Estd. 1966

D&H sécheron

Complete Welding Support

D&H Secheron Welding
PRODUCT DATA & WELDING HANDBOOK

QUALITY | EXPERIENCE | SUCCESS



PROUDLY MADE IN INDIA

OUR BRANCHES

EAST ZONE

Kolkata
36/1A, Gorcha Road,
Near Gariahat Tram Depot,
Gariahot, Kolkata - 700 019
Tel: +91 33 2461 8014
Fax : +91 33 2461 8014
Email: dnhkol@dnhsecheron.net

WEST ZONE

Vasai
220, Ambika Commercial Complex,
Navgrah
Vasai (E), Dist: Palghar - 401 210

SOUTH ZONE

Chennai
"Parishad Apartment" Ground Floor,
New No. 24(Old No.46), B.N. Road,
T. Nagar, Chennai - 600 017.
Tel: +91 44 28151651 / 2657 / 3857
Fax : +91 44 28152657
Email: dnhchn@dnhsecheron.net

Manufacturing Excellence

D&H Sécheron has a deep-rooted belief backed by experience that good quality machines produce the finest quality products. As a reinstatement of our belief, we have always deployed new-generation machinery on our different shop floors.

Some state-of-the-art manufacturing facilities include high-speed automated wire drawing & cutting machines, high-capacity fast extrusion machines, highly sophisticated machines for flux cored wire manufacturing, precision layer winding machines and automated vacuum packing lines.








Research & Development Center

D&H Sécheron Electrodes Pvt. Ltd. has taken the lead in the initial days itself to set up an independent R&D Centre which is seamlessly connected to the main plant at Indore. We are proud to share that our R&D lab has been recognized by the Department of Scientific and Industrial Research (Ministry of Science and Technology - Government of India) from the year 1979 onwards. The R&D Centre takes up application-oriented research to solve problems related to specific requirements of the welding industry apart from having the advisory role in the production and quality control within the company.

The R&D Centre is well equipped for its activities with the latest equipment for carrying out various destructive and non-destructive testing, metallographic studies and corrosion testing facilities available with our NABL-accredited testing lab.

The R&D Centre has been one of the key contributors to the overall sustained growth of the company by developing new welding consumables as well as enhancing the existing ones. The data-driven approach, application-oriented study and adherence to the global standards by the R&D Centre is the differentiation factor for D&H Sécheron as one of the most reputed brands in the industry.

D&H Sécheron got award for development of **Cromotherme-92** against imported product in **Make in India** issued by Central Minister Heavy Industries.



Approvals

Since the inception in 1966, quality has been one of the main driving forces behind our steady expansion of products. We take every measure possible to ensure that the highest quality standards are consistently adhered to and maintained across our entire organization. We have developed an extensive range of welding consumables in accordance with the standards and requirements specified by several national and international standardization agencies and major OEMs such as LRA, IRS, IBR, RDSO, SGS, EIL, PDIL, TOYO, DGQA, BHEL, NPCIL, NTPC and many more.

Few Testimonials

We are very much pleased to state that we have been procuring huge quantities of FCAW consumables of D&H Sécheron Electrodes Pvt. Ltd. We appreciate the quality of all products supplied by your company and we are very much satisfied as far as the technical requirements of our clients are concerned.

JINDAL STEEL & POWER

HOD, Quality
Dy. General Manager
Raigarh, Chhattisgarh

We are using various D&H Sécheron welding electrodes for casting repair application since last five years. Weld characteristics and performance of all the products are found satisfactory.

B.B. INVESTMENT CASTING
Manufactures : Precision Lost Wax Investment Castings

HOD, QA/QC
BB Investment Casting
Metoda GIDC - Rajkot

Thanks to D&H Sécheron Electrodes Pvt. Ltd. for giving entire support of the process development. Your efforts are greatly appreciated and we look forward to continuing to work with you in the future.

AMSTEEL CASTINGS PVT.LTD

Quality Manager
AMSTEEL Casting Pvt. Ltd.

Lotherme

D&H Sécheron has played a vital role in the field of Maintenance Welding: Repair & Reclamation of components to enhance their service life.

LoTherme range of products are dedicated to the maintenance needs of a broad spectrum of industries that regularly need consumables for crack repair, for joining/alternations in-situ and to combat wear in all forms. LoTherme range Includes SMAW Electrodes, Open Arc FCW, Composite Saw Wire + Flux and are exclusively used by a number of industries like the Cement, Thermal Power, Mining, Steel, Sugar, Railways, Transportation and General Engineering Industries. The LoTherme consumables are designed in such a way that while carrying out repair & reclamation welding, the components do not lose their original properties, but rather it enriches the same by prolonging their service life. A team of qualified and experienced engineers from D&H Sécheron offer on-site services to customers for the selection of LoTherme consumables and for the execution of repair and maintenance jobs.



Services We Offer

1. Service Welding

We undertake specialized fabrication services for in-house profiling and customized hard-facing to protect or refurbish critical components at our state-of-the-art fabrication workshop or in-situ at our customer site with reliability and quality of a global standard.



2. Training

D&H Sécheron provides customized training programs for welders and Engineers to boost their technical skills & operational efficiency. We also provide Webinar training and training on our customer sites on demand.



Industries We Serve



MINING



STEEL



CEMENT



RAILWAY



OIL & GAS



TRANSPORT



SUGAR



MARINE



POWER



SHIPPING



HEAVY ENGINEERING



AEROSPACE

Network

With a dedicated team of sales executives and a widely spread team network along with stockists, D&H Sécheron offers strong backup to all its customers.

Apart from India, our welding consumables are being exported to Australia, Bahrain, Bangladesh, Bhutan, Ethiopia, Ghana, Guyana (South America), Indonesia, Iran, Israel, Jordan, Kenya, Kuwait, Malawi, Malaysia, Mali, Nepal, Oman, Portugal, Qatar, Rwanda, Saudi Arabia, Senegal, Singapore, South Africa, Spain, Sri Lanka, Sudan, Togo, UAE, Uganda, Vietnam & Zambia.



Note : If you have any queries / requirements, please write to us at **tsd@dnhsecheron.net**

OUR PROFILE

D&H Secheron Group has been in the forefront within Indian welding fraternity since its inception in 1966. An ISO 9000-2015, 14001-2015, 45001-2018, CE Marking, NABL certified Laboratories company, a leading name in Indian and overseas welding industry offers comprehensive package of welding products and services.

Quality, Innovation and Import substitution have been the three watchwords. This special distinction has been earned by D&H Secheron by providing **'Complete Welding Support'.** With its state of the art production facilities, a dedicated team of sales engineers and widely spread dealer network, D&H Secheron offers strong support and back up to all its customers.

Supratherme, one of our earliest and proudest achievement, (synonymous with the name of D&H Secheron), was followed by a host of special electrodes for some of the most critical applications in the industries. The brief calendar of developments highlighting the important electrodes developed (given below) reveals the distinguished achievements of D&H Secheron.

NO.	YEAR	TYPES AND DESCRIPTION
1.	1967	**Supratherme :** A superb E7018 class electrode unmatched in quality to date.
2.	1969	**D&H 45S :** Special electrodes for welding of galvanising tanks.
3.	1969	**CCR (Special) :** For hardfacing of blast furnace bells and hoppers.
4.	1969	**D&H 1200 T :** Nickel base alloy electrode conforming to the AWS Classification ENiCrFe -2
5.	1970	**Supratherme (Spl) :** For -50°C used in fabrication of heavy water towers (DAE)
6.	1971	**Supratherme-Ni :** Approved and used by NPCIL for -46°C (-50°F) for thermal cooling shields.
7.	1972	**Batox-B :** Basic coated stainless steel electroce (AWS E308L) used in nuclear fabrication (dump tank).
8.	1972	**Rutox-F :** Stainless steel electrode conforming to the AWS Classification E316L-16 with ferrite below 2

OUR PROFILE

9.	1973	**D&H 150:** For welding HV9A stainless steel for phosphoric acid service. Approved by FCI. Suitable forHV9,HV9A,Alloy20and Carpenter 20 Steels.
10.	1973	**Batox D:** Basic coated stainless steel electrode conforming of the AWS Classification E316L, for liquid solution storage tanks.
11.	1974	**Nitherme-3.5:** AWS Classification E8016-C2, Developed for welding of 3.5% nickel-steel for cryogenic applications down to -80°C.
12.	1974	**Cromotherme-5:** AWS Classification E8018-B6. Developed for service temperatures up to 600°C for oil refineries.
13.	1974	**Cromotherme-9:** AWS Classification E8018-B8. Developed for and accepted by Engineers India Ltd., Haldia Refinery Project, as the first indigenous electrode of its class.
14.	1974	**D&H1212:** AWS Classification ENiCrFe-3. Developed as an equivalent of imported Inconel-182 for welding of HK4O alloy tubes.
15.	1975	**D&H 920B:** Stainless steel electrode. Developed for, approved and used by Bharat Heavy Plate and Vessels Ltd., Visakhapatnam, for -196°C application in fabrication of liquid oxygen Plants.
16.	1975	**D&H 1400:** Similar to Hastelloy C. Developed and used for hardfacing of hot shearing blades in steel plants.
17.	1976	**Supratherme-Ni (Spl):** AWS E 8018-G. Approved by Engineers India Ltd., for temperatures down to -60°C. Used for welding of crude oil storage tanks fabricated out of quenched and tempered Steels.
18.	1977	**Rutox-F (U) and Batox-F (U):** Fully austenitic stainless steel electrode for outstanding corrosion resistance in ureaservice.

OUR PROFILE

19.	1978	LoTherme range of low heat input electrode for repair and maintenance welding in several industries to conserve precious materials and components.
20.	1979	Further developments in electrodes for urea service.
21.	1980	Electrodes with extra low hydrogen 'less than 3m1/100gms for welding under high relative humidity conditions.
22.	1981	**Corotherme:** Electrodes for welding weathering steels.
23.	1983	Special C-Mn steel electrodes with enhanced properties for heavy water project.
24.	1985	Electrodes for welding high tensile Q&T steels.
25.	1986	Further developments in electrodes for Q&T steels for defence applications.
26.	1987	Special electrodes for defence applications.
27.	1989	**Nitherme-3.5L:** Electrode conforming to E7016-C2L for -101°C applications.
28.	1992	**Tensotherme-Cu:** An electrode for welding LoPearl steel which is used for resisting corrosion by molasses.
29.	1992	**Super-Mn:** A specially formulated electrode depositing Mn steel weld metal.
30.	1992	**Tensal (Sp1):** An electrode conforming to E10018-D2 for welding of alloy steel castings.
31.	1992	**Rutox-AH:** An electrode conforming to E308H1 for welding of 304H.
32.	1993	**Supratherme (Mod):** An electrode conforming to GS-8 specifications of EIL for H_2S service. The weld metal possesses excellent resistance to SSCC and HIC.
33.	1993	**Rutox 20/9/3:** An electrode for welding armour plates meeting FVRDE 1056(a) specification requirements.

OUR PROFILE

34.	1994	**D&H 2093L:** A stainless steel electrode for welding duplex stainless steels.
35.	1994	**D&H 535:** A surfacing electrode for building up hot forging dies.
36.	1995	**Dietherme-HD:** An electrode for surfacing forging hammer dies.
37.	1995	**Cromotherme-1(Spl),Cromotherme-2(Spl):** Special electrodes depositing creep. resisting weld metal.
38.	1996	**D&H 62, D&H 450:** Hardfacing electrodes for steel plant applications.
39.	1996	**Super-Cut:** An economical cutting electrode.
40.	1996	**Abrotherme:** A hardfacing electrode for thermal power plants.
41.	1997	**Molytherme(Mod):** A C-Mo electrode, with good impact properties at sub-zerotemp
42.	1997	**Cromotherme-1(Mod):** A Cr-Mo electrode with impact properties at sub-zerotemperature.
43.	1997	**Cobaltherme-6:** A cobalt based electrode.
44.	1998	**Cromotherme-2(Mod) :** Superior toughness at sub-zero, at- 18°C and temper embrittlement resistance.
45.	1998	**Cromotherme-9(Mod):** Conforming to E9018-B9 classification for welding T91 / P91 material.
46.	1998	**D&H16/8/2:** Conforming to E16-8-2 classification.
47.	1998	**D&H25/10/4:** For super duplex stainless steel welding with PREN> 40.
48.	1998	**D&H430Cb:** For welding 18%Cr stainless steel.
49.	1999	**D&H 9650:** For reclaiming forging dies.
50.	1999	**D&H25/5/3:** Conforming to E2553-16 classification for welding duplex stainless steels which contain approximately 25%Cr.

OUR PROFILE

51.	1999	**Cromotherme-20Mo:** A Cr-Mo-V electrode for filling up work alloy castings of similar composition.
52.	1999	**D&H 600:** A hardfacing electrode ideal for resisting abrasion or heavy impact or both together.
53.	1999	**Autotherme-1:** A copper coated continuous solid wire conforming to AWS ER70S-6 for Co_2 welding.
54.	2000	**Super MnCr:** An electrode for hardfacing carbon steel, low alloy steel & austenitic manganese steel where resistance to severe abrasion is desired.
55.	2000	**D&H 1260:** An electrode conforming to ENiCrMo-6 for welding 9%Ni steel.
56.	2000	**Cromotherme-9(Spl):** An electrode for welding P-92 materials.
57.	2001	**Molytherme-R:** An electrode conforming to IS : E63BD124J for welding CONCOR Bogies.
58.	2001	**D&H 1225:** Conforming to ENiCrCoMo-1 classification for welding furnace heating elements, reformer tubes, and similar composition alloys etc.
59.	2001	**Norma-V:** Medium coated rutile type all position electrode for welding mild steel.
60.	2001	**Medio-V:** All position electrode deposit givcs radiographic quality.
61.	2002	**LoTherme-619:** Low heat input hardfacing electrode for recommending worn-out MM [steel and Gr.90A points and crossings for in use hightraffic density routes.
62.	2002	**D&H 444L-15:** For welding ASTM-CA6NM casting and similar composition materials. The consumable is conforming to E410NiMo-15 classification.
63.	2003	**D&H 1223:** Conforming to ENiCrMo-3 classification for welding Ni-Cr-Mo alloys to themselves and to steel.

OUR PROFILE

64.	2003	**D&H1425:** Conforming to ENiMo- 1 classification, suitable for process applications in the as welded condition.
65.	2003	**Supratherme-Spl(Mod):** An electrode to meet HIC, SSCC and impact requirement at -51°C.
66.	2003	**D&H145LN:** A special purpose stainless steel electrode depositing 25%Cr-9%Ni-2.3%M0-1.5%Cu-N weld metal.
67.	2003	**Cromotherme-5(Mod):** Conforming to E8018-B6 to meet toughness requirements at -10°C.
68.	2003	**LoTherme-627:** A suitable formulated low heat input hardfacing electrode for reclamation of rolls, crane wheels, etc.
69.	2004	**Supratherme-H4R:** Moisture resistant electrode for producing tough and ductile weld of radiographic quality. Electrodes supplied in Vacuum packing, it does not require expensive re-drying.
70.	2004	**Supratherme(Spl)-H4R:** Moisture resistant electrode for producing tough and ductile weld of radiographic quality. Electrode meets impact requirement at -50°C and supplied in Vacuum packing.
71.	2004	**D&H1227:** Conforming to ENiCrMo-7 classification for welding Ni-Cr-Mo alloys.
72.	2004	**Cobaltherme-21:** Cobalt-based electrode depositing a weld metal having Stellite 21 grade and used for repairing hot trimming dies.
73.	2004	**D&H150L(Spl):** Special electrode conforming to E383-16 classification.
74.	2004	**LoTherme-618S:** Specially formulated low heat input hardfacing electrode for Sugar Mill roller. Weld metal hardness ranges from: 58-60 HRC.

OUR PROFILE

75.	2004	**Batox-MoN:** A basic coated welding electrode depositing 18%Cr-11%Ni-2%Mo-N type weld metal. The deposit displays good crack resistance and excellent creep strength and resists scaling at elevated temperatures.
76.	2004	**Cromotherme-5L:** Basic coated low carbon & low hydrogen type electrode, conforming to E8018-B6L classification.
77.	2004	**Cromotherme-9L:** Specially designed for welding of ferritic martensitic chrome steel conforming to E8018-B8L classification.
78.	2004	**Rutox-Mo(H):** A stainless steel electrode depositing 18%Cr-11%Ni-2.3%Mo with high carbon, provides higher tensile and creep strength at elevated temperatures.
79.	2004	**Batox-D(Spl):** Basic coated electrode yielding an extra low carbon, 18%Cr-12%Ni-2.3%Mo-N weld deposit highly resistant to intergranular corrosion.
80.	2004	**LoTherme-625:** Low heat input hardfacing electrode for reconditioning of worn-out MM steel and Gr.90A points and crossings for use in high traffic density 35GMT.
81.	2004	**Nitherme-2.5(Mod):** A low hydrogen electrode depositing 2.2%Ni-0.30%Cr-0.03%Ti weld metal. Ideal for welding fine grained and Nickel steels for service temperatures down to -60°C.
82.	2005	**D&H672:** Deposits high Nickel alloy containing Cr-W-Mo. Weld deposit resist heat and heavy impact. Ideal for hot working tools.
83.	2005	**Batox-B(N):** A stainless steel electrode depositing 19%Cr-10%Ni-0.08%N weld metal which has excellent' resistance to intergranular corrosion.
84.	2006	**D&H 320:** Conforming to E320 - 16 classification.
85.	2006	**Molytherme-Extra(Mod):** A low hydrogen iron powder electrode with superior toughness.

OUR PROFILE

86.	2006	**Cromotherme-1L(Mod):** Electrodes suitable for welding 1.25%Cr-O.5%Mo creep resisting steel. The weld metal possesses excellent tensile strength together with toughness even at -20°C. Conforming to E7018B2-L classification.
87.	2006	**Batox-D (NP):** Basic coated electrode yielding 0.05%C-18%Cr-12%Ni-2.3%Mo-N weld deposit. Conforming to IGCAR Specification PFBR/30000/1032/SP/R-1.
88.	2006	**Nitherme-2.5L:** A low hydrogen electrode depositing 2.5%Ni in the weld metal. Weld metal possesses excellent toughness at sub-zero temperatures down to -73°C. Conforming to E 7018-C1L classification.
89.	2007	**Molytherme-Spl:** The weld metal possesses high strength together with good notch toughness even at subzero temperature down to -50°C.
90.	2007	**Cellutherme-Mo:** Deeply penetrating, forceful, spray type arc electrode to yield 0.5%Mo weld deposit.
91.	2007	**D&H25/10/4W:** Conforming to E2595-16 for use primarily to weld duplex stainless steels which contain approximately 25%Cr.
92.	2007	**Cromotherme-2L (Mod) :** It is used for welding P22/T22 low carbon version. It gives low hardness and consistent sub zero impact toughness even at -20°C.
93.	2007	**CNM (SPL)M :** Conforming to E120180M,suitable for joining many high strength, low alloy or micro alloyed steels to themselves or to lower strength steels.
94.	2007	**D&H1200T(Ns):** A non-synthetic electrode depositing homogeneous Ni-Cr-Fe alloy composition. lt can meet impact at -196°C & lateral expansion requirements.
95.	2007	**D&H 1212 (NS):** A non-synthetic electrode depositing homogeneous Ni-Cr-Fe alloy composition. It can meet impact at -196°C & lateral expansion requirements.

OUR PROFILE

96.	2007	**D&H 953:** Special hardfacing electrode for Nitrided dies.
97.	2008	The covering of 17 stainless steel electrodes introduced. These are modification of the 16 covering. On horizontal fillet welds, electrodes with a 17 covering tend to produce more of a spray arc and a finer rippled weld-bead surface.
98.	2008	**Ultratensal-Cu:** It is a basic coated extra low hydrogen electrode. Ideally suited for welding of high strength Q&T steels, like WEL TEN 80, SA 517 grades, WB36 and their equivalent grades.
99.	2008	**Cellutherme-P80:** It has been designed primarily for welding typical high strength pipe butt joints in the vertical welding position with downward or upward progression. Conforming to E8010-P1.
100.	2008	**Molytherme-G:** It is a low hydrogen electrode yielding a weld deposit containing Mn-Mo. The electrode is ideally suited for welding SA 302 Gr.B steels &, similar composition materials.
101.	2008	Wear plate and complete full-fledged automated job work, work shop established.
102.	2009	**Cromotherme-91:**Non-synthetic electrode depositing weld metal of 9%Cr-1%Mo modified with Al, V, Nb, and N for welding P91 materials. Conforming to E9015-B91 classification.
103.	2009	**Cromotherme-92:** A low hydrogen electrode deposits 9%Cr-1%Mo and enriched with Niobium, Vanadium, Nitrogen and tungsten. Some typical materials where this electrode can be used are P92, Rotor Steel, E 911 steels, GX12 Cr MoWVNbW1letc.
104.	2009	**D&H 2209 (NS):** Ideal for welding duplex stainless steels. The weld metal possesses excellent corrosion resistance in marine & paper environments. Suitable for welding duplex stainless steels having Cr ≤ 25% and other grades like UNS 32205, UNS 31803, etc.

OUR PROFILE

105.	2009	**D&H 2553(NS):** Non-synthetic rutile coated electrode depositing duplex stainless steel weld metal. The electrode can be used where resistance to pitting corrosive attack and resistance to stress corrosion cracking are required.
106.	2009	**D&H 320LR (NS):** The elements C, Si, P and S maintained as low as possible and Nb Mn re controlled to get better properties. The typical applications include HV-9A stainless steel, for fabricating carpenter 20 stainless steels etc.
107.	2009	**D&H 385:** It is particularly suited for welding Carpenter 20, HV9, HV9A, Uranus B6, UHB 904L, Sandvik 2RK65, and similar materials which are used for these service conditions.
108.	2009	**Nitherme-1.5(SPL):** Ideal for welding fine grained and Nickel steels for service temperatures down to -50°C. Typical applications include storage tanks for liquefied gases like Ammonia, distillers in coke oven batteries and petrochemical industries. Conforming to E8018-C4 classification.
109.	2009	**D&H 1212 (MOD):** Electrode depositing 65%Ni-20%Cr-2%Nb-1.5%Mo weld metal. It is ideally suited for surfacing steel with Nickel-Chromium-Iron alloy when high Manganese contents are not detrimental, for welding clad side of Nickel Chromium-Iron clad steel and dissimilar metal combinations. Suitable for overlay of forge plates. Specially recommended for welding 9% Ni Steels for cryogenic service.
110.	2010	**D&H 383:** Non-synthetic electrode depositing low carbon 28%Cr-31.5%Ni-3.7%Mo-l fully austenitic weld metal. Weld metal cxhibits excellent resistance to corrosion in non-oxidizing on-oxidizing media like Sulfuric acid, Phosphoric acid, etc. Ideally suited for welding stainless steels of similar composition and Other equivalent grades of stainless steels.

OUR PROFILE

111.	2010	**D&H 2594 (NS):** Non-synthetic electrode depositing super duplex stainless steel weld metal. The weld metal exhibit.; high strength, high impact energy, and resistance to stress corrosion cracking, pitting, and crevice corrosion.
112.	2010	**D&H 1223 (NS):** A non-synthetic electrode depositing homogeneous Ni-Cr-Mo alloy composition. Ideal for welding Ni-Cr-Mo alloys to themselves and to steel, and for surfacing. The electrodes are used in applications where the temperature ranges from cryogenic to 540°C.
113.	2010	**D&H 1400(Mod):** Non-synthetic electrode for joining, repair and surfacing, to resist abrasion, corrosion, oxidation and high temperature service. Weld metal containing low carbon Cr-Mo-W- Co. Excellent resistance to heat, strength and toughness up to 1000°C.
114.	2010	**Cromotherme-23:** Low hydrogen iron powder electrode depositing 2.2%Cr-0.5%Ni-0.2%Mo-1.5W-0.2V Weld metal of having less impurities i.e. S, P will improve the impact property at subzero temperatures. Ideal for welding P23 material welding.
115.	2010	**D&H 2595 (NS):** Non-synthetic electrode depositing super duplex stainless steel weld metal with PREN≥40. The weld metal exhibits high strength, high impact energy, and resistance to stress corrosion cracking, pitting, and crevice corrosion.
116.	2010	**Indotherme Spl (Mod):** A basic coated hydrogen controlled electrode. We metal possesses excellent crack resistance, toughness and excellent resistance to SSCC and HIC. It is suitable for mild steel and medium high tensile steels.
117.	2010	**Rutox-A (N):** A stainless steel electrode depositing 22Cr-10Ni-0.15N weld metal. The weld metal has higher resistance to cracking, oxidation and scaling at

		elevated temperatures up to 1100°C. It is ideally suitable for welding of stainless steels of similar composition like ASTM S30815.
118.	2011	**Cromotherme-1(RTE):** Weld metal having strict control on S. P, As, Sn & Sb will improve the subzero impact Property and resists temper embrittlement. Ideal for welding steam generating equipments and reactor vessels.
119.	2011	**Indotherme-H4R:** Basic coated, low hydrogen, moisture resistance electrode with vacuumpack.
120.	2011	**Tensal (MOD):** Special low hydrogen type electrodes. The weld metal possesses high strength together with good notch toughness even at subzero temperatures down to -50°C. Ideally suited for welding fine-grained steels, high strength steels. Q&T steels used in the fabrication of structures, bridges, penstocks, earth moving equipments other materials like DIRSO 500HT, heat exchangers, etc.
121	2011	**Cromotherme-91W:** A low hydrogen electrode deposits 9%Cr-0.5%Mo-1.75%W micro alloyed with Niobium, Vanadium, Nitrogen and Boron. Tungsten additions provides adequate creep rupture strength at higher steam pressures and temperatures. The controlled addition of micro alloying elements increased the high temperature strength and creep behaviour. It is designed to weld advanced power plant materials like boiler super heater and re-heater tubes. It is also used for header and steam piping for extremely severe steam conditions. The typical materials that are welded with this consumable are A213 T92, A335 P92, A387 Gr 92, etc.
122.	2011	**Nimotherme-1(Spl):** Low hydrogen iron powder electrode depositing 1%Ni-0.25%Mo weld metal. Confirming to E8018-C3 class. Ideally suited for welding grain refined steels and nickel steels for service temperatures down to -60°C. Typical applications include storage tanks for liquefied gases

OUR PROFILE

		like Ammonia, distillers in coke oven batteries and petrochemical industries. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions.
123.	2011	Complete range of Tubular hard facing electrodes launched.
124.	2011	**Cromotherme-2 (RTE):** Special electrode to meet temper embrittlement requirements. Weld metal having strict control on S,P,As,Sn & Sb will improve the subzero impact properly and resists temper embrittlement. Ideal for welding steam generating equipments and reactor vessels.
125.	2011	**Cromotherme-24:** The electrode is used for welding similar composition materials and SA-182, F22V SA-336, F22V 8v SA-541, 22V. Specially applicable wherever prolonged heat treatments are involved together with the impact property requirement at subzero temperature up to -18°C. Basically it is used for fabricating desulphurization reactors, heavy section pressure vessels having similar composition.
126.	2011	**Rutox-AH(Cu):** Joining and surfacing of 18%Cr-8%%Ni stainless steel and clad steels of similar composition materials i.e. 18Cr-8%Ni cast steel, forged steel, etc. Cladding carbon steel and low alloy steel. Steels conforming to AISI 304H and their equivalents can be welded. The composition designed to withstand high temperature and pressures in super critical & ultra super critical boilers.
127.	2011	**Rutox-AN(St):** Special electrode producing 19%Cr-10%Ni-Cb stabilized weld metal with N. Joining and surfacing of 18%Cr-8%Ni stainless steel and clad steels of similar composition materials i.e. 18%Cr-8%Ni cast steel, forged steel, etc. Cladding carbon steel and low alloy steel. Steels conforming to AISI 304, 321, 347, and their equivalents can be welded. The composition designed to withstand high temperature and pressure in SC & USC boilers.

OUR PROFILE

128.	2011	**D&H 310N (St):** It is a stainless steel electrode depositing 25%Cr-20%Ni with N weld metal. It is designed for welding in all conventional positions. Weld metal possesses excellent mechanical properties and resists scaling at high temperatures up to 1200°C. It is ideally suited for the welding of similar and dissimilar compositions, including hardenable steels, clad steels, Carbon -Molybdenum and Chromium - Molybdenum steels where pre-heat, and post weld heat treatments are impracticable. The composition designed to withstand high temperature and pressure in SC & USC boilers.
129.	2012	**Supratherme (Spl) CT:** The weld metal is of radiographic quality and displays remarkable impact strength even at -60°C. Typical applications include welding of carbon steels, steels sensitive to hydrogen embrittlement, heavy and rigid structures, pressure vessel and equipment subjected to severe stress and requiring good toughness properties at sub zero temperatures down to -60°C.
130.	2012	**D&H 25/4:** Weld metal has excellent performance in high temperature up to 1100°C. Weld metal defend against attack of sulphurous oxidizing or reducing combustio gases. Electrode is for joining and surfacing or heat-resistant chromium and chromium-nickel steel and cast steel of Similar compositions.
131.	2012	**Rutox-D(Sp1):** It is a rutile coated electrode yielding an extra low carbon (1.025%max) with ferrite (6-12 FN) in the weld metal. The Weld metal has excellent resistance to intergranular corrosion even at elevated temperatures. Ideally suited for welding stainless steels of similar composition. Ideal for joining wrought and cast materials in a number of industries like rayon, dye, paper, chemical, fertilizer, petrochemicals, etc. Surfacing & overlay applications.
132.	2012	**D&0 1423 (NS):** It is suitable for welding components in plants for chemical processes with highly corrosive

		media. Typical base materials which are welded with thisproduct are ASTM 8574, B575, B619, B622 and B626 with UNS No. N06022. Ideal for C-22 alloys.
133.	2012	**Rutox-B (Spl):** It is a rutile coated electrode yielding an extra low carbon (0.025% max) with ferrite (5-10 FN) in the weld metal. The weld metal has excellent resistance to intergranular corrosion even at elevated temperatures.
134.	2012	**D&H 1217 (NS):** Control boron and zirconium are helpful in reducing the tendency for ductility dip cracking. It is ideally suited for welding the Ni-Cr-Fe alloy of the UNS number N06690. Typical specifications for Ni-Cr-Fe base metals are ASTM B166, B167 and B168. Ideal for stringent requirements in the construction of nuclear reactors.
135.	2012	**D&H 1232 (NS):** Typical specifications for the Cr-Ni-Mo stainless steel base metal are A240, A167, A182, A249, A276, A312, A358, A373, and A479, most particularly the grade UNS S31254 / 254 SMO / 6% Mo SS type. In a chloride containing environment, the fully austenitic weld-metal exhibits high resistance to Pitting, Crevice Corrosion & Stress Corrosion Cracking. It is ideal for Sulphuric and Phosphoric acid media that has been contaminated by chlorides. It can also be used for welding of 625 and 825 grade Ni-based alloys.
136.	2012	**D&H 1414 (NS):** Weld metal gives good resistance to the corrosion, resistance to reducing, oxidizing, crevice and pitting corrosion. It is suitable to join duplex, super duplex and super austenitic stainless steel and ideally suitable for nickel alloys such a Inconel alloy C-276, 622, 625, 686, UN N06059 and N06022.
137.	2013	**Unitherme-70:** It is ideally suited for the fabrication of carbon steels particularly fillet and butt welds for faster deposition Electrodes are best suited for thicker base metal. The higher metal recovery makes it the ideal choice for heavy fabrication.

138.	2013	**Cromotherme-9H4R:** It is used for welding similar composition plates, pipes, forging and tubes. Typical applications include welding of A387 Gr.9 plate, A335 P9 pipe, A217 C12 castings, A213 T9 tubes etc.
139.	2014	**D&H 4130:** It is a specially designed electrode to match the heat treating properties of SAE 4130 and 8630 materials. It is ideally suited for joining and surfacing of SAE 4130 and 8630 materials. The weld metal fulfills the NACE MR 01-75 requirements fo ' use on oil field equipment in sour (H_2S) ga and oil environment.
140.	2014	**SECHERON 410NM:** It is a special purpos electrode depositing 12%Cr-1.2%Ni-0.2%Mo weld metal, which has excellent resistance to corrosion, erosion, pitting and impact. It is ideally suited for joining of similar composition materials, groove welding and filling of GX8CrNi12 grade Steel castings. Typical applications include process pumps, steam valves, gas valves, volute casting casing covers, pump shaft impellers, etc.
141	2014	**D&H430NM :** Is a special purpose electrode depositing 16%Cr-5%Ni-1%Mo weld metal, which has excellent resistance to corrosion, erosion, pitting and impact. Typical applications include surfacing of high pressure valves, turbine blades, valve seats, repairs of runners, pumps-and combustion building, pulp and paper plant equipment, etc.
142.	2014	**Indotherme(Spl) H4R:** is suitable for mild steel and medium high tensile steels subjected to dynamic loading, high stresses and impact. Weld deposit displays excellent toughness at sub zero temperatures down to -46°C.
143.	2014	**Indotherme(Spl)Mod-H4R:** is basic coated, low hydrogen, moisture resistance electrode. Weld metal has crack resistant and tough weld metal of radiographic quality. It is suitable for mild steel and medium high tensile steels subjected to dynamic

loading, high stresses and impact. Weld deposit displays excellent toughness at sub zero temperatures down to -46°C.

144. 2015 **Secheron 308Mo:** electrode display good resistance to corrosion, cracking & scaling. is recommended for welding ASTM CF8 stainless steel castings and welding wrough materials such as type 316 stainless when increased ferrite is desired.

145. 2015 **Ultratensal-69:** Is basic coated, extra low hydrogen electrode ideally suited for welding high strength Q&T steels like Welten 80 SA517 grades and their equivalents. The weld metal has excellent crack resistance and displays high strength combined with good sub-zero impact strength. It is ideal for welding high strength low alloy steels used for sub-marine hull construction.

146. 2015 **D&H 1201(NS):** Electrodes are used for welding Nickel-Chromium-Iron alloy for the clad side of joints in steel clad with steel Nickel-Chromium-Iron alloy, and for surfacing steel with Nickel-Chromium-Iron on weld metal. The electrodes may be used for applications at temperatures ranging from cryogenic to around 980°C. These electrodes are also suitable for joining steel to Nickel base alloys.

147 2016 **Nitherme-6.5L:** Is low hydrogen and low carbon type electrode depositing 6.5%Ni steel weld metal. Ideal for welding fine grained and Nickel steels for service temperatures down to -115°C. Typical applications include pressure vessels, piping, valves and tanks used for storage, transportation and distribution of liquefied gases. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions.

148. 2016 **D&H NM-CI:** Is the most economical for repairing various types of c ast iron where machinability of the weld deposit is not required, where weld shrinkage

OUR PROFILE

		stress is not a concern and color match of the base metal should not be expected. It melts at relatively low temperatures which permit the use of low welding currents. Commonly used on gears, motor housings, machine parts, farm equipment, large fames, etc.
149.	2016	**Cromotherme-921:** Is basic coated, low hydrogen electrode. Weld metal contain 9.5%Cr-1.5%Mo-1.0%Co modified with Niobium, Vanadium, Boron and Nitrogen designed to provide improved creep strength, toughness, fatigue life, oxidation and corrosion resistance at elevated temperatures. It is designed to weld the materials in power plant and refineries. It is ideally suited for welding advances creep resistant GX-13CrMoCoVNb 9-2-1 steel.
150.	2016	**Molytherme-CM:** Is a basic coated, low hydrogen electrode for depositing 0.5%Cr-1.1&Mo-V creep resistant weld metal, it is ideally suited for welding of steels of similar it composition. Typical applications include welding Cr-Mo-V steels used in boilers pipelines in chemical, power plants, castings, etc.
151	2016	**Cromotherme-7:** Is a basic coated, low hydrogen electrode for depositing 7%Cr-0.5% Mo creep resistant weld metal. It is ideally suited for welding of steels of similar composition. Typical applications include welding Cr-Mo steels used in boilers, pipelines in chemical, power plants, castings, etc.
152	2017	**Batox-409Nb:** Is a basic coated stainless steel electrode depositing 12%Cr-0.5%Ni-1%Nb weld metal.
153	2017	**Batox-16/8/2:** Is a basic coated, stainless steel electrode depositing 15.5%Cr-8.5Ni-1.3%Mo stainless steel weld metal.
154	2017	**Secheron 410 NC:** is a special purpose Electrode depositing 13%Cr-3%Ni-0.8%Cu weld metal which has excellent resistance to corrosion, erosion, pitting and impact. It is specially suited for welding 06XH3DL grade castings.
155	2017	**BOR-F:** is a basic coated electrode producing an air

OUR PROFILE

		hardening weld metal which has excellent resistance to abrasion.
156	2018	**LoTherme-410C:** is ideally suited for the repair of all tool steels. It is also suitable for repair of shearing blades, planer plate anvils, drills.
157	2018	**LoTherme-444C:** is ideally suited for buildup directly on cast iron draw dies including gray, nodular, ductile cast irons.
159	2018	**LoTherme-623F:** Typical applications include cane cutting knives, crusher hammers, jaws, rollers, rock drills, tractor grousers, etc
159	2019	**D&H 409Nb:** Is a rutile coated stainless steel electrode depositing 12%Cr-0.5%Ni-1%Nb weld metal. Added Nb in weld metal to produce a ferritic microstructure with fine grains.
160	2019	**Maxfil-MC-31:** Is a gas shielded metal-cored wire designed for welding of low & medium tensile steels structures subjected to dynamic loading.
161	2020	**Nimotherme-1(Spl)Mod:** Is a low hydrogen, iron powder electrode yielding a tough and ductile weld deposit having 1%Ni-0.25%Mo. Ideally suited for welding fine-grained and nickel steels for service temperatures down to minus 40°C.
162	2020	**D&H310(Mod):** Is a low carbon 25%Cr-20%Ni-4%Mn type electrode for welding steels of similar composition. The weld metal has excellent resistance to oxidation and scaling up to 1200°C.
163	2020	**D&H1233:** Electrode for welding similar and dissimilar alloys like mild steel, stainless steel & nickel base alloys. Weld metal has good pitting and crevice corrosion resistance. It resists scaling up to 1100°C.
164	2021	**Ultratherme-P2:** Designed to weld hot, fill & cap passes in high strength pipe but joints. Specifically suited for API 5L pipes welding.

OUR PROFILE

165	2021	**Nimotherme-NM1:** is a low-hydrogen electrode, which contains about 1%Nickel and 0.5% Molybdenum. This electrode can be welded without PWHT.
166	2021	**Nimotherme-NM2:** is a basic coated, low-hydrogen electrode. This electrode is intended to meet strength requirements after extended post weld heat treatment as required in the construction of nuclear power plants.
167	2021	**Rutox-G:** It is most often used to weld AISI Type 240 and 241 base metals. These alloys are nitrogen-strengthened austenitic stainless steels exhibiting high strength with good toughness over a wide range of temperatures.
168	2021	**Secheron-209:** It is most often used to weld AISI type 209 (UNS S20910) base metals. The alloy is a nitrogen strengthened austenitic stainless steel exhibiting high strength with good toughness over a wide range of temperatures.
169	2021	**D&H 20/18/6 Cu:** Is a stainless steel electrode depositing an extra low carbon 20%Cr-18%Ni-6%Mo-0.7%Cu stainless steel weld metal. The weld metal has excellent resistance to pitting and crevice corrosion.
170	2021	**D&H 1414 (NS):** provide excellent operating characteristics for groove and fillet welding in down hand position and smaller diameter electrodes are suitable for all position welding.
171	2021	**D&H 430 MC:** is a basic coated all position electrodes depositing 17%Cr-1.3%Mo.The weld metal shows good corrosion resistibility and good oxidation resistibility.
172	2021	**Maxfil-39R:** Low alloy steel flux cored wire for welding of high strength fine grained quenched & tempered steels to meet sub-zero impact resistance property.
173	2022	**Ultratensal-1000:** Is a basic coated electrode. The weld metal displays good crack resistance and produces sound weld metal possessing excellent

OUR PROFILE

		strength combined with good impact properties at sub-zero temperature.
174	2022	**Ultratensal-1050:** Is a basic coated and very low hydrogen electrode producing high strength weld metals. The weld metal displays good crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties at sub-zero temperature.
175	2022	**Batox 310L Mo N:** Basic coated electrodes produce low carbon, silicon, and high manganese. The nitrogen in the weld metal helps to stabilize and strengthen the austenitic phase.
176	2022	**LoTherme-9580(Mod):** Have balanced chemical composition contain with Cr-Ni-Mo and V. It is designed for surfacing / cladding of a new die and re-building of worn-out hot forging dies.
177	2022	**LoTherme GS-535 (SPL):** Forging die rebuilding flux cored wire suitable for weld surfacing & reclamation of forging hot working tools where hardness requirement is >40 HRC
178	2022	**Lotherme OA-618:** Is a specially designed for hard facing on carbon steel & Stainless Steel for applications encountering severe abrasion and erosion at elevated temperatures up to 850°C. The deposit will exhibit surface relief checks, soft and stable arc.

Our plant at Indore is fully equipped to produce all types of electrodes under strict quality control. All raw materials are tested before use in the manufacture of electrodes. Each batch of electrodes undergoes various process control stages and final testing of the weld metal in our laboratories to ensure the best quality consistently.

We furnish comprehensive line of arc welding electrodes. The range includes a wide selection of mild steel, high tensile steel, creep resistant steel, nickel steel, stainless steel, hard surfacing, cast iron and nickel based electrodes. We also have our wide range of products LoTherme electrode which are specially designed for maintenance and repair welding.

The electrodes manufactured by us conform to the applicable specifications laid down by the Bureau of Indian Standards, American

OUR PROFILE

Welding Society, British Standards, DIN & JIS standards. We also manufacture special electrodes to meet the specific requirements of the customers. A large number of electrodes have been elaborately tested and approved by reputed inspection agencies like the Bureau of Indian Standards, Research Design and Standards Organization, Engineers India Limited, Director of Boilers, Projects Development India Ltd., Llyod's Register of Shipping, Bureau Veritas, American Bureau of Shipping and Det Norske Veritas. We are an ISO 9000-2015, 14001-2015, 45001-2018, CE Marking, NABL accredited company.

D&H Secheron has taken the lead in setting up an independent Research and Development centre attached to the main plant at Indore. Research and Development activities in fact, have been given prime importance at D&H Secheron since its very inception. Our R&D centre is well equipped with latest equipments for carrying out destructive and non-destructive tests like creep testing, tensile testing, hardness testing, impact testing down to -196°C, metallographic studies, corrosion testing and radiographic testing. The R&D centre was recognized by the Department of Science and Technology of "The Government of India" in 1979. The centre also takes up application-oriented research problems to solve specific requirements of user industry and with the aim of propagating appropriate welding technology. Our lab has been accredited by National Accreditation Board for testing and calibration Laboratories (NABL), Department of Science & Technology, India.

Technical service is an important feature associated with D&H Sécheron. We have a large team of qualified and experienced engineers & managers posted throughout the country to render prompt technical and customer service. Our technical service personnel help the customers in studying the welding application, selection of appropriate electrode and the procedure, training of welding personnel with the aim of achieving optimum quality at minimum Cost.

Time to time organization upgraded R&D and lot of facilities to name few XRF, Corrosion Equipment and UTM will full controls.

Thus, today D&H Sécheron has progressed in this field steadily and has equipped itself with the latest technology to offer solution to its valued customer in the best possible manner.

"We offer complete welding support".

INDEX

	PAGE No.
Facility of **D&H Secheron**	1-8
Our Profile	9-30
SMAW [Stick Electrodes]	47-298
GMAW [Solid MIG Wire]	299-317
GTAW [TIG Rod]	318-362
FCAW [Flux Cored Wire]	363-418
SAW [Wire/Flux Combination]	419-485
Technical Data	486-539
Recommendations for the storage, re-drying and handling of **D&H Secheron** covered electrodes	520-523

Index by Products

ELECTRODES FOR CROSS COUNTRY PIPE LINE

PRODUCT NAME	AWS CODE	PAGE NO.
CELLUTHERME	E6010	48
CELLUTHERME-AC	E6011	49
CELLUTHERME- Mo	E7010-G	50
CELLUTHERME- 70P1	E7010-P1	51
CELLUTHERME-80Mo	E8010-G	52
CELLUTHERME-P80	E8010-P1	53

ELECTRODES FOR MILD STEEL

NORMA	E6013	54
NORMA-S	E6013	55
NORMA-V	E6013	56
NORMA-X	E6013	57
MEDIO	E6013	58
MEDIO-S	E6013	59
MEDIO-V	E6013	60
EXOBEL	E6013	61
TENSOTHERME	E6018	62
UNITHERME	E6020	63
RAPIDEX	E7014	64
FERROVITE	E7024	65

ELECTRODES FOR MEDIUM & HIGH TENSILE

INDOTHERME	E7016	66
INDOTHERME-CS	E7016	67
INDOTHERME(SPL)	E7016-1	68
INDOTHERME(SPL)H4R	E7016-1 H4R	69
SUPRATHERME	E7018	70
SUPRATHERME(MOD)	E7018	71
SUPRATHERME(SPL)MOD-H4R	E7018-1 H4R	72
SUPRATHERME-H4R	E7018H4R	73
SUPRATHERME-P2	E8018-P2	74
TENSAL	E9018-G	75

Index by Products

PRODUCT NAME	AWS CODE	PAGE NO.
TENSAL-H4R	E9018-G H4R	76
TENSAL(MOD)	E9018-G	77
TENSAL-MH	E9018M	78
TENSAL-MH(R)	E9018M H4R	79
TENSAL(SPL)	E10018-D2	80
TENSAL-SPL(R)	E10018-D2 H4R	81
ULTRATENSAL(SPL)H4R	E11016-G H4R	82
ULTRATENSAL	E11018-G	83
ULTRATENSAL-1000	-	84
ULTRATENSAL-1050	E14018M-H4	85
ULTRATENSAL-MH(H4R)	E11018M- H4R	86
ULTRATHERME-H	E10016-G	87
ULTRATENSAL-Cu	E10018-G	88
ULTRATENSAL-MC	E10018M	89
ULTRATENSAL-MH	E11018M	90
ULTRATHERME	E11018-G	91
ULTRATHERME-M	E11018M	92
CNM(SPL)	E12018-G	93
CNM(SPL)M	E12018M	94
COROTHERME(SPL)	E8018-W2	95
SUPRATHERME(SPL)	E7018-1	96
SUPRATHERME(SPL)H4R	E7018-1 H4R	97
SUPRATHERME(SPL)MOD	E7018-1	98
SUPRATHERME-NM(MOD)	E8018-G	99
SUPRATHERME-NM(MOD)H4R	E8018-G H4R	100
SUPRATHERME-Ni	E7018-G	101
SUPRATHERME-Ni(SPL)	E8018-G	102
SUPRATHERME-Ni(SPL)MOD	E8018-G	103
DK-18Ni(Mod)	E8018-G	104
NIMOTHERME-1	E8016-C3	105
NIMOTHERME-1L(MOD)	E7018-C3L	106
NIMOTHERME-1(SPL)	E8018-C3	107
NIMOTHERME-1(SPL)H4R	E8018-C3 H4R	108

PRODUCT NAME	AWS CODE	PAGE NO.
NIMOTHERME-1(SPL)MOD	E8018-C3	109
NIMOTHERME-NM1	E8018-NM1	110
NIMOTHERME-NM2	E9018-NM2	111
NITHERME-1.5(SPL)	E8018-C4	112
NITHERME-2.5	E8016-C1	113
NITHERME-2.5L	E7018-C1L	114
NITHERME-2.5(MOD)	E10018-G	115
NITHERME-2.5(SPL)H4R	E7018-C1L	116
NITHERME-3.5	E8016-C2	117
NITHERME-3.5(SPL)	E8018-C2	118
NITHERME-3.5L	E7016-C2L	119
NITHERME-3.5L(SPL)	E7018-C2L	120
NITHERME-6.5L	E9015-C5L	121
ELECTRODES FOR CREEP RESISTING STEEL		
MOLYTHERME	E7018-A1	122
MOLYTHERME-EXTRA	E8018-D3	123
MOLYTHERME(MOD)	E7018-A1	124
MOLYTHERME-R	-	125
MOLYTHERME(SPL)	E9018-D1	126
MOLYTHERME(SPL)MOD	E9018-D1	127
CROMOTHERME	E8018-B1	128
CROMOTHERME-20	E8018-G	129
CROMOTHERME-0.5	-	130
CROMOTHERME-1	E8018-B2	131
CROMOTHERME-1L	E7018-B2L	132
CROMOTHERME-1(MOD)	E8018-B2	133
CROMOTHERME-1L(MOD)	E7018-B2L	134
CROMOTHERME-1(H4R)	E8018-B2 H4R	135
CROMOTHERME-1(RTE)	E8018-B2	136
CROMOTHERME-2	E9018-B3	137
CROMOTHERME-2L	E8018-B3L	138
CROMOTHERME-2(MOD)	E9018-B3	139
CROMOTHERME-2L(MOD)	E8018-B3L	140
CROMOTHERME-2(RTE)	E9018-B3	141
CROMOTHERME-2(16)	E9016-B3	142

Index by Products

PRODUCT NAME	AWS CODE	PAGE NO.
CROMOTHERME-2(15)RTE	E9015-B3	143
CROMOTHERME-5	E8018-B6	144
CROMOTHERME-5L	E8018-B6L	145
CROMOTHERME-5(MOD)	E8018-B6	146
CROMOTHERME-5L(MOD)	E8018-B6L	147
CROMOTHERME-5(15)MOD	E8015-B6	148
CROMOTHERME-9	E8018-B8	149
CROMOTHERME-9L	E8018-B8L	150
CROMOTHERME-9(MOD)	E9018-B91	151
CROMOTHERME-9(15)	E8015-B8	152
CROMOTHERME-9M	E8018-B8	153
CROMOTHERME-12	-	154
CROMOTHERME-23	E9015-B23	155
CROMOTHERME-24	E9015-B24	156
CROMOTHERME-91	E9015-B91	157
CROMOTHERME-92	E9015-B92	158
CROMOTHERME-20Mo	E9018-G	159
ELECTRODES FOR STAINLESS STEEL		
SIA	E307-15(Nearest)	160
SIA(RUTILE)	E307-16(Nearest)	161
SIA-Mo	-	162
SIA (N)	-	163
RUTOX-A	E308-16	164
BATOX-A(ST)	E347-15	165
RUTOX-AH	E308H-16	166
RUTOX-AH(ST)	E347-16	167
RUTOX-A(N)	-	168
RUTOX-B	E308L-16	169
BATOX-B	E308L-15	170
BATOX-D	E316L-15	171
SECHERON 308L	E308L-16(Nearest)	172
CRONITHERME-25/12	E309-16	173
D&H 307	E307-16	174

Index by Products

PRODUCT NAME	AWS CODE	PAGE NO.
D&H 307-15	E307-15	175
D&H 307-17	E307-17	176
D&H 308L-17	E308L-17	177
D&H 308Mo-17	E308Mo-17	178
D&H 308H-17	E308H-17	179
D&H 309-15	E309-15	180
D&H 309H	E309H-16	181
D&H 309L	E309L-16	182
D&H 309L-15	E309L-15	183
D&H 309L-17	E309L-17	184
D&H 309LMo	E309LMo-16	185
SECHERON 309L	E309L-16	186
D&H 309Cb-15	E309Nb-15	187
D&H 309Mo	E309Mo-16	188
D&H 309Mo-15	E309Mo-15	189
D&H 309LMo	E309LMo-16	190
D&H 310-15	E310-15	191
D&H 310-16	E310-16	192
SECHERON 310L	E310L-16(MOD)	193
BATOX-310H	E310H-15	194
BATOX-310MoN	-	195
D&H 310HC	E310H-16	196
D&H 310Mo	E310Mo-16	197
D&H 310Mo-17	E310Mo-17	198
D&H 312	E312-16	199
D&H 312-17	E312-17	200
D&H 316L-17	E316L-17	201
D&H 317-17	E317-17	202
D&H 318-17	E318-17	203
D&H 320	E320-16	204
D&H 320LR	E320LR-16	205
D&H 320LR-15	E320LR-15	206
D&H 347-17	E347-17	207
D&H 383	E383-16	208
D&H 383-17	E383-17	209

Index by Products

PRODUCT NAME	AWS CODE	PAGE NO.
D&H 385	E385-16	210
D&H 385-17	E385-17	211
D&H 16/8/2	E16-8-2-16	212
D&H 20/18/6 Cu	-	213
D&H 145L	-	214
RUTOX-Mo	E316-16	215
RUTOX-Mo(H)	E316H-16	216
BATOX-HP40Nb	-	217
RUTOX-D	E316L-16	218
BATOX-D	E316L-15	219
RUTOX-E	E317L-16	220
RUTOX-F	E316L-16	221
BATOX-F	E316L-15	222
SECHERON 316L	E316L-16	223
RUTOX-F(SPL)	E316L-16(Nearest)	224
BATOX-F(U)	E316L-15(Modified)	225
BATOX-F(U)M	E316LMn-15	226
RUTOX-G	E240-16	227
RUTOX-Mo(ST)	E318-16	228
RUTOX-A(ST)	E347-16	229
BATOX-A(ST)	E347-15	230
D&H 13Cr	E410-15	231
D&H 410	E410-26	232
D&H 430 MC	-	233
D&H 430 NM	-	234
D&H 430Nb	E430Nb-16	235
D&H 444L	E410NiMo-16	236
D&H 444L-15	E410NiMo-15	237
D&H 17Cr	E430-15	238
D&H 430	E430-26	239
D&H-3U	-	240
D&H 25/4	-	241
D&H SECHERON 209	E209-16	242
D&H 446L	E630-16	243
D&H 2209(NS)	E2209-16	244

Index by Products

PRODUCT NAME	AWS CODE	PAGE NO.
D&H 2209-15(NS)	E2209-15	245
D&H 2209-17(NS)	E2209-17	246
D&H 2307-17	E2307-17	247
D&H 2553(NS)	E2553-16	248
D&H 2553-17	E2553-17	249
D&H 2594(NS)	E2594-16	250
D&H 2594-15(NS)	E2594-15	251
D&H 2594-17(NS)	E2594-17	252
D&H 2595(NS)	E2595-16	253
D&H 2595-15(NS)	E2595-15	254
D&H 2595-17(NS)	E2595-17	255
ELECTRODES FOR GALVANISING BATH		
D&H 45S	-	256
D&H 45S(LH)	-	257
ELECTRODES FOR HARDFACING		
BOR-A (R)	-	258
BOR-B	-	259
BOR-C	-	260
BOR-CR	-	261
CCR-20	-	262
CCR-200	-	263
CCR(SPL)	-	264
CROMA	-	265
D&H 535	-	266
D&H 958	-	267
D&H 630-H	-	268
D&H 9650	-	269
DIETHERME-HD	-	270
SHC-SIX	-	271
SMA	-	272
SUPER-Mn	-	273
D&H 4130	-	274
THERMEHARD 55	-	275

PRODUCT NAME	AWS CODE	PAGE NO.
FENITHERME	-	276
D&H FN	-	277

ELECTRODES FOR NICKEL & NICKEL ALLOY

D&H 1200T(NS)	ENiCrFe-2	278
D&H 1212(NS)	ENiCrFe-3	279
D&H 1212(MOD)	ENiCrFe-3(Approx)	280
D&H 1217(NS)	ENiCrFe-7	281
D&H 1223(NS)	ENiCrMo-3	282
D&H 1225(NS)	ENiCrCoMo-1	283
D&H 1227(NS)	ENiCrMo-7	284
D&H 1229(NS)	ENiCrFe-9	285
D&H 1232(NS)	ENiCrMo-12	286
D&H 1233(NS)	ENiCrMo-13	287
D&H 1250	ENiCu-7	288
D&H 1260	ENiCrMo-6	289
D&H 1280	ENi-1	290
D&H 1400	ENiCrMo-5	291
D&H 1400(MOD)	ENiCrMo-4	292
D&H 1414(NS)	ENiCrMo-14	293
D&H 1423(NS)	ENiCrMo-10	294

ELECTRODES FOR CAST IRON

D&H MONEL	ENiCuB	295
NFM	ENiCI	296
D&H 1111CI	ENiFeCI	297
D&H NM-CI	E St	298

CONSUMABLE FOR GMAW

AUTOTHERME-1	ER70S-6	300
AUTOTHERME 70S-2	ER70S-2	301
AUTOTHERME 70S-2(NACE)	ER70S-2	302
AUTOTHERME 80S-D2	ER80S-D2	303
AUTOTHERME C-Mo	ER70S-A1	304
AUTOTHERME Cr-Mo 1	ER80S-B2	305

Index by Products

ELECTRODES FOR NICKEL & NICKEL ALLOY

PRODUCT NAME	AWS CODE	PAGE NO.
AUTOTHERME Cr-Mo 1 (MOD)	ER80S-B2	306
AUTOTHERME Cr-Mo 2	ER90S-B3	307
AUTOTHERME Cr-Mo 2 (MOD)	ER90S-B3	308
AUTOTHERME Cr-Mo 5	ER80S-B6	309
AUTOTHERME Cr-Mo 9	ER80S-B8	310
AUTOTHERME Cr-Mo 91	ER90S-B91	311
AUTOTHERME Cr-Mo 92	ER90S-B92	312
AUTOTHERME Mn-Mo	ER80S-G	313

CONSUMABLE OF GMAW FOR STAINLESS STEEL

AUTOTHERME-308L	ER308L	314
AUTOTHERME-309L	ER309L	315
AUTOTHERME-316L	ER316L	316
AUTOTHERME-347	ER347	317

CONSUMABLE OF GTAW FOR MILD STEEL

F 70S-6	ER70S-6	319
F 70S-2	ER70S-2	320
F 70S-2(NACE)	ER70S-2	321

CONSUMABLE OF GTAW FOR LOW ALLOY STEEL

F 80S-D2	ER80S-D2	322
F 90S-D2	ER90S-D2	323
F C-Mo	ER70S-A1	324
F Cr-Mo 1	ER80S-B2	325
F Cr-Mo 1 (MOD)	ER80S-B2	326
F Cr-Mo 1L	ER70S-B2L	327
F Cr-Mo 2	ER90S-B3	328
F Cr-Mo 2 (MOD)	ER90S-B3	329
F Cr-Mo 2L	ER80S-B3L	330
F Cr-Mo 5	ER80S-B6	331
F Cr-Mo 9	ER80S-B8	332
F Cr-Mo 91	ER90S-B91	333
F Cr-Mo 92	ER90S-B92	334

PRODUCT NAME	AWS CODE	PAGE NO.
F Mn-Mo	ER80S-G	335
F 80S-Ni 1	ER80S-Ni1	336
F 80S-Ni 2	ER80S-Ni2	337
F 100S-G	ER100S-G	338
CONSUMABLE OF GTAW FOR STAINLESS STEEL		
FW 308	ER308	339
FW 308L	ER308L	340
FW 309	ER309	341
FW 309L	ER309L	342
FW 310	ER310	343
FW 316	ER316	344
FW 316L	ER316L	345
FW 317L	ER317L	346
FW 320	ER320	347
FW 347	ER347	348
FW 385	ER385	349
FW 410	ER410	350
FW 410NiMo	ER410NiMo	351
FW 430	ER430	352
FW 2209	ER2209	353
FW 2553	ER2553	354
FW 2594	ER2594	355
CONSUMABLE OF GTAW FOR NICKEL & ITS ALLOY		
FW 1223	ERNiCrMo-3	356
FW 1225	ERNiCrCoMo-1	357
FW 1250	ERNiCu-7	358
FW 1280	ERNi-1	359
FW 1400	ERNiCrMo-4	360
FW 1423	ERNiCrMo-10	361
FW NiCr-3	ERNiCr-3	362

CONSUMABLE OF FCAW FOR CARBON STEEL & LOW ALLOY STEEL

PRODUCT NAME	AWS CODE	PAGE NO.
MAXFIL-12R	E71T-1C	364
MAXFIL-12M	E71T-1M/E71T-9M	365
MAXFIL-MC-31	E70C-6M H4	366
MAXFIL-12RJ	E71T-1C/MJ	367
	E71T-9C/MJ	
	E71T-12MJ H4	
MAXFIL-15R	E71T-5C	368
MAXFIL-30H	TFe-1	369
MAXFIL-31B	E70T-5C	370
MAXFIL-31B(SPL)	E71T-5M	371
MAXFIL-34B(MDH)	E81T5G-M	372
MAXFIL-36R	E81T1-K2C/M	373
MAXFIL-36B2	E80T5-B2C	374
MAXFIL-36B	E80T5G-C	375
MAXFIL-36B(M)	E81T1G-C	376
MAXFIL-37B	E80T5-Ni1C	377
MAXFIL-37R	E81T1-Ni1C	378
MAXFIL-37RJ	E81T1-Ni1M-J H4	379
MAXFIL-38R	E91T1-K2C	380
MAXFIL-39R	E81T1-Ni2C	381
MAXFIL-40B	E100T5-K3C	382
MAXFIL-40R	E101T1-K3C	383
MAXFIL-41B	E90T5-K2C	384
MAXFIL-41B3	E90T5-B3C	385
MAXFIL-41R	E91T1-B3C	386
MAXFIL-42B	E110T5-K4C	387
MAXFIL-42R	E111T1-K4C	388
MAXFIL-44B	E100T5-D2C	389
MAXFIL-50H	TFe-2	390
MAXFIL-55H	TFe-2	391
MAXFIL-70A1	E70T5-A1C	392
MAXFIL-71A1	E71T1-A1C/M	393
MAXFIL-71W	E71T1-GC	394
MAXFIL-80R	E81T1-B1C	395

Consumable Of Fcaw For Carbon Steel & Low Alloy Steel

PRODUCT NAME	AWS CODE	PAGE NO.
MAXFIL-81A1	E81T1-A1C	396
MAXFIL-81R(SPL)	E81T1-B2C	397
MAXFIL-81R	E81T1-B2M	398
MAXFIL-81W	E81T1-W2C	399
MAXFIL-91D1	E91T1-D1C	400
MAXFIL-701G5	E70T5-GC	401
MAXFIL-801G5	E80T5-GC	402
MAXFIL-901G5	E90T5-GC	403
MAXFIL-1101G5	E110T5-GC	404
MAXFIL-1201G5	E120T5-GC-H4	405
MAXFIL-1401G5	E140T5-GC-H4	406
COREFIL-Ni(MOD)	E81T1-G	407
MAXFIL-308L	E308LT0-1	408
MAXFIL-308H	E308HT0-1	409
MAXFIL-309L	E309LT0-1	410
MAXFIL-309L Mo	E309LMoT0-1	411
MAXFIL-310	E310T0-1	412
MAXFIL-316L	E316LT0-1	413
MAXFIL-347	E347LT0-1	414
MAXFIL-410NiMo	E410NiMoT0-1	415
MAXFIL-410	E410T0-1	416
MAXFIL-2209	E2209T0-1	417
MAXFIL-2594	E2594T0-1	418

CONSUMABLE OF SAW WIRE

AUTOTHERME GRADE-A	EL8	421
AUTOTHERME GRADE-B	EM12K	422
AUTOTHERME GRADE-C	EH14	423
AUTOTHERME GRADE-E	EH10K	424
AUTOTHERME GRADE-E (SPL)	EH12K	425
AUTOTHERME GRADE-E (MOD)	EH11K	426
AUTOTHERME GRADE-F	EA2	427
AUTOTHERME GRADE-G	EG	428
AUTOTHERME GRADE-H	ENi2	429

PRODUCT NAME	AWS CODE	PAGE NO.
AUTOTHERME GRADE-J	EA4	430
AUTOTHERME GRADE-L	EB2	431
AUTOTHERME GRADE-LR	EB2R	432
AUTOTHERME GRADE-M	EB3	433
AUTOTHERME GRADE-MR	EB3R	434
AUTOTHERME GRADE-N	EB9	435
AUTOTHERME GRADE-P	EF3	436
AUTOTHERME GRADE-Q	EM4	437
AUTOTHERME GRADE-R	EB6	438
AUTOTHERME GRADE-S	ENi3	439
AUTOTHERME GRADE-T	ENi1	440
AUTOTHERME GRADE-T (MOD)	ENi6	441
AUTOTHERME GRADE-U	EA3	442
AUTOTHERME GRADE-U (MOD)	EA3K	443
AUTOTHERME GRADE-V	EB8	444
AUTOTHERME GRADE-W	EF2	445
AUTOTHERME GRADE-Y	ENi5	446
AUTOTHERME GRADE-308L	ER308L	447
AUTOTHERME GRADE-308H	ER308H	448
AUTOTHERME GRADE-309L	ER309L	449
AUTOTHERME GRADE-316L	ER316L	450
AUTOTHERME GRADE-318	ER318	451
AUTOTHERME GRADE-347	ER347	452
AUTOTHERME GRADE-410	ER410	453
AUTOTHERME GRADE-430	ER430	454
AUTOTHERME GRADE-1223	ER1223	455
CONSUMABLE OF SAW FLUX		
MAXFLUX SAF-2	F7AZ-EL8, F7A0-EM12K	460
MAXFLUX SAF-4	F6A2-EL8, F7A4-EM12K, F7A4-EH14	461
MAXFLUX SAF-4 (SPL)	F7A4-EM12K, F7A4/P4 -EH14,F7A4/P4-EH10K	462
MAXFLUX SAF-4 (PW)	F7A4/P4-EM12K, F8A4/F7P5-EH14	463

Index by Products

PRODUCT NAME	AWS CODE	PAGE NO.
MAXFLUX SAF-4 (UV)	F7A4/P4-EH14	464
	F7A5/P5-EH10K	
MAXFLUX SAF-4 (UV)	F8A4/P4-EA2-A2&EA3-	465-466
	A3,F9A4/P2-EF3-F3,	
	F11A4/ F10P5-EM4-M4	
MAXFLUX SAF-5	F7A4-EM12K,F7A5-H14,	467
	F7A5-EH10K	
MAXFLUX SAF-7S	F7AZ-EL8,F7A0-EM12K	468
MAXFLUX SAF-8 (LS)	F7A2/P2-EM12K,	469-470
	F7A6/P6/P8-EH10K	
MAXFLUX SAF-8 (PW)	F7P5/P6-EH10K,F7P5/P6-	471
	EH14,F7P6/P8-EH12K	
MAXFLUX SAF-9	F8A5/A6-ENi2-Ni2,	472
	F8A5/A6-ECNi2-Ni2	
MAXFLUX SAF-11	F8A2-EG-G	473
MAXFLUX SAF-12	F8P2-EB6-B6,	474
	F8P2- EB2R-B2,	
	F9P2-EB3R-B3,	
	F9PZ-EB9-B9	
MAXFLUX SAF-13	F8P2-EB2-B2,	475
	F9P2-EB3-B3	
MAXFLUX SAF-223	F7A4-EH14, F7A4-	476
	EM12K, F8A2-EA2-A2	
MAXFLUX SAF-223 (SPL)	F6A2-EL8,	477
	F7A4/A5-EM12K,	
	F7A4/P4-EH14,	
	F8A2-EA2-A2	
MAXFLUX SAF-704	-	478
MAXFLUX SAF-723	F8P2-EA4-A4,	479
	F8A4/F7P4-EA3-A3	
MERGEARC SAF-723	F8P2-EA4-A4	480
MAXFLUX SS-4	F520AZ-ER308L/308L	481
	F520PZ-ER410/410	
	F450PZ-ER430/430	

Index by Products

PRODUCT NAME	AWS CODE	PAGE NO.
MAXFLUX SS-4(LT)	F520AZ/A20-ER308L/308L	482-483
	F520AZ-ER309L/309L	
	F490AZ/A20-ER316L/316L	
	F550AZ-ER318/318	
	F520AZ-ER347/347	
MAXFLUX HF-250	-	484
MAXFLUX SAF-NA	F110A32-ENiCrMo	485
	-3/NiCrMo-3	

SMAW
Stick Electrodes



CELLUTHERME

Codification :

AWS SFA 5.1	E6010
IS 814	EC4310X
EN ISO 2560-B	E 43 10 A



Characteristics & Applications :

Cellutherme is a light coated cellulosic type electrodes. The electrodes are characterized by a deeply penetrating, forceful, spray type arc and readily removable, thin, friable slag. Ideally suited for welding in all positions including vertical down. The weld metal possesses good mechanical properties. Ideal for stove pipe technique and faster welding. Welds are of radiographic quality. It is ideally suited for root pass welding of API 5L X42 and X46 grades. Typical applications include welding of pipes, tubes, ducts, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	0.50	0.20	0.016	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	
				- 30°C	- 20°C
Typical	480	400	27	50	70

Welding Positions :



Current And Packing Data : DC(±)

Size (mm) Dia x Length	4x350	3.15x350	2.5x350
Current Range (Amps)	110-160	70-100	40-65
Qty(Pcs/Carton)	80	120	200

Approvals : CE, EIL, PDIL

Precautions :

1. In order to achieve best results, ensure a good joint fit-up.
2. Do not use high current, which may lead to high spatter loss.

CELLUTHERME-AC

Codification :

AWS SFA 5.1	E6011
EN ISO 2560-B	E 4311 A



Characteristics & Applications :

Cellutherme-AC is a light coated cellulosic type, ideally suited for welding in all positions including vertical downwards. The electrode is characterized by forceful, spray type arc, which is also stable and easy to strike and re-strike. The weld beads are evenly rippled. Extremely beneficial for welding of pipes in "Stove Pipe Technique" both for faster welding and greater control on penetration of the root runs. The welds are of radiographic quality. It is designed for welding pipes and tubes of all diameters in Stove Pipe Technique specially for root runs for achieving good penetration. Typical applications include: Storage tanks, Pressure vessels, Tank wagons, Tipping wagons, Rail coaches, Automobile body and panels, Chutes, Silos, Chimneys, Ducts, Ship's hull construction, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	0.50	0.20	0.016	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	480	400	27	50

Welding Positions :



Current And Packing Data : DC(±)

Size (mm) Dia x Length	4x350	3.15x350	2.5x350
Current Range (Amps)	110-150	70-105	50-70
Qty(Pcs/Carton)	80	120	200

Approvals : CE

Precautions :

1. In order to achieve best results, ensure a good joint fit-up.
2. Do not use high current, which may lead to high spatter loss.

CELLUTHERME-Mo

Codification :

AWS SFA 5.5	E7010-G
EN ISO 2560-B	E 49 10 G A



Characteristics & Applications :

Cellutherme-Mo is a light coated cellulosic type electrodes. The electrodes are characterized by a deeply penetrating, forceful, spray type arc and readily removable, thin, friable slag. Ideally suited for welding in all positions including vertical down. Ideal for stove pipe technique and faster welding. Welds are of radiographic quality. Electrode is designed to yield a weld deposit containing 0.5Mo and therefore is suitable for welding C-0.5%Mo steels. It is ideally suited for root pass welding of API 5L X42 to X60 grades. Typical applications include welding of pipes, tubes, ducts, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Typical	0.08	0.45	0.15	0.020	0.025	0.51

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	511	434	26.0

Welding Positions :



Current And Packing Data : DC(±)

Size (mm) Dia x Length	4x350	3.15x350	2.5x350
Current Range (Amps)	110-150	70-100	40-65
Qty (Pcs/Carton)	80	120	200

Approvals : Adani Infra, CE

Precautions :

1. In order to achieve best results, ensure a good joint fit-up.
2. Do not use high current, which may lead to high spatter loss.

CELLUTHERME-70P1

Codification :

AWS SFA 5.5	E7010-P1
EN ISO 2560-B	E 4910 P1 A



Characteristics & Applications :

Cellutherme-70P1 is a light coated cellulosic type electrodes. The electrodes are characterized by a deeply penetrating, forceful, spray type arc and readily removable, thin, friable slag. Ideally suited for welding in all positions including vertical down. Ideal for stove pipe technique and faster welding. Welds are of radiographic quality. It is suitable for stringent pipeline welding requirements when tested for low temperature impact toughness. Ideal for root pass welding of up to API 5L X80 grade pipe, and hot, fill and cap pass welding of up to X65 grade pipe.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Typical	0.14	1.00	0.50	0.010	0.012	0.20	0.75	0.25	0.01

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	530	470	24.0	40

Welding Positions :



Current And Packing Data : DC(±)

Size (mm) Dia x Length	4x350	3.15x350	2.5x350
Current Range (Amps)	110-150	70-100	50-70
Qty (Pcs/Carton)	80	120	200

Approvals : CE

Precautions :

1. In order to achieve best results, ensure a good joint fit-up.
2. Do not use high current, which may lead to high spatter loss.

CELLUTHERME-80Mo

Codification :

AWS SFA 5.5	E8010-G
EN ISO 2560-B	E 5510 G A



Characteristics & Applications :

Cellutherme-80Mo electrodes have been designed primarily for welding typical high-strength, pipe butt joints in the vertical welding position with downward or upward progression. This electrode operates with a forceful penetrating arc, produce deep penetrating, spray-type welding arcs and thin, easily removable slag. It is extremely beneficial for welding of pipes in "Stove Pipe Technique" both for faster welding and greater control on penetration of the root runs. The welds are of radiographic quality. It is ideally suited for welding of API 5L-X56 & API 5L-X70 piping assemblies.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Typical	0.08	0.45	0.15	0.018	0.018	1.00	0.25

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	570	500	21.0

Welding Positions :



Current And Packing Data : DC(±)

Size (mm) Dia x Length	4x350	3.15x350	2.5x350
Current Range (Amps)	120-170	90-120	60-80
Qty (Pcs/Carton)	80	120	200

Approvals : CE

Precautions :

1. In order to achieve best results, ensure a good joint fit-up.
2. Do not use high current, which may lead to high spatter loss.

CELLUTHERME-P80

Codification :

AWS SFA 5.5	E8010-P1
EN ISO 2560-B	E 5510 P1 A



Characteristics & Applications :

Cellutherme-P80 electrodes have been designed primarily for welding typical high-strength, pipe butt joints in the vertical welding position with downward or upward progression. This electrode operates with a forceful penetrating arc and deposits a weld metal of 0.15%Cr - 0.6%Ni - 0.35%Mo steel. Extremely beneficial for welding of pipes in "Stove Pipe Technique" both for faster welding and greater control on penetration of the root runs. It is ideally suited for welding of API 5L-X65 & API 5L- X70 piping assemblies.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Typical	0.08	0.8	0.30	0.018	0.020	0.15	0.60	0.35	0.02

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	570	500	26.0	40

Welding Positions :



Current And Packing Data : DC(±)

Size (mm) Dia x Length	4x350	3.15x350	2.5x350
Current Range (Amps)	120-170	90-120	60-80
Qty (Pcs/Carton)	80	120	200

Approvals : CE

Precautions :

1. In order to achieve best results, ensure a good joint fit-up.
2. Do not use high current, which may lead to high spatter loss.

Codification :

AWS SFA 5.1	E6013
IS 814	ER4222
EN ISO 2560-A	E 35 0 R 12



Characteristics & Applications :

A medium coated rutile type AC/DC all position expect vertical downward electrode for welding mild steel structures, rail coaches, wagons, storage tanks, ships, sheet metal work etc.

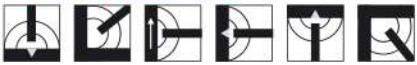
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.08	0.44	0.22	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				0°C
Typical	481	436	27	62

Welding Positions :



Current And Packing Data: AC / DC(-)

Size (mm) Dia x Length	5x450	4x450	3.15x350	2.5x350
Current Range (Amps)	180-220	140-180	100-140	60-90
Qty (Pcs/Carton)	65	100	150	260

Approvals :

ABS, Adani Infra, BHEL, BIS, BV, CE, DNV, EIL, Indian Navy, IRS, LRA, NTPC, PDIL

NORMA-S

Codification :

AWS SFA 5.1	E6013



Characteristics & Applications :

A medium coated general purpose all position mild steel electrode for welding low carbon and mild structural steels. It gives radiographic quality weld metal. The electrode operates with a quiet arc and deposits a smooth bead with fine ripples. The slag is easily detachable. The electrode produces minimum spatter and has good striking and re-striking characteristics. The electrode operates well under low OCV transformers. Typical applications include welding of steel structures, tanks, truck frames and bodies, machinery construction, auto bodies, frames, pipes etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.09	0.35	0.25	0.025	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				RT
Typical	480	420	24	55

Welding Positions :



Current And Packing Data: AC / DC(-)

Size (mm) Dia x Length	4x450	3.15x350	2.5x350
Current Range (Amps)	140-180	90-130	60-90
Qty (Pcs/Carton)	55	85	140

NORMA-V

Codification :

AWS SFA 5.1	E6013
IS 814	ER4211



Characteristics & Applications :

A medium coated general purpose all position electrode for welding low carbon and mild structural steels. It gives radiographic quality weld metal. The electrode operates with a quiet arc and deposits a smooth bead with fine ripples. The slag is easily detachable. The electrode produces minimum spatter and has good striking and re-striking characteristics. The electrode operates well under low OCV transformers and direct current either polarity. Easy to operate in all positions including vertical down. Typical applications include welding of steel structures, tanks, truck frames and bodies, machinery construction, auto bodies, frames, pipes etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.08	0.45	0.25	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				0°C
Typical	475	406	24	55

Welding Positions :



Current And Packing Data: DC(±)

Size (mm) Dia x Length	5x450	4x450	3.15x350	2.5x350
Current Range (Amps)	190-230	140-180	100-140	60-90
Qty (Pcs/Carton)	35	55	85	140

Approvals : BIS

NORMA-X

Codification :

AWS SFA 5.1	E6013
IS 814	ER4222X
EN ISO 2560-A	E 35 0 R 12



Characteristics & Applications :

Norma-X is a medium coated rutile type electrode useful in any welding shop for general fabrication and maintenance work in mild steel. It gives radiographic quality weld metal. The flux coating is so controlled that the electrode provides excellent performance in all welding positions expect vertical downward. It works very well even with low OCV transformers and gives very smooth flow with stable arc with low spatter and smoke. The detachability of slag is very easy and gives uniform ripples with good appearance. Thus, Norma-X has special and exclusive appeal to the welders. The weld metal is ductile and presents good mechanical properties with consistent quality. It is ideally suited for welding of all mild steel structures, bus body building, automobile bodies, pipes as well as other mild steel general applications.

Some of the typical applications include :

Structural steel, Bridges, Truck bodies, Bus bodies, Machinery construction, Auto parts, Building structures, Steel furniture, Rail coaches & wagons, Ships, Tugs, Barges, Dredgers, Trawlers, Storage tanks, Boilers, Pipelines.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.08	0.55	0.25	0.015	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				0°C
Typical	490	430	25	62

Welding Positions :



Current And Packing Data : AC/DC(-)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	180-220	130-180	100-140	60-90
Qty (Pcs/Carton)	55	100	150	200

Approvals : BIS, BV, CE

MEDIO

Codification :

AWS SFA 5.1	E6013
IS 814	ER4222X
EN ISO 2560-A	E 35 0 R 12



Characteristics & Applications :

A medium coated rutile type Touch electrode designed to operate even with 45 OCV, Suitable for all types of mild steel structures, plant machinery, pipes, dredgers, trawlers, etc. The weld metal is soft, ductile and is of radiographic quality.

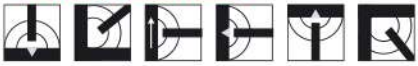
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.08	0.46	0.22	0.020	0.023

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				0°C
Typical	485	438	28	60

Welding Positions :



Current and packing data : AC / DC(-)

Size (mm) Dia x Length	5x450	4x450	3.15x450	3.15x350	2.5x350
Current Range (Amps)	200-260	140-190	100-135	100-135	60-90
Qty (Pcs/Carton)	50	90	150	150	225

Approvals :

ABS, BIS, BV, CE, CIB-MP, DNV, EIL, Indian Navy, IRS, L&T Power, LRA, NPCIL, NTPC, PDIL

MEDIO-S

Codification :

AWS SFA 5.1	E6013
IS 814	ER4322X



Characteristics & Applications :

Medio-S is a rutile electrode ideally suited for welding of carbon steels. The weld metal is of radiographic quality and possesses excellent notch toughness at -20°C. Typical applications include ship construction, tanks, barges, dredgers, structures, etc.

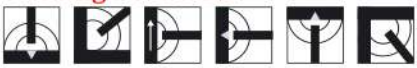
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.055	0.55	0.16	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 20°C
Typical	485	436	28	50

Welding Positions :



Current And Packing Data: AC / DC(-)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	190-240	150-180	100-130	60-90
Qty (Pcs/Carton)	50	75	120	180

Approvals : Indian Navy

MEDIO-V

Codification :

AWS SFA 5.1	E6013
IS 814	ER4211X



Characteristics & Applications :

Medio-V is a medium coated, rutile type, all position electrode. The electrode operates on alternating and direct current either polarity. The weld metal is soft, ductile, metallurgically clean and mechanically sound with radiographic quality. Typical applications include industrial pipes and tubes, storage tanks, boilers, fire boxes tanks, ships, barges, dredgers, trawlers, tugs rail coaches, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.08	0.45	0.22	0.018	0.023

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				0°C
Typical	485	440	28	60

Welding Positions :



Current and packing data : AC / DC(±)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	3.15x350	2.5x350
Current Range (Amps)	260-320	190-250	140-190	100-140	100-140	60-90
Qty (Pcs/Carton)	30	50	90	150	150	180

Approvals : BIS

EXOBEL

Codification :

AWS SFA 5.1	E6013
IS 814	ER4222X
EN ISO 2560-A	E 35 0 R 12



Characteristics & Applications :

A heavy coated rutile type electrode for achieving radiographic quality welds in mild steel boilers, pressure vessels, ships, hull construction, etc. Excellent bead appearance and self peeling slag. Typical applications also include storage tanks, wagons, automobile frames and bodies, rolling stocks, rail coaches locomotive fire boxes, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	0.46	0.20	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				0°C
Typical	485	444	28	70

Welding Positions :



Current and packing data : AC / DC(-)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	260-320	190-240	140-200	100-135	70-100
Qty (Pcs/Carton)	25	35	55	80	150

Approvals : BIS, CE, CIB-MP, EIL, IRS, NPCIL

TENSOTHERME

Codification :

AWS SFA 5.1	E6018



Characteristics & Applications :

Tensotherme is basic coated hydrogen controlled iron powder electrode for welding of mild steels for critical services. The welds are especially suitable for dynamic loading. It is specially designed for welding of plant, machinery and equipment subjected to critical service loads in combination with varying temperature cycles, for example, in fabrication of converter shells for the steel industry.

Typical Chemical Composition Of All Weld Metal (%) :

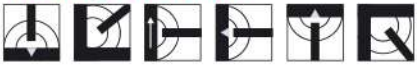
Element	C	Mn	Si	S	P
Typical	0.07	0.64	0.22	0.014	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				RT
Typical	475	400	25.0	160

Diffusible Hydrogen Content: 5 ml/100 gms of weld metal max.

Welding Positions :



Current And Packing Data: AC / DC (+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x350	2.5x350
Current Range (Amps)	280-350	220-280	160-200	110-140	80-100
Qty (Pcs/Carton)	24	35	55	75	125

Precautions :

1. Re-dry the electrodes at 350°C for 01 hour.
2. Use short arc, low current and lowest size of electrode possible.

UNITHERME

Codification :

AWS SFA 5.1	E6020
IS 814	EA4245X



Characteristics & Applications :

Unitherme is an iron oxide type electrode for welding of carbon steels. The welds are radiographic quality. Typical applications include locomotive fire boxes, rotary kilns, heavy structures, engine frames, bases, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	0.50	0.23	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				0°C
Typical	475	416	24	50

Welding Positions :



Current and packing data : AC / DC(-)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	260-350	190-260	150-210	110-150	70-100
Qty (Pcs/Carton)	30	45	70	90	125

Precautions :

1. Redry the electrodes at 125°C for 01 hour, if necessary.
2. Ensure use of electrode in horizontal and flat positions.

RAPIDEX

Codification :

AWS SFA 5.1	E7014
IS 814	ES5224JX



Characteristics & Applications :

A medium heavy coated, iron powder rutile type electrode suitable for welding all mild steel structures, boilers, pressure vessels. Welds are of radiographic quality. The electrode has a metal recovery of 115 %. Rapidex is suitable for all types of joints to achieve faster speed and higher welding output. Typical applications include boilers, pressure vessels, wagons, girders, tanks, ships, barges, machine parts, etc.

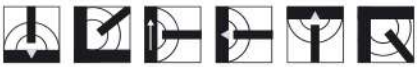
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	0.58	0.24	0.018	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				0°C
Typical	515	444	28	60

Welding Positions :



Current and packing data : AC / DC(-)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	260-340	200-260	160-200	100-150	70-100
Qty (Pcs/Carton)	25	35	55	75	100

FERROVITE

Codification :

AWS SFA 5.1	E7024
EN ISO 2560-A	E350R52



Characteristics & Applications :

A Super heavy coated, iron powder type electrode ideal for welding mild steel structures, plant machinery, etc. High metal recovery of 150% reduces welding time and increases the output. Weld metal is sound and is of radiographic quality. Some typical applications include mild steel structures, heavy columns, shipbuilding, locomotives, girders, boilers, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	0.56	0.24	0.025	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				0°C
Typical	520	448	27	56

Welding Positions :



Current And Packing Data: AC / DC(±)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x350
Current Range (Amps)	320-380	220-280	190-230	140-170
Qty (Pcs/Carton)	20	30	45	50

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 150-200°C for 01 hour.
2. The electrode is meant for operation in flat and horizontal positions only.

INDOTHERME

Codification :

AWS SFA 5.1	E7016
EN ISO 2560-A	E423B12



Characteristics & Applications :

A medium coated basic type hydrogen controlled electrode producing a tough, ductile weld metal for welding heavy sections in mild steel, medium high tensile steels, subjected to dynamic loading. Also suited for cast steels, difficult steels of unknown composition and for non-machinable deposits on cast iron. Typical applications include coaches, ships, heavy duty structures, earth moving machinery, rotary kiln shells, cast irons.

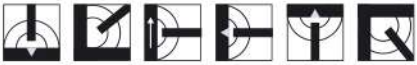
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	1.10	0.54	0.018	0.021

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	558	477	28	70

Welding Positions :



Current and packing data : AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	240-320	190-250	140-200	90-140	70-100
Qty (Pcs/Carton)	25	35	55	75	150

Approvals : BHEL, BIS, CE, EIL, NTPC, PDIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short are, minimize heat input.

INDOTHERME-CS

Codification :

AWS SFA 5.1	E7016
IS 814	EB5426H_2X



Characteristics & Applications :

Indotherme-CS is a medium coated, basic type hydrogen controlled electrode producing a tough, crack resistant weld metal of radiographic quality. It is specially designed for welding cast steels, difficult steels high in carbon and sulphur.

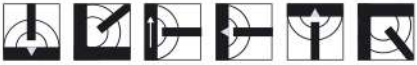
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	0.80	0.30	0.018	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 30°C
Typical	530	460	26.0	34

Welding Positions :



Current And Packing Data: AC / DC (+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	240-320	190-250	140-180	90-140	70-90
Qty (Pcs/Carton)	25	35	55	75	125

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use smallest size of electrode possible.
3. Use low current, short arc and stringer beads.

INDOTHERME(SPL)

Estd. 1966 D&H sécheron Complete Welding Support

Codification :

AWS SFA 5.1	E7016-1
IS 814	EB5626H_2X



Characteristics & Applications :

Indotherme(Spl) is a medium coated basic type hydrogen controlled electrode producing a tough, ductile weld metal for welding heavy sections in mild steel, medium high tensile steels, subjected to dynamic loading. Weld deposit displays excellent toughness at sub zero temperatures down to -45°C. It is ideally suited for cast steels, difficult steels of unknown composition and for non- machinable deposits on cast iron. Typical applications include Rail coaches, Wagons, Ships, Road rollers, Heavy duty cranes, Conveyors, Earth moving machinery, Tractors, Hydraulic gates, Rotary kiln shells, Concrete reinforcement rods, Welding cast iron, Depositing buffer layer on steels before hardfacing, etc.

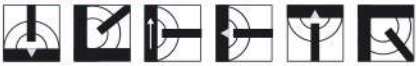
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.07	1.40	0.50	0.018	0.021

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 45°C
Typical	550	460	28	50

Welding Positions :



Current And Packing Data: AC / DC (+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	240-320	190-250	140-200	90-140	70-100
Qty (Pcs/Carton)	25	35	55	75	150

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short are, minimize heat input.

INDOTHERME(SPL)H4R

Codification :

AWS SFA 5.1	E7016-1 H4R
IS 814	EB5626H$_2$X



Characteristics & Applications :

Indotherme(Spl)H4R is a basic coated, low hydrogen, moisture resistant electrode. It is suitable for mild steel and medium high tensile steels subjected to dynamic loading, high stresses and impact. Weld deposit displays excellent toughness at sub zero temperatures down to -45°C. Some of the applications include: Heavy structures subjected to dynamic loading, Rail coaches, Wagons, Ships, Road rollers, Heavy duty cranes, Conveyors & other materials handling plant and equipment, Earth moving machinery, Tractors, Hydraulic gates, Rotary kiln shells, Concrete reinforcement rods, Welding cast iron, Depositing buffer layer on steels before hardfacing, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.06	1.30	0.30	0.019	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 45°C
Typical	530	460	28.0	60

Diffusible Hydrogen Content: 4 ml / 100 gms of weld metal Max.

Moisture As Conditioned: 0.30 Max.

Moisture As Exposed (80% RH, 27°C For 9 Hrs): 0.40 Max

Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Welding Positions :



Current And Packing Data: AC / DC (+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	190-250	140-200	90-140	70-100
Qty (Pcs/Carton)	2	2	2	2

Precautions :

1. Re-dry the electrodes at 250°C for 01 hour, if expose to atmosphere.
2. Restrict the heat input, use short arc and stringer bead.

SUPRATHERME

Codification :

AWS SFA 5.1	E7018
IS 814	EB5426H_5JX
EN ISO 2560-A	E 42 3 B 3 2



Characteristics & Applications :

A heavy coated low hydrogen, iron powder type electrode ideally suited for producing tough and ductile welds of radiographic quality in boilers, pressure vessels and heavy structures subjected to dynamic loading. The electrodes have a metal recovery of about 115%. Some typical applications include heavy structures subjected to dynamic loading and impact, highly restrained joints, coaches, wagons, penstocks, boilers, pressure vessels, earthmoving machines, etc.

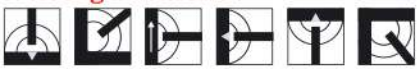
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.06	1.02	0.44	0.022	0.022

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	545	460	28	65

Welding Positions :



Current And Packing Data: AC / DC (+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-320	200-250	150-190	100-150	70-100
Qty (Pcs/Carton)	25	50	70	100	150

Approvals : ABS, Adani Infra, BHEL, BIS, BV, CE, CIB-MP, DNV, EIL, Indian Navy, IRS, L&T Power, LRA, NPCIL, NTPC, PDIL, Reliance (Engineering)

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short are, minimize heat input.

SUPRATHERME(MOD)

Codification :

AWS SFA 5.1	E7018
IS 814	EB5426H_5JX
EN ISO 2560-A	E423B32H5



Characteristics & Applications :

Supratherme(Mod) is a basic coated, iron powder, hydrogen controlled, all conventional position electrode, produces radiographic quality welds, having excellent cracking resistance. The electrode ideally suited for welding carbon steels used in the construction of equipment subject to heavy dynamic load impact and severe service conditions in sour gas service.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.06	1.02	0.44	0.006	0.013

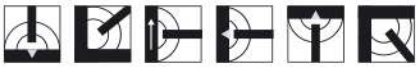
Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Weld Metal Hardness (HV5)
				- 30°C	
Typical	545	460	30.0	100	180

Corrosion Test : Passes corrosion test as per NACE standard TM-01-77-96 (SSCC) and TM-02-84-96(HIC).

Diffusible Hydrogen Content : 5ml /100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-320	200-250	150-190	100-140	70-100
Qty (Pcs/Carton)	25	30	50	75	100

Approvals : CE, EIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, minimize heat input.

SUPRATHERME(SPL)MOD-H4R

Codification :

AWS SFA 5.1	E7018-1H4R
IS 814	EB5626H_5JX



Characteristics & Applications :

Moisture resistant hydrogen controlled basic coated electrode for producing tough and ductile weld of radiographic quality in Boilers, Pressure vessels, Medium carbon steels, Cast steel and problematic steels. The weld metal is clean and has low level of impurities, thus having unique properties. The electrode can be used in all conventional positions of welding. It is ideally suited for welding carbon steels used in the construction of equipment subjected to heavy dynamic load, impact and severe service conditions in sour gas service.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.06	1.40	0.30	0.010	0.015

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 45°C
Typical	540	430	29.0	80

Corrosion Test : The weld metal meets the requirements as per NACE: TM-01- 77- 96 (SSCC) and TM-02-84-96 (HIC).

Diffusible Hydrogen Content: 4 ml / 100 gms of weld metal Max.

Moisture As Conditioned: 0.30 Max.

Moisture As Exposed (80% RH, 27°C For 9 Hrs): 0.40 Max.

Advantage: Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Welding Positions :



Current And Packing Data: AC / DC (+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	190-250	140-200	90-140	70-100
Qty (Pcs/Carton)	20	30	45	80

Precautions :

1. Restrict the heat input, use short arc and stringer bead.
2. Re-dry the electrodes at 250°C for 1 hour, if expose to atmosphere.

SUPRATHERME-H4R

Codification :

AWS SFA 5.1	E7018H4R
IS 814	EB5426H_4JX
EN ISO 2560-A	E 42 3 B 3 2 H5



Characteristics & Applications :

Supratherme-H4R is a moisture resistant hydrogen controlled basic coated electrode for producing tough and ductile weld of radiographic quality in boilers, pressure vessels, medium carbon steels, cast steel and problematic steels. The weld metal is clean and has low level of impurities, thus having unique properties. Some typical applications include maintenance welding of all types of C-Mn steels, heavy tensile steels, heavy structures, plants & equipments subjected to static or dynamic loading. Typical Applications Include: Coaches, Wagons, Penstocks, Boilers & Pressure vessels, Earth moving machines etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.065	1.00	0.40	0.019	0.020

Typical Mechanical Properties Of All Weld Metal :

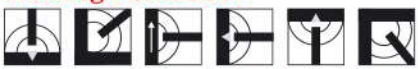
Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	540	460	29	70

Diffusible Hydrogen Content: 4 ml / 100 gms of weld metal Max.

Moisture As Exposed (80% RH, 27°C For 9 Hrs): 0.40 Max.

Advantage: Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Welding Positions :



Current And Packing Data: AC / DC (+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-280	150-180	100-135	80-100
Qty (Pcs/Carton)	20	30	45	80

Approvals : BV, CE

Precautions :

1. Restrict the heat input, use short arc and stringer bead.
2. Re-dry the electrodes at 250°C for 1 hour, if expose to atmosphere.

SUPRATHERME-P2

Codification :

AWS SFA 5.5	E8018-P2



Characteristics & Applications :

Supratherme-P2 is designed primarily for the welding of the hot, fill, and cap passes in high strength pipe butt joints in the vertical position, in upward progression. The low hydrogen nature of the covering of these electrodes makes them especially suited for joining crack-sensitive high strength pipe.Typical applications of these electrodes are the welding of API 5L pipe steels up to and including Grade X80, along with many other high strength medium and high carbon, and low-alloy steels.

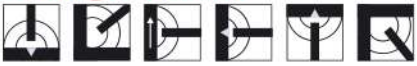
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Typical	0.07	1.30	0.40	0.018	0.018	0.10	0.60	0.20	0.02

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 30°C
Typical	580	500	21.0	45

Welding Positions :



Current And Packing Data: AC / DC (+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	220-280	160-190	110-135	80-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Re-dry the electrodes at 300°C for 01 hour, as per our standard recommended practice.
2. Use short arc and stringer bead.

TENSAL

Codification :

AWS SFA 5.5	E9018-G
EN ISO 18275-B	E 62 18-G A H5



Characteristics & Applications :

A low hydrogen, iron powder type electrode for welding steels having tensile strength up to 680Mpa Ideally suited for welding fine-grained steels, high tensile steels used in bridges, penstocks, tanks, etc. The weld metal possesses excellent toughness at sub-zero temperatures down to -50°C. Typical applications include welding of grain-refined steels, Q&T steels, HSLA steels, pressure vessels, structural fabrication, etc.

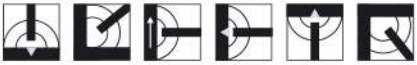
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Mo	S	P
Typical	0.065	1.20	0.40	1.20	0.50	0.025	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 51°C
Typical	673	584	22	40

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	280-350	200-250	140-190	100-140	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE, CIB-MP, PDIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. When welding grain refined and Q&T steels, control the heat input by using: (a) Stringer bead. (b) Control over preheat and interpass temperature. (c) Short arc.

TENSAL-H4R

Codification :

AWS SFA 5.5	E9018-G H4R



Characteristics & Applications :

Tensal-H4R is basic coated, extra low hydrogen, moisture resistance type electrode for welding high strength steels. It is suited for welding steels having tensile strength up to 690 MPa. The weld metal possesses excellent toughness at sub-zero temperatures down to -50°C. Typical applications include welding of grain refined steels, Q&T steels, HSLA steels, pressure vessels, structural fabrication, bridges, penstocks, tanks, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Typical	0.06	1.20	0.40	0.020	0.021	0.80	0.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	650	580	22	40

Moisture

- As Conditioned : 0.15% Max.
- As Exposed : 0.40% Max. (27°C and 80% Relative Humidity for 9 Hours).

Diffusible Hydrogen Content : 4 ml/100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-250	140-190	100-140	70-100
Qty (Pcs/Carton)	20	30	45	90

Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Precautions :

1. Use short arc and stringer bead.
2. Re-dry the electrodes at 250°C for 1 hour, if expose to atmosphere.

TENSAL(MOD)

Codification :

AWS SFA 5.5	E9018-G



Characteristics & Applications :

Tensal(Mod) is a low hydrogen type electrodes depositing a high strength and tough weld metal. The electrode possesses excellent operating characteristics and is suitable for welding in all positions. The weld metal possesses high strength together with good notch toughness even at sub-zero temperatures down to -50°C. Ideally suited for welding fine-grained steels, high strength steels. Q&T steels used in the fabrication of structures, bridges, penstocks, earth moving equipments, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Co
Typical	0.05	1.00	0.20	0.012	0.010	0.20	1.80	0.25	0.03	0.02
	Max	1.80	0.60	Max	Max	Max	Max	0.65	Max	Max

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	620	530	17 Min	27 Min

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	200-250	140-180	100-140	70-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 01 hour.
2. Use short arc, low current and stringer beads.

TENSAL-MH

Codification :

AWS SFA 5.5	E9018-M
EN ISO 18275-B	E 62 18-N3M1 A H5



Characteristics & Applications :

Extra low hydrogen type electrodes depositing a high strength weld metal. Ideally suited for welding fine-grained steels, high strength steels, Q&T steels used in the fabrication of structures, bridges, penstocks and other components.

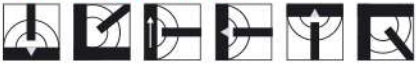
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Mo	S	P
Typical	0.06	1.20	0.35	1.60	0.30	0.018	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 50°C
Typical	644	554	26	50

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	280-350	200-250	140-190	100-140	80-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE, CIB-MP

Precautions :

1. During welding keep the heat input to a minimum.
2. Ensure the electrodes are dry. Re-dry the electrode at 400°C for 01 hour.

TENSAL-MH(R)

Codification :

AWS SFA 5.5	E9018M H4R



Characteristics & Applications :

Tensal-MH(R) is hydrogen controlled, basic coated, moisture resistant electrode, depositing a high strength weld metal. The electrode possesses excellent operating characteristics and is suitable for welding in all positions. The extra low hydrogen content reduces susceptibility from hydrogen induced cracking. The weld metal possesses high strength together with good notch toughness. Ideally suited for welding fine-grained steels, high strength steels. Q&T steels used in the fabrication of structures, bridges, penstocks and other components.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni	Mo
Typical	0.06	1.30	0.35	0.018	0.018	1.70	0.30

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	650	560	26	75

Diffusible Hydrogen Content : 4 ml / 100 gms of weld metal Max.
Moisture As Conditioned : 0.15 Max.
Moisture As Exposed (80% RH, 27°C For 9 Hrs) **:** 0.40 Max.
Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	280-350	200-250	140-190	100-140	80-100
Qty (Pcs/Carton)	15	20	30	45	80

Precautions :

1. Restrict the heat input, use short arc and stringer bead.
2. Re-dry the electrodes at 250°C for 1 hour, if expose to atmosphere.

TENSAL(SPL)

Codification :

AWS SFA 5.5	E10018-D2
EN ISO 18275-B	E 69 18-4 M2 P H5



Characteristics & Applications :

A basic coated low hydrogen iron powder type electrode for welding high tensile steels. The weld metal is of radiographic quality. Ideally suited for welding high tensile steels, Q&T steels, castings, etc. with UTS range of 711Mpa. The weld metal possesses high strength combined with excellent toughness at sub-zero temperatures.

Typical Chemical Composition Of All Weld Metal (%) :

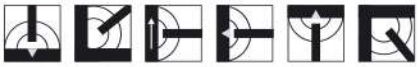
Element	C	Mn	Si	Mo	Ni	S	P
Typical	0.06	1.85	0.45	0.40	0.30	0.018	0.018

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C for 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 50°C
Typical	711	653	22	30

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	280-350	200-250	140-190	100-140	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. When welding grain refined and Q&T steels, control the heat input by using:
   (a) Stringer bead. (b) Control over preheat and interpass temperature. (c) Short arc.

TENSAL-SPL(R)

Codification :

AWS SFA 5.5	E10018-D2H4R



Characteristics & Applications :

Basic coated, low hydrogen, moisture resistant electrode for welding high tensile steels. The weld metal is of radiographic quality. The electrode possesses excellent operating characteristics and is suitable for welding in all positions. The extra low hydrogen content reduces susceptibility from hydrogen induced cracking. The weld metal possesses high strength together with good notch toughness. Ideally suited for welding fine-grained steels, high strength steels. Q&T steels, castings used in the fabrication of structures, bridges, penstocks and other components.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni	Mo
Typical	0.06	1.85	0.45	0.018	0.018	0.30	0.40

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C for 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 51°C
Typical	710	650	22	30

Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Diffusible Hydrogen Content : 4 ml/100 gms of weld metal Max.

Moisture As Conditioned: 0.15 % Max.

Moisture As Exposed (80% RH, 27°C & 9 Hrs) **:** 0.40 % Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	280-350	200-250	140-190	100-140	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Precautions :

1. During welding keep the heat input to a minimum.

ULTRATENSAL(SPL)H4R

Codification :

AWS SFA 5.5	E11016-G H4R



Characteristics & Applications :

Ultratensal(SPL)H4R is a moisture resistant hydrogen-controlled type electrode ideally suited for welding high strength steels, fine-grained steels, HSLA, Q&T steels, etc. The weld metal possesses high strength combined with good toughness properties. Ideal for welding high strength steels used in earth moving industry and Hydal application etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Mo	Ni	Cr	S	P
Typical	0.06	1.35	0.25	0.50	2.20	0.20	0.018	0.018

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C for 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 40°C
Typical	782	683	19	30

Diffusible Hydrogen content : 4ml/100 gm of weld metal.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-260	140-190	100-150	70-100
Qty (Pcs/Carton)	20	30	45	80

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use short arc and minimize heat input during welding.

Advantages :

Electrodes are vacuum packed no need of redrying & can be used straight on the job.
Moisture as Conditioned: 0.15Max.
Moisture as Exposed: 0.4Max.

ULTRATENSAL

Codification :

AWS SFA 5.5	E11018-G



Characteristics & Applications :

ULTRATENSAL electrode is low hydrogen, iron powder type electrode for welding high strength steels. The weld deposits of this electrode have high strength with excellent toughness. It is ideally suited for welding high tensile steels, grain refined Q&T steels such as USS-T1, SA 517 grades and their equivalents, Fabrication of penstocks, heavy structures, earth moving equipments, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Cr	Mo
Typical	0.06	1.50	0.40	0.018	0.020	2.30	0.25	0.42

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C for 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	775	695	20	40

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-320	180-240	140-180	90-140	50-90
Qty (Pcs/Carton)	25	35	55	75	125

Precautions :

1. Re-dry the electrodes at 300-350 C for 01 hour.
2. Use low current, short arc and stringer beads.

ULTRATENSAL-1000



Characteristics & Applications :

Ultratensal-1000 is a basic coated electrode. The weld metal displays good crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties at sub-zero temperature. Welds are of radiographic quality. It is suitable for joining high strength, low alloy or micro alloyed steels to themselves or to lower strength steels, including carbon steels. Ideally suited for welding earth moving equipments and other heavy equipments.

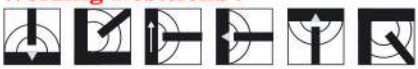
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P	V
Range	0.04-0.10	1.6-2.0	0.5Max	0.7-1.2	2.0-3.0	0.70-1.10	0.02 Max	0.02 Max	0.08 Max
Typical	0.08	1.8	0.40	1.0	2.5	0.90	0.015	0.015	0.06

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
				RT	- 51°C
Range	1000 Min	930 Min	15 Min	70 Min	27 Min
Typical	1100	960	18	100	50

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-260	150-200	100-150	80-110
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer beads.
3. Use a carefully formulated welding procedure with preheat and post weld heat treatment.

ULTRATENSAL-1050

Codification :

AWS SFA 5.5	E14018M-H4



Characteristics & Applications :

Ultratensal-1050 is a basic coated and very low hydrogen electrode producing high strength weld metals. The weld metal displays good crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties at sub-zero temperature. Welds are of radiographic quality. It is suitable for joining high strength, low alloy or micro alloyed steels to themselves or to lower strength steels, including carbon steels. Ideally suited for welding earth moving equipments and other heavy equipments.

Typical Chemical Composition Of All Weld Metal (%) :

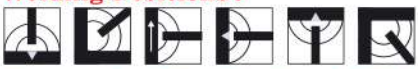
Element	C	Mn	Si	Cr	Ni	Mo	S	P	V
Range	0.04-0.10	1.0-2.0	0.5 Max	0.5-1.2	2.5-5.0	0.8-1.5	0.12 Max	0.010 Max	0.08 Max
Typical	0.08	1.3	0.30	0.7	3.7	1.2	0.010	0.008	0.06

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 40°C
Range	1000 Min	950 Min	15.0 Min	27 Min
Typical	1050	980	18	50

Diffusible Hydrogen Content : 4 ml/100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-260	150-200	100-150	80-110
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 350°C for 2 hours.
2. Use short arc and stringer beads.

ULTRATENSAL-MH(H4R)

Codification :

AWS SFA 5.5	E11018M- H4R



Characteristics & Applications :

Ultratensal-MH(H4R) is moisture resistant hydrogen controlled basic coated electrode. The weld metal displays excellent crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties at sub zero temperature. The electrode possesses excellent operating characteristics and is suitable for welding in all positions. The extra low hydrogen content reduces susceptibility from hydrogen induced cracking. It is suitable for welding high strength Q&T steels like WEL-TEN 80, SA 517 grades and their equivalents. Ideally suited for welding highly restrained joints in high strength steels under site conditions with high relative humidity.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Typical	0.06	1.40	0.30	0.012	0.015	0.25	2.10	0.40	0.03

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	790	700	22	40

Diffusible Hydrogen Content : 4 ml / 100 gms of weld metal Max.
Moisture As Conditioned: 0.15 Max.
Moisture As Exposed (80% RH, 27°C For 9 Hrs) **:** 0.40 Max.
Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	180-240	140-180	90-140	50-90
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Re-dry the electrodes at 250°C for 01 hour, if expose to atmosphere.
2. Restrict the heat input, use short arc and stringer bead.

ULTRATHERME-H

Codification :

AWS SFA 5.5	E10016-G



Characteristics & Applications :

Basic coated, extra low hydrogen electrode ideally suited for welding high strength steels, Q&T steels. The weld metal is of radiographic quality and possesses excellent strength combined with good toughness. Ideal for welding high strength steels under the site conditions having high relative humidity and higher joint restraints, as the extra low hydrogen levels ensure freedom from hydrogen induced cracking.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu
Typical	0.06	1.20	0.30	0.020	0.022	0.25	1.90	0.35	0.05	0.12

Typical Mechanical Properties Of All Weld Metal :

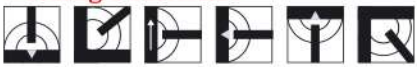
(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	740	650	19	50

Diffusible Hydrogen Content : 3 ml/100 gms of weld metal Max.

Moisture Content : 0.15 % Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	190-260	140-190	100-150	70-100
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Indian Navy

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrode at 400°C for 01 hour.
2. Keep the minimum heat input during welding.
3. Controlling preheat and inter pass temperatures between 120-150°C.
4. Use stringer beads and minimize weaving.

ULTRATENSAL-Cu

Codification :

AWS SFA 5.5	E10018-G



Characteristics & Applications :

Basic coated extra low hydrogen electrode. The weld metal displays excellent crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties at sub-zero temperature. Ideally suited for welding of high strength Q&T steels, like WEL TEN 80, SA 517 grades, WB36 pipes, and their equivalent grades. Welding highly restrained joints in high strength steels under site conditions with relative humidity since the extra low hydrogen content of the weld metal helps preventing hydrogen induced cracking.

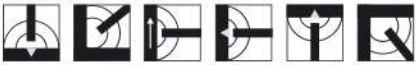
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cu	Ni	Mo	Cr	Nb	AI	S	P
Typical	0.08	1.0	0.4	0.6	1.2	0.4	0.2	0.02	0.02	0.014	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	680	590	22

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-240	140-180	90-140	50-90
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Adani Infra, CIB-MP

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 400°C for 01 hour.
2. Ensure cleanliness of the surface to be welded.
3. Use short arc and minimum heat input. The preheat and Inter pass temperature shall never be more than 150°C

ULTRATENSAL-MC

Estd. 1966 D&H sécheron Complete Welding Support

Codification :

AWS SFA 5.5	E10018M
IS 1395	E 68 B M2 2 6 Fe



Characteristics & Applications :

Ultratensal-MC is a basic coated extra low hydrogen electrode. Weld metal displays excellent crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties at sub zero temperature. It is ideally suited for welding high strength Q&T steels like WEL-TEN 80, WEL-TEN 690 RE-A, WEL TEN 690 RE-B, RDE-S-70, SA 517 grades and their equivalents. The electrodes are ideally suited for welding highly restrained joints in high strength steels under site conditions with high relative humidity since the extra low hydrogen content of the weld metal helps preventing hydrogen induced cracking.

Typical Chemical Composition Of All Weld Metal (%) :

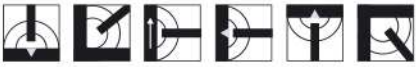
Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Typical	0.06	1.35	0.45	0.020	0.020	0.25	2.0	0.30	0.01

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	790	680	22.0	50

Diffusible Hydrogen Content: 4.0 ml/100 gms of weld metal Max.

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	5x450	4.0x450	3.15x450	2.5x350
Current Range (Amps)	180-240	140-180	90-140	50-90
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 400°C for 01 hour.
2. Use short arc and stringer bead.

ULTRATENSAL-MH

Estd. 1966 D&H sécheron Complete Welding Support

Codification :

AWS SFA 5.5	E11018M
EN ISO 18275-B	E 76 18 N4M2 A H5



Characteristics & Applications :

Basic coated, extra low hydrogen electrode ideally suited for welding high strength Q&T steels like Welten 80, SA517 grades and their equivalents. The weld metal has excellent crack resistance and displays high strength combined with good sub-zero impact strength. Ideal for welding high strength steels under site conditions having high relative humidity and higher joint restraints as the extra low hydrogen levels ensure freedom from hydrogen induced cracking.

Typical Chemical Composition Of All Weld Metal (%) :

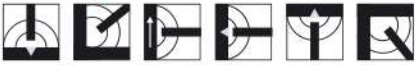
Element	C	Mn	Si	Ni	Mo	Cr	S	P
Typical	0.06	1.35	0.36	2.10	0.40	0.25	0.015	0.015

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 50°C
Typical	782	693	21	40

Diffusible Hydrogen Content: 3ml/100gms of weld metal or less.

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	270-320	180-240	140-180	90-140	50-90
Weight/Carton (kgs)	3	3	3	3	3

Approvals : BHEL, CE, Indian Navy

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 400°C for 01 hour.
2. Keep the heat input during welding to a minimum by controlling the preheat and interpass temperatures between 120-150°C.
3. Use stringer bead and minimise weaving.

ULTRATHERME

Codification :

AWS SFA 5.5	E11018-G



Characteristics & Applications :

Ultratherme is a low hydrogen type electrode ideally suited for welding high strength steels, fine-grained steels, HSLA, Q&T steels, etc. The weld metal possesses high strength combined with good toughness properties. Ideal for welding high strength steels used in earth moving industry, etc.

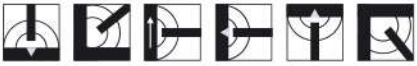
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Mo	Ni	Cr	S	P
Typical	0.06	1.4	0.25	0.50	2.20	0.20	0.018	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 40°C
Typical	782	683	19	30

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	280-350	200-260	140-190	100-150	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and minimise heat input during welding.

ULTRATHERME-M

Codification :

AWS SFA 5.5	E11018M
EN ISO 18275-B	E7618-N4M2 A H5



Characteristics & Applications :

Basic coated hydrogen control electrode with a stable and smooth arc that is easy to strike and restrike. Low spatter and good bead finish. Welds are of radiographic quality. The weld metal displays good crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties at subzero temperature. It is ideally suited for welding high strength Q & T steels like WEL-TEN 80, SA 517 grades and their equivalents. The electrodes are ideally suited for welding restrained joints in high strength steels.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.060	1.50	0.40	0.020	0.020	0.20	2.00	0.40

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 50°C
Typical	790	705	22	30

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5 x 350
Current Range (Amps)	180-240	140-180	90-140	50-90
Qty (Pcs/Carton)	35	55	75	125

Approvals : CE

Precautions :

1. Redry the electrodes at 300°C for 01 hour.
2. During welding the heat input should be kept to a minimum. Preheat and interpass temperature shall never be more than 120-150°C.
3. Use stringent beads and minimize weaving.

CNM(SPL)

Codification :

AWS SFA 5.5	E12018-G
EN ISO 18275-B	E 83 18-G A H5



Characteristics & Applications :

CNM(SPL) is a special formulated electrode to deposit a very high strength weld metal. The weld metal possesses high strength and toughness and is ideally suited for welding high strength steels.

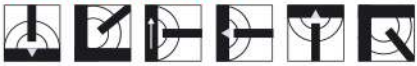
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.07	1.0	0.35	1.0	2.2	0.95	0.025	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				0°C
Typical	970	861	16.0	50

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-320	200-250	150-190	100-140	60-90
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer beads.
3. Use a carefully formulated welding procedure with preheat and post weld heat treatment.

CNM(SPL)M

Codification :

AWS SFA 5.5	E12018M
EN ISO 18275-B	E 83 18 N4C2M2 A H5



Characteristics & Applications :

Basic coated electrode with a stable and smooth arc, easy to strike and restrike.
Low spatter and good bead finish. Welds are of radiographic quality. The weld metal displays good crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties at subzero temperature. It is suitable for joining many high strength, low alloy or micro alloyed steels to themselves or to lower strength steels, including carbon steels. Ideally suited for welding earth moving equipments and other heavy equipments.

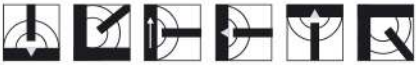
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P	V
Typical	0.07	1.6	0.35	1.0	2.2	0.40	0.012	0.020	0.03

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 50°C
Typical	901	792	20.0	40

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-320	200-250	150-190	100-140	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer beads.
3. Use a carefully formulated welding procedure with preheat and post weld heat treatment.

COROTHERME(SPL)

Codification :

AWS SFA 5.5	E8018-W2
EN ISO 2560-A	E462ZB32



Characteristics & Applications :

Corotherme(SPL) is a special electrode depositing a 0.5%Cr - 0.7%Ni - 0.5%Cu weld metal ideally suited for welding weathering steels to resist high temperature atmospheric corrosion. Ideal for welding steels like Corten steels used in chemical, petrochemical and railway industries to resist atmospheric corrosion.

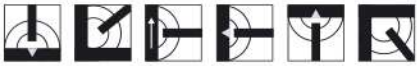
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Cu	S	P
Typical	0.065	0.65	0.40	0.55	0.75	0.50	0.018	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 20°C
Typical	556	475	27	55

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	250-300	200-250	150-190	110-150	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE, Indian Navy

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer bead.

SUPRATHERME(SPL)

Codification :

AWS SFA 5.1	E7018-1
IS 814	EB5626H_5JX
EN ISO 2560-A	E424B32



Characteristics & Applications :

An iron powder, low hydrogen type electrode producing a tough and ductile weld metal for welding heavy and rigid structures subjected to dynamic loading and impact. The weld metal is of radiographic quality and displays remarkable impact strength even at -50°C. Typical applications include welding of carbon steels, steels sensitive to hydrogen embrittlement, heavy and rigid structures, pressure vessels and equipment subjected to severe stress and requiring good toughness properties at sub-zero temperatures down to -50°C.

Typical Chemical Composition Of All Weld Metal (%) :

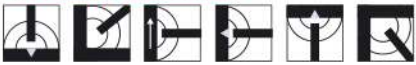
Element	C	Mn	Si	P	S
Typical	0.06	1.40	0.25	0.025	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	
				- 45°C	- 40°C
Typical	550	455	28.0	50	60

Diffusible Hydrogen Content: 5 ml / 100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-350	200-280	150-180	100-135	80-100
Qty (Pcs/Carton)	25	50	70	100	150

Approvals : ABS, Adani Infra, BHEL, CE, CIB-MP, EIL, L&T Power, NPCIL, NTPC, PDIL, Reliance (Engineering)

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer bead.

SUPRATHERME(SPL)H4R

Codification :

AWS SFA 5.1	E7018-1 H4R
IS 814	EB5626H$_4$JX
EN ISO 2560-A	E 42 4 B 3 2 H5



Characteristics & Applications :

Supratherme(Spl)H4R is a moisture resistant hydrogen controlled basic coated electrode for producing tough and ductile weld of radiographic quality in boilers, pressure vessels, medium carbon steels, cast steel and problematic steels. The weld metal is clean and has low level of impurities, thus having unique properties. Some typical applications include maintenance welding of all types of C-Mn steels, heavy tensile steels, heavy structures, plants & equipments subjected to static or dynamic loading. Typical Applications Include: Coaches, Wagons, Penstocks, Boilers & Pressure vessels, Earth moving machines etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.05	1.30	0.25	0.015	0.015

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	
				- 45°C	- 40°C
Typical	540	460	29	80	100

Diffusible Hydrogen Content : 4 ml/100 gms of weld metal Max.
Moisture As Conditioned : 0.30 Max.
Moisture As Exposed (80% RH, 27 C For 9 Hrs) **:** 0.40 Max.
Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-280	150-180	100-135	80-100
Weight/Carton (kgs)	2	2	2	2

Approvals : BV,CE

Precautions :

1. Restrict the heat input, use short arc and stringer bead.
2. Re-dry the electrodes at 250°C for 1 hour, if expose to atmosphere.

SUPRATHERME(SPL)MOD

Codification :

AWS SFA 5.1	E7018-1
IS 814	EB5626H_5JX
EN ISO 2560-A	E424B32H5



Characteristics & Applications :

Supratherme(Spl)Mod is a basic coated iron powder type, high yield, and hydrogen-controlled electrode. Easy to operate in all conventional welding positions. Radiographic quality welds having excellent cracking resistance. Ideally suited for welding carbon steels used in the construction of equipment subjected to heavy dynamic load, impact, and severe service conditions in sour gas service.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P
Typical	0.06	1.40	0.40	0.010	0.013

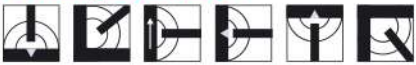
Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)		Weld Metal Hardness (BHN)
				-45°C	-40°C	
Typical	550	450	29	80	100	180

Corrosion Tests: Passes corrosion test as per NACE standard TM-01-77- 96 (SSCC) and TM-02-84-96 (HIC).

Diffusible Hydrogen Content: 5ml/100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-250	150-190	100-140	70-100
Qty (Pcs/Carton)	30	50	75	100

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short are, minimize heat input.

SUPRATHERME-NM(MOD)

Codification :

AWS SFA 5.5	E8018-G



Characteristics & Applications :

Supratherme-NM(Mod) is a basic coated, low hydrogen high purity electrode for NACE requirements. Radiographic quality welds having excellent cracking resistance, excellent toughness to withstand heavy dynamic loading and impact. Ideally suited for welding fine grained steels, low alloy steels subjected to sub-zero temperature applications down to -50°C. Ideal for welding, heavy sections, highly restrained joints subjected to dynamic loading. Ideal for pressure vessels, tanks, spheres, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Range	0.12 Max	1.4 Max	0.80 Max	0.03 Max	0.03 Max	0.60-1.00	0.30-0.60
Typical	0.07	1.2	0.40	0.008	0.010	0.80	0.40

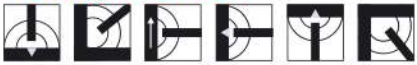
Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J) -50°C	Hardness (BHN)
Range	550 Min	460 Min	19.0 Min	27 Min	180-210
Typical	575	500	26	35	190

Diffusible Hydrogen Content : 5 ml/100 gms of weld metal Max.

Corrosion Test: Passes NACE TM-01-77-96 (SSCC) & TM-02-84-96 (HIC).

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	220-280	160-190	100-135	80-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer beads.

SUPRATHERME-NM(MOD)H4R

Codification :

AWS SFA 5.5	E8018-G H4R



Characteristics & Applications :

Supratherme-NM(Mod)H4R is basic coated, moisture resistant, low hydrogen high purity electrode for NACE requirements. Radiographic quality welds having excellent cracking resistance, excellent toughness to withstand heavy dynamic loading and impact. Ideally suited for welding fine grained steels, low alloy steels subjected to sub-zero temperature applications down to -60°C. Ideal for welding, heavy sections, highly restrained joints subjected to dynamic loading. Ideal for pressure vessels, tanks, spheres, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Ni
Range	0.12 Max	1.4 Max	0.80 Max	0.03 Max	0.03 Max	0.60-1.00	0.30-0.60
Typical	0.06	1.2	0.40	0.008	0.010	0.80	0.40

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-60°C
Range	550 Min	460 Min	19 Min	27 Min
Typical	575	500	26	50

Diffusible Hydrogen Content : 4.0 ml/100 gms of weld metal.

Moisture As Conditioned : 0.20 Max.

Moisture As Exposed (80% RH, 27°C For 9 HRS) **:** 0.40 Max.

Corrosion Test : Passes NACE TM-01-77-96 (SSCC) & TM-02-84-96 (HIC).

Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	220-280	160-190	100-135	80-100
Weight/Carton (kgs)	2	2	2	2

Precautions :

- Restrict the heat input, use short arc and stringer bead.
- Re-dry the electrodes at 250°C for 1 hour, if expose to atmosphere.

SUPRATHERME-Ni

Codification :

AWS SFA 5.5	E7018-G
IS 1395	E49 B G 1 2 6 Fe



Characteristics & Applications :

A low hydrogen, iron powder type electrode yielding a 0.5%Ni in the weld metal. Ideally suited for welding fine-grained steels, heavy sections, and restrained joints requiring good impact strength at sub-zero temperatures down to -50°C. Typical applications include welding of C-Mn grain refined steels, heavy sections, and restrained joints requiring good impact strength at sub-zero temperatures down to -50°C.

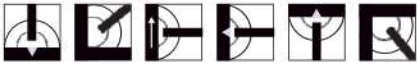
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	S	P
Typical	0.06	1.0	0.30	0.55	0.018	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	525	446	28.0	45

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-350	200-280	160-190	110-135	80-100
Qty (Pcs/Carton)	25	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Prevent excessive heat input during welding.

SUPRATHERME-Ni(SPL)

Codification :

AWS SFA 5.5	E8018-G
EN ISO 2560-A	E 46 5 1Ni B 4 2 H5



Characteristics & Applications :

Supratherme-Ni(Spl) is a basic coated, low hydrogen, iron powder type electrode yielding a weld metal containing 1.5%Mn and 0.7%Ni. Excellent quality welds for welding heavy sections of fine grained high strength steels with particular reference to low temperature service down to -60°C. Typical applications include welding of fine grained Q&T steels for pressure vessels, tanks, penstocks, where high strength and sub-zero temperature toughness properties are of importance.

Typical Chemical Composition Of All Weld Metal (%) :

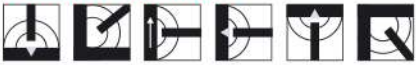
Element	C	Mn	Si	S	P	Ni
Typical	0.07	1.25	0.30	0.018	0.018	0.75

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 50°C
Typical	565	515	27.0	60

Diffusible Hydrogen Content: 5 ml / 100 gms of weld metal Max.

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-330	220-280	160-190	110-135	80-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE, EIL, PDIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Minimise heat input during welding.

SUPRATHERME-Ni(SPL)MOD

Codification :

AWS SFA 5.5	E8018-G



Characteristics & Applications :

It is basic coated, low hydrogen, iron powder type electrode yielding a 1.0% Ni in the weld metal. Radiographic quality welds having excellent cracking resistance. Weld metal of excellent toughness to withstand heavy dynamic loading and impact. Ideally suited for welding fine grained steels, low alloy steels subjected to sub-zero temperature applications down to -60°C. Ideal for welding, heavy sections, highly restrained joints subjected to dynamic loading. Ideal for pressure vessels, tanks, spheres, etc.

Typical Chemical Composition Of All Weld Metal (%) :

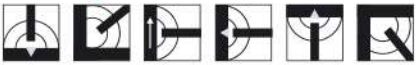
Element	C	Mn	Si	P	S	Ni
Typical	0.07	1.50	0.30	0.010	0.010	1.00

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 60°C
Typical	570	520	27.0	75

CTOD (SENB) at 0°C : 0.25 mm minimum.

Welding Positions :



Current And Packing Data : AC/DC (+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x350	2.5x350
Current Range (Amps)	270-330	220-280	160-190	100-140	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. For best impact properties, accomplish minimum heat input by: Using smallest size of electrode possible, minimum weaving, maximum number of layers, welding in down hand position wherever possible.

DK-18Ni(Mod)

Codification :

AWS SFA 5.5	E8018-G



Characteristics & Applications :

DK-18Ni(Mod) is a basic coated low hydrogen electrode for low temperature application welding. Suitable for welding of DMR grade fine-grained steel, heavy section fabrication, pressure vessels,penstock pipelines, fine grained quenched & tempered steels, etc where high stress & dynamic loadingservice applications are involved. The weld metal is of radiographic quality. Typical material gradessuitable for welding with this electrodes are-DMR 249A, C/D grades of ASTM SA-414, Grade 55 & 60 steels of SA-516, Steels conforming to SA-814, IS: 2002, IS: 2062 and equivalent grade of steels.

Typical Chemical Composition Of All Weld Metal (%):

Element	C	Mn	Si	S	P	Ni
Typical	0.10	0.60-1.50	0.35	0.015	0.030	2.0-3.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-50°C
Typical	640	525	24	65

Diffusible Hydrogen Content: < 4 ml / 100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x350/450	2.5x350
Current Range (Amps)	180-200	140-180	100-140	60-90
Qty (Pcs/Carton)	45	70	100	150
Weight/Carton (kgs) Vacuum	2	2	2	2

Precautions :

1. Re-dry the electrodes at 400°C for 2 hours as per our standard recommended practice.
2. Re-dried electrodes shall be kept in a holding oven (maintained at 150-200°C) to avoid moisture pick up.

NIMOTHERME-1

Codification :

AWS SFA 5.5	E8016-C3



Characteristics & Applications :

A low hydrogen electrode yielding a tough and ductile weld deposit having 1%Ni-0.25%Mo suitable for welding fine-grained and Ni steels for service temperatures down to -60°C. Typical applications include storage tanks for liquefied gases, distillers in coke oven batteries and petrochemical industries. Ideal for welding high strength and fine-grained steels subjected to sever dynamic loading and sub-zero temperature service.

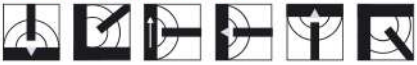
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Mo	S	P
Typical	0.06	0.90	0.30	0.90	0.25	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 40°C
Typical	574	505	27.0	50

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	210-270	150-190	100-135	80-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Restrict the heat input during welding.

NIMOTHERME-1L(MOD)

Codification :

AWS SFA 5.5	E7018-C3L
EN ISO 2560-B	E 4918 N2 A H5



Characteristics & Applications :

It is low hydrogen & low carbon electrode depositing 1.0%Ni - 0.25%Mo - 0.02%V weld metal. Weld metal possesses excellent strength together with toughness at subzero temperatures. It is ideally suited for welding low carbon grain-refined steels, nickel steels, normalized, and tempered steels. Typical applications include storage tanks for liquefied gases like Ammonia, distillers in coke oven batteries and petrochemical industries. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Typical	0.06	1.2	0.30	0.010	0.015	0.10	1.00	0.25	0.02

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 50°C
Typical	530	450	30	50

Hardness : As per NACE MR-0175 Requirements: 220 VPN Max.

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	190-250	140-200	100-130	70-100
Qty (Pcs/Carton)	30	50	75	100

Approvals : CE

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use smallest size of electrode possible.
3. Use low current, short arc and stringer beads.

NIMOTHERME-1(SPL)

Codification :

AWS SFA 5.5	E8018-C3



Characteristics & Applications :

Nimotherme-1(SPL) is a low hydrogen, iron powder electrode yielding a tough and ductile weld deposit having 1%Ni - 0.25%Mo. Ideally suited for welding fine- grained and nickel steels for service temperatures down to -40°C. Typical applications include storage tanks for liquefied gases like Ammonia, distillers in coke oven batteries and petrochemical industries. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	V	P	S
Typical	0.08	1.00	0.30	0.10	1.00	0.25	0.02	0.015	0.015

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-40°C
Typical	580	500	27	80

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x350	2.5x350
Current Range (Amps)	190-250	140-200	100-140	70-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Restrict the heat input to a minimum during welding to achieve better properties.

NIMOTHERME-1(SPL)H4R

Codification :

AWS SFA 5.5	E8018-C3 H4R



Characteristics & Applications :

Nimotherme-1(SPL)H4R is a low hydrogen, iron powder, moisture resistance, electrode yielding a tough and ductile weld deposit having 1%Ni - 0.25%Mo. Ideally suited for welding fine-grained and nickel steels for service temperatures down to -40°C. Typical applications include storage tanks for liquefied gases like Ammonia, distillers in coke oven batteries and petrochemical industries. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	V	P	S
Typical	0.08	1.00	0.30	0.10	1.00	0.25	0.02	0.015	0.015

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 40°C
Typical	580	500	27	80

Diffusible Hydrogen Content : 4 ml / 100 gms of weld metal Max.
Moisture As Conditioned : 0.20 Max.
Moisture As Exposed (80% RH, 27°C For 9 HRS) **:** 0.40 Max.
Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x350	2.5x350
Current Range (Amps)	190-250	140-200	100-140	70-100
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Re-dry the electrodes at 300°C for 2 hours, if expose to atmosphere.
2. Restrict the heat input to a minimum during welding to achieve better properties.

NIMOTHERME-1(SPL)MOD

Codification :

AWS SFA 5.5	E8018-C3



Characteristics & Applications :

Nimotherme-1(SPL)Mod is a low hydrogen, iron powder electrode yielding a tough and ductile weld deposit having 1%Ni - 0.25%Mo. Ideally suited for welding fine- grained and nickel steels for service temperatures down to - 40°C. Typical applications include storage tanks for liquefied gases like Ammonia, distillers in coke oven batteries and petrochemical industries. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions in sour gas service.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P	V
Typical	0.08	1.00	0.30	0.10	1.00	0.25	0.008	0.015	0.02

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 40°C
Typical	580	500	28	120

Corrosion Test :

Passes corrosion test as per NACE TM-01-77-96(SSCC) and TM-02-84-96(HIC).

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x350	2.5x350
Current Range (Amps)	190-250	140-200	100-140	70-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hours.
2. Use low current short arc and minimum weaving.

NIMOTHERME-NM1

Codification :

AWS SFA 5.5	E8018-NM1



Characteristics & Applications :

Nimotherme-NM1 is a low-hydrogen electrode, which contains about 1% Nickel and 0.5% Molybdenum. This electrode can be welded without PWHT. Some typical applications include the welding of similar composition high-strength low-alloy or microalloyed structural steels.

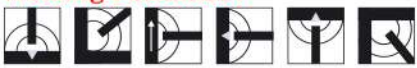
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Typical	0.06	1.00	0.40	0.015	0.015	1.00	0.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 40°C
Typical	590	510	24	60

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	220-280	160-200	100-140	80-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour, as per our standard recommended practice.
2. Use short arc, stringer bead, and smallest size of electrode, minimum current to ensure minimum heat input.

NIMOTHERME-NM2

Codification :

AWS SFA 5.5	E9018-NM2



Characteristics & Applications :

Nimotherme-NM2 is a basic coated, low-hydrogen electrode. This electrode is intended to meet strength requirements after extended post weld heat treatment as required in the construction of nuclear power plants and in the fabrication of components (e.g., steam generators and pressurizers) used in nuclear power plants. The weld metal fulfill the requirements of drop weight testing to determine nil ductility temperature as well as measurement of mils of lateral expansion on broken Charpy V-notch specimens.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo	Cr
Typical	0.08	1.10	0.40	0.015	0.015	1.70	0.30	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 30°C
Typical	660	570	21	60

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	220-280	160-200	100-140	80-100
Qty (Pcs/Carton)	35	55	75	125

Approvals : CE

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour, as per our standard recommended practice.
2. Use short arc, stringer bead, and smallest size of electrode, minimum current to ensure minimum heat input.

NITHERME-1.5(SPL)

Codification :

AWS SFA 5.5	E8018-C4



Characteristics & Applications :

A low hydrogen electrode depositing 1.5%Ni steel weld metal. Pleasing operating characteristics. Weld metal of radiographic quality. Ideal for welding fine grained and Nickel steels for service temperatures down to -50°C. Typical applications include storage tanks for liquefied gases like Ammonia, distillers in coke oven batteries and petrochemical industries. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions.

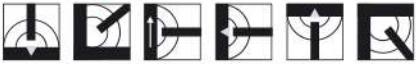
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni
Typical	0.080	1.00	0.50	0.018	0.016	1.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 50°C
Typical	570	480	25	40

Welding Positions :



Current And Packing Data : AC/DC (+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	200-250	140-180	90-120	70-90
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. Accomplish minimum heat input during welding by,
   a. Controlling preheat and interpass temperature. b. Using smallest size of electrode possible. c. Minimum weaving.
3. Depositing maximum number of layers, which enable grain refinement.

NITHERME-2.5

Codification :

AWS SFA 5.5	E8016-C1



Characteristics & Applications :

A low hydrogen DC(+) electrode yielding 2.5%Ni in the weld deposit, ideally suited for welding fine-grained steels and Ni steels especially for service temperatures down to -60°C. The weld metal possesses strength combined with excellent sub-zero temperature notch toughness. Typical applications include storage tanks, pressure vessels, containers and piping for liquefied gases like propane and butane.

Typical Chemical Composition Of All Weld Metal (%) :

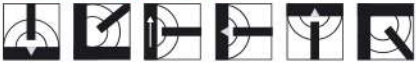
Element	C	Mn	Si	Ni	S	P
Typical	0.06	0.80	0.30	2.40	0.018	0.018

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 605°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 60°C
Typical	569	495	24	50

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	210-270	150-190	100-135	80-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. Restrict the heat input to a minimum during welding to achieve better properties.

Note : Low carbon version Nitherme-2.5L conforming to AWS : E7018-C1L is also available.

NITHERME-2.5L

Codification :

AWS SFA 5.5	E7018-C1L



Characteristics & Applications :

A low hydrogen electrode yielding low carbon, 2.5% Ni in the weld deposit. It is ideally suited for welding fine-grained steels and Ni steels especially for service temperatures down to -75°C. The weld metal possesses strength combined with excellent sub-zero temperature notch toughness. Typical applications include storage tanks, pressure vessels, containers and piping for liquefied gases like propane and butane.

Typical Chemical Composition Of All Weld Metal (%) :

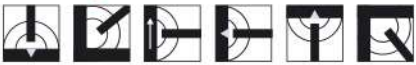
Element	C	Mn	Si	P	S	Ni
Typical	0.04	0.80	0.30	0.018	0.018	2.40

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 605°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 75°C
Typical	520	410	26	35

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	210-270	150-190	100-135	80-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour.
2. Restrict the heat input to a minimum during welding to achieve better properties.

NITHERME-2.5(MOD)

Codification :

AWS SFA 5.5	E10018-G



Characteristics & Applications :

Low hydrogen electrode depositing 2.8%Ni and 0.3%Mo weld metal. Pleasing operating characteristics. Weld metal of radiographic quality. Ideally suited for welding grain refined steels and nickel steels for service temperatures down to -50°C. Typical applications include storage tanks for liquefied gases like Ammonia, distillers in coke oven batteries, petrochemical industries, DMR 249B (AB2) steel, etc. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions.

Typical Chemical Composition Of All Weld Metal (%) :

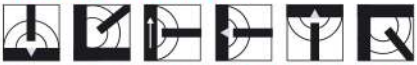
Element	C	Mn	Si	Cr	Ni	Mo	V	P	S	Cu
Typical	0.08	0.90	0.30	0.10	2.8	0.30	0.02	0.012	0.010	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Bend (3T)
				- 50°C	
Typical	690	620	22	70	Satisfactory

Diffusible Hydrogen Content : upto 3 ml / 100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	190-250	110-180	80-120	60-90
Qty (Pcs /Carton)	30	50	75	125

Approvals : Indian Navy

Precautions :

1. For best impact properties, accomplish minimum heat input by: • Using smallest size of electrode possible. • Minimum weaving. • Proper control over inter pass temperatures. • Maximum number of layers. Welding in down hand position wherever possible.
2. Ensure the electrodes are dry. Re-dry the electrodes at 480°C for 01 hour.

NITHERME-2.5(SPL)H4R

Codification :

AWS SFA 5.5	E7018-C1L



Characteristics & Applications :

A low hydrogen electrode yielding low carbon, 2.5% Ni in the weld deposit. It is ideally suited for welding fine-grained steels and Ni steels especially for service temperatures down to -75°C. The weld metal possesses strength combined with excellent sub-zero temperature notch toughness. Typical applications include storage tanks, pressure vessels, containers and piping for liquefied gases like propane and butane.

Typical Chemical Composition Of All Weld Metal (%) :

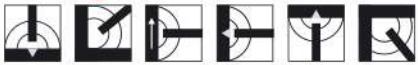
Element	C	Mn	Si	P	S	Ni
Typical	0.04	0.80	0.30	0.018	0.018	2.40

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 605°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-75°C
Typical	520	410	26.0	35

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	210-270	150-190	100-135	80-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour.
2. Restrict the heat input to a minimum during welding to achieve better properties.

Advantages :

Electrodes are vacuum packed no need of redrying & can be used straight on the job.
Moisture as Conditioned: 0.3Max.
Moisture as Exposed: 0.4Max.

NITHERME-3.5

Codification :

AWS SFA 5.5	E8016-C2



Characteristics & Applications :

A unique low hydrogen type electrode yielding 3.5%Ni in the weld deposits. Specially designed for welding fine-grained steels and nickel steels for service temperatures down to -75°C. Typical applications include pressure vessels, piping systems, valves and tanks used for liquefied propane, butane, ethane, acetylene, CO_2 and even liquefied ethylene.

Typical Chemical Composition Of All Weld Metal (%) :

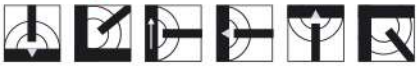
Element	C	Mn	Si	Ni	S	P
Typical	0.06	0.80	0.30	3.2	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 605°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 75°C
Typical	564	505	23	42

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	190-240	140-190	100-130	70-100
Qty (Pcs/Carton)	35	55	75	125

Approvals : BHEL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Restrict the heat input to a minimum during welding to achieve better properties.

NITHERME-3.5(SPL)

Codification :

AWS SFA 5.5	E8018-C2



Characteristics & Applications :

Nitherme-3.5(SPL) is a low hydrogen iron powder electrode depositing 3.5%Ni weld metal. It is pleasing operating characteristics and weld metal is of radiographic quality. Weld metal possesses excellent toughness at sub-zero temperatures. Ideal for welding fine grained Nickel steels for service temperatures down to -75°C. Typical applications include pressure vessels, piping, valves and tanks used for storage, transportation and distribution of liquefied gases.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni
Typical	0.06	0.80	0.20	0.015	0.012	3.40

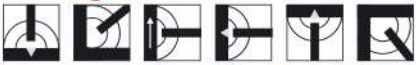
Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 75°C
Typical	570	510	23	35

Corrosion Test :

Passes corrosion test as per NACE standard TM-01-77-96 (SSCC)

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	200-250	150-200	110-140	80-110
Qty (Pcs/Carton)	35	55	75	125

Precautions : (For best impact strength)

1. Accomplish minimum heat input during welding by,
   a. Controlling preheat and interpass temperature.
   b. Using smallest size of electrode possible.
   c. Minimum weaving.
   d. Welding in down hand position wherever possible.
2. Deposit maximum number of layers, which enables grain refinement.
3. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.

NITHERME-3.5L

Codification :

AWS SFA 5.5	E7016-C2L
EN ISO 2560-B	E 49 15-N7 P H5



Characteristics & Applications :

A low hydrogen electrode depositing 3.5%Ni weld metal. Specially designed for welding fine-grained steels and nickel steels for service temperatures down to -100°C. Typical applications include pressure vessels, piping, valves, tanks, transportation and distribution of liquefied gases, etc.

Typical Chemical Composition Of All Weld Metal (%) :

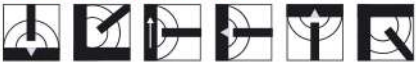
Element	C	Mn	Si	Ni	S	P
Typical	0.045	0.8	0.25	3.10	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 605°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 100°C
Typical	525	426	29	30

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	190-240	140-190	100-130	70-100
Qty (Pcs/Carton)	35	55	75	125

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Restrict the heat input to a minimum during welding to achieve better properties.

NITHERME-3.5L(SPL)

Codification :

AWS SFA 5.5	E7018-C2L
EN ISO 2560-B	E 4918 N7 P H5



Characteristics & Applications :

Low hydrogen iron powder electrode depositing 3.5%Ni in weld metal. Easy to operate in all conventional welding positions. Radiographic quality welds possesses excellent toughness even at sub-zero temperatures down to -100°C. Ideal suited for welding fine-grained and Nickel steels. Typical applications include pressure vessels, piping, valves, and tanks used for storage, transportation, and distribution of liquefied gases.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni
Typical	0.045	0.80	0.25	0.020	0.020	3.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 605°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 100°C
Typical	525	426	29	50

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	190-240	140-190	100-130	70-100
Qty (Pcs/Carton)	35	55	75	125

Approvals : CE

Precautions :

1. For best impact properties, accomplish minimum heat input by:
   • Using smallest size of electrode possible. • Minimum weaving.
   • Proper control over interpass temperatures. • Maximum number of layers. • Welding in down hand position wherever possible.
2. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.

NITHERME-6.5L

Codification :

AWS SFA 5.5	E9015-C5L



Characteristics & Applications :

A low hydrogen and low carbon type electrode depositing 6.5% Ni steel weld metal. Ideal for welding fine grained and Nickel steels for service temperatures down to -115°C. Typical applications include pressure vessels, piping, valves and tanks used for storage, transportation and distribution of liquefied gases. Also suitable for welding heavy sections and highly restrained joints subjected to dynamic loading, impact and severe service conditions.

Typical Chemical Composition Of All Weld Metal (%) :

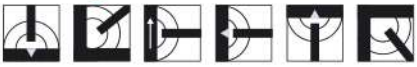
Element	C	Mn	Si	P	S	Ni
Typical	0.04	0.70	0.30	0.018	0.018	6.50

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 580°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 115°C
Typical	650	580	21.0	40

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	220-270	160-200	110-140	80-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour.
2. Restrict the heat input to a minimum during welding to achieve better properties.

MOLYTHERME

Codification :

AWS SFA 5.5	E7018-A1
IS 1395	E49 B A1 2 6 Fe
EN ISO 3580-A	E MoB 4 2



Characteristics & Applications :

Molytherme is a low hydrogen iron powder type electrode yielding a weld deposit containing 0.5%Mo. Ideal for welding creep resistant C-Mo steels for service temperatures up to 525°C. Typical applications include boilers, pressure vessels, pipes and tubes of similar composition.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Typical	0.06	0.80	0.42	0.020	0.025	0.52

Typical Mechanical Properties Of All Weld Metal :

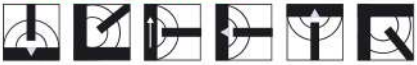
(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J) + 20°C	Creep Strength at 525°C (1% offset in10,000hrs) (MPa)
Typical	535	455	28	140	121

Diffusible Hydrogen Content: 5 ml/100 gms of weld metal Max.

Moisture Content : 0.40% Max.

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	270-340	170-240	140-170	90-120	70-90
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : Adani Infra, BHEL, CE, CIB-MP, EIL, NPCIL, NTPC, PDIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer bead.

MOLYTHERME-EXTRA

Codification :

AWS SFA 5.5	E8018-D3
EN ISO 18275-B	E 59 18-G P H5



Characteristics & Applications :

Molytherme-Extra is a low hydrogen electrode yielding a weld deposit containing Mn-Mo. The electrode is ideally suited for welding steels of similar composition. The weld metal possesses good high temperature properties and has excellent toughness.

Typical Chemical Composition Of All Weld Metal (%) :

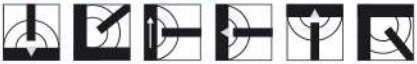
Element	C	Mn	Si	Mo	S	P
Typical	0.07	1.25	0.40	0.55	0.015	0.018

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 51°C
Typical	604	495	25	28

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	270-340	170-240	140-170	90-130	70-90
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : BHEL, CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer bead.

MOLYTHERME(MOD)

Codification :

AWS SFA 5.5	E7018-A1
IS 1395	E49 B A1 2 6 Fe



Characteristics & Applications :

Low hydrogen iron powder electrodes depositing 0.5%Mo with excellent toughness. Weld metal retains mechanical properties after prolonged heat treatments. Ideal for welding C-0.5%Mo steels, plates, pipes for pressure vessel, boilers, etc. where toughness at -20°C is required. The weld metal possesses good creep strength up to 525°C.

Typical Chemical Composition Of All Weld Metal (%) :

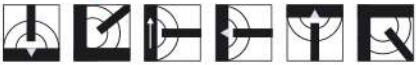
Element	C	Mn	Si	S	P	Mo
Typical	0.06	0.85	0.42	0.015	0.02	0.5

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 20°C
Typical	525	465	27	75

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	4x350	3.15x350	2.5x350
Current Range (Amps)	270-320	200-250	140-170	140-180	100-130	70-90
Qty (Pcs/Carton)	25	35	55	55	75	100

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use short arc and stringer bead.

MOLYTHERME-R

Codification :

IS 1395	E 63 B D1 26 J



Characteristics & Applications :

Molytherme-R is a low hydrogen electrode yielding a weld deposit containing Mn-Mo. The electrode is ideally suited for welding steels of similar composition, CONCOR BOGIES etc. The weld metal possesses good high temperature properties and has excellent toughness. The deposits will also meet the metal recovery of 110% min requirements.

Typical Chemical Composition Of All Weld Metal (%) :

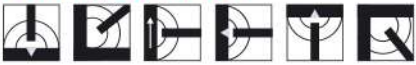
Element	C	Mn	Si	Mo	S	P
Typical	0.06	1.30	0.50	0.40	0.020	0.021

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	RA%	CVN Impact Strength (J)
					- 50°C
Typical	640	550	23	65	40

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	270-340	170-240	140-170	100-130	70-90
Qty (Pcs/Carton)	25	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use short arc and stringer bead.

MOLYTHERME(SPL)

Codification :

AWS SFA 5.5	E9018-D1
IS 1395	E63BD126
EN ISO 18275-B	E 62 18-3M3 P H5



Characteristics & Applications :

Extra low hydrogen type electrodes depositing a high strength weld metal. The electrode possesses excellent operating characteristics and is suitable for welding in all positions. Weld metal has got good toughness even at subzero temperatures. Deposition efficiency is about 115%. The weld metal possesses high strength together with good notch toughness even at subzero temperatures down to -50°C. Ideally suited for welding fine-grained steels, high strength steels, IS: 8500-91, Gr 540B, 570B, 590B, IS: 2002-92 Gr.3, IS: 1875-92 class 3A or similar.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Mo	S	P	Ni
Typical	0.06	1.45	0.50	0.40	0.020	0.021	0.50

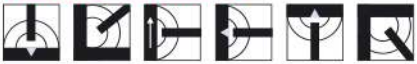
Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	RA%	CVN Impact Strength (J)	
					- 50°C	- 20°C
Typical	640	550	23	65	50	120

Diffusible Hydrogen Content: 5ml/100 gms of weld metal max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-250	140-190	100-140	80-100
Qty (Pcs/Carton)	35	55	75	125

Approvals : CE, RD & SO Class-C1

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. During welding keep the heat input to a minimum.

MOLYTHERME(SPL) MOD

Estd. 1966 D&H sécheron Complete Welding Support

Codification :

AWS SFA 5.5	E9018-D1
IS : 1395	E63BD126J
IRS M28	2020 Class C2



Characteristics & Applications :

Extra low hydrogen type electrodes depositing a high strength weld metal. The electrode possesses excellent operating characteristics and is suitable for welding in all positions. Weld metal has got good toughness even at subzero temperatures. Deposition efficiency is about 115% min. The weld metal possesses high strength together with good notch toughness even at subzero temperatures down to -50°C. Ideally suited for welding components made of steel to IS:2062 Gr. E410, E450, IS:2002-Gr3, IS:1875-04 class 3A or similar.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Mo	S	P	Ni
Typical	0.07	1.50	0.60	0.45	0.025	0.025	0.55

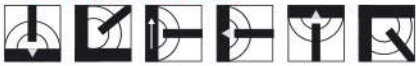
Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	RA%	CVN Impact Strength (J)	
					-50°C	-20°C
Typical	650	560	21.0	62	50	120

Diffusible Hydrogen Content : 5 ml/100 gms of weld metal max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-250	140-190	100-140	80-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. During welding keep the heat input to a minimum.

CROMOTHERME

Codification :

AWS SFA 5.5	E8018-B1



Characteristics & Applications :

Cromotherme is a basic coated hydrogen controlled electrode. Ideally suited for welding of creep resistant steels of similar composition used in power plants, boilers, oil refineries and chemical plants.

Typical Chemical Composition Of All Weld Metal (%) :

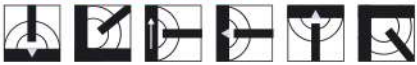
Element	C	Mn	Si	Cr	Mo	S	P
Typical	0.07	0.60	0.30	0.50	0.50	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	564	446	20

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	250-300	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc during welding.

CROMOTHERME-20

Codification :

AWS SFA 5.5	E8018-G



Characteristics & Applications :

Cromotherme-20 is a low hydrogen type electrode depositing a radiographic quality weld metal with 1%Cr-0.5%Mo-0.20%V. Ideally suited for welding of steels of similar composition.

Typical Chemical Composition Of All Weld Metal (%) :

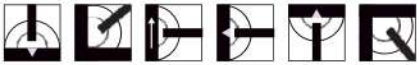
Element	C	Mn	Si	Cr	Mo	V	S	P
Range	0.07-0.12	0.40-0.90	0.20-0.50	1.00-1.50	0.40-0.65	0.20-0.40	0.03 Max	0.03 Max

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				RT
Typical	550 Min	460 Min	19.0 Min	120 Min

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	180-240	140-180	110-140	70-100
Qty (Pcs/Carton)	35	55	75	125

Approvals : Adani Infra

Precautions :

1. Use short arc during welding.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

CROMOTHERME-0.5



Characteristics & Applications :

Cromotherme-0.5 is a low hydrogen electrode yielding a weld metal containing 0.5%Cr - 0.8%Mo - 0.3%V. Cromotherme 0.5 is ideally suited for welding Cr-Mo-V steels used in boilers, pipelines in chemical and power plants.

Typical Chemical Composition Of All Weld Metal (%) :

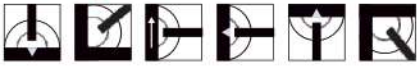
Element	C	Mn	Si	Cr	Mo	V	S	P
Typical	0.06	0.80	0.35	0.50	0.85	0.30	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	Creep Strength at 550°C (1% offset in10,000hrs) (MPa)
Typical	584	515	21.0	150

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	270-340	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	3.5	3.5	3.0	2.5	2.5

Precautions :

1. Use short arc during welding.
2. Ensure the electrodes are dry.

CROMOTHERME-1

Codification :

AWS SFA 5.5	E8018-B2
IS 1395	E55 B B2 2 6 Fe
EN ISO 3580-A	E CrMo1 B 4 2



Characteristics & Applications :

Cromotherme-1 is low hydrogen iron powder type electrodes yielding a weld deposit containing 1.25% Cr - 0.5% Mo. Excellent for welding creep resistant 0.5%Cr - 0.5%Mo, 1%Cr - 0.5%Mo steels. The weld deposit has excellent creep resistance at service temperatures up to 550°C.

Typical Chemical Composition Of All Weld Metal (%) :

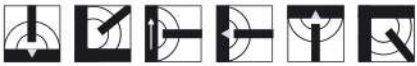
Element	C	Mn	Si	P	S	Cr	Mo
Typical	0.060	0.80	0.44	0.025	0.020	1.25	0.55

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Creep Strength at 550°C (1% offset in10,000hrs) (MPa)
				+ 20°C	
Typical	594	515	25	55	118

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	250-300	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : Adani Infra, BHEL, BV, CE, CIB-MP, EIL, L&T Power, NTPC, PDIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer bead.

CROMOTHERME-1L

Codification :

AWS SFA 5.5	E7018-B2L
EN ISO 3580-A	E CrMo1L B 4 2 H5



Characteristics & Applications :

Low hydrogen basic coated all position electrodes with low carbon, suitable for welding of 1.25%Cr - 0.5%Mo creep resisting steel. The weld metal possesses excellent mechanical properties and crack resistance together with toughness. Ideal for welding 1.25%Cr - 0.5%Mo material.

Typical Chemical Composition Of All Weld Metal (%) :

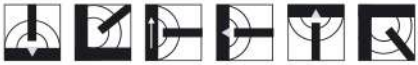
Element	C	Mn	Si	Cr	Mo	S	P
Typical	0.045	0.80	0.50	1.25	0.50	0.022	0.023

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	564	475	22

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	250-300	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE, EIL

Precautions :

1. Use a short arc during welding.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

CROMOTHERME-1(MOD)

Codification :

AWS SFA 5.5	E8018-B2
IS 1395	E 55BB2 26Fe
EN ISO 3580-A	E CrMo1 B 4 2 H5



Characteristics & Applications :

Weld metal having lesser impurities i.e. S, P, will improve the subzero impact property and retains its mechanical properties after prolonged heat treatments. Ideal for welding similar composition materials. The weld metal displays excellent tensile strength and creep resistance. Specially applicable wherever the impact property requirement at subzero temperatures up to -20°C.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Sn	As	Sb
Typical	0.06	0.76	0.49	0.007	0.010	1.25	0.50	0.002	0.004	0.002

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)		Creep Strength at 550°C (1% offset in10,000hrs) (MPa)
				-20°C	+20°C	
Typical	620	530	22	80	100	120

Diffusible Hydrogen Content: 5 ml/100 gms of weld metal max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	250-300	200-250	140-180	100-130	70-100
Qty (Pcs/Carton)	25	30	50	75	100

Approvals : BHEL, CE.

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, low current and stringer beads.
   Note : Low carbon version Cromotherme 1L(MOD) conforming to AWS:E7018-B2L is also available.

CROMOTHERME-1L(MOD)

Complete Welding Support

Codification :

AWS SFA 5.5	E7018-B2L



Characteristics & Applications :

Low carbon weld metal having lesser impurities i.e. S, P, will improve the subzero impact property and retains its mechanical properties after prolonged heat treatments. Ideal for welding similar composition materials. The weld metal displays excellent creep resistance with controlled hardness. It is specially applicable wherever the impact property requirement at subzero temperatures up to -20°C.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Mo	Sn	As	Sb
Typical	0.045	0.75	0.50	0.010	0.007	1.25	0.50	0.002	0.004	0.002

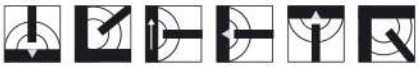
Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J) - 20°C	Hardness (BHN)
Typical	560	450	24	90	180-200

Diffusible Hydrogen Content: 5ml/100 gms of weld metal Max.

X-Factor: (10P + 5Sb + 4Sn + As)/100 : 15 ppm.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	250-300	200-250	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	100

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour, as per our standard recommended practice.
2. Use short arc and stringer bead.

CROMOTHERME-1(H4R)

Codification :

AWS SFA 5.5	E8018-B2 H4R



Characteristics & Applications :

Cromotherme-1(H4R) is basic coated, low hydrogen, moisture resistance type electrode. Weld metal display remarkable strength and creep resistance at elevated temperatures up to 550°C. Electrode is used for welding creep resistant 0.5%Cr - 0.5%Mo and 1%Cr - 0.5%Mo steels. Typical applications include steam boiler construction, welding of steam and super-heater piping, power plants, oil refinery and chemical plants.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Typical	0.06	0.80	0.44	0.022	0.023	1.35	0.55

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

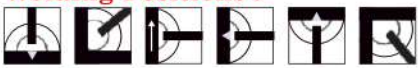
Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	600	520	25

Moisture :

- As Conditioned : 0.20 % Max.
- As Exposed : 0.40 % Max. (27°C and 80% Relative Humidity for 9 Hours).

Diffusible Hydrogen Content : 4 ml/100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	180-240	140-180	100-130	70-100
Weight/Carton (kgs.)	35	55	75	100

Advantage : Electrodes are Vacuum packed, no need of drying and can be used straight on the job.

Precautions :

1. Use short arc and stringer bead
2. Re-dry the electrodes at 250°C for 01 hour, if expose to atmosphere.

CROMOTHERME-1(RTE)

Codification :

AWS SFA 5.5	E8018-B2
EN ISO 3580-A	E CrMo1 B 3 2 H5



Characteristics & Applications :

Weld metal having strict control on S, P, As, Sn & Sb will improve the subzero impact property and resists temper embrittlement. Weld metal retains its mechanical properties after prolonged heat treatments. Ideal for welding steam generating equipments and reactor vessels. The weld metal displays excellent tensile strength and creep resistance. Specially applicable wherever temper embrittlement resistance is required.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Mo	Sb	As	S	P	Sn	Cu	Ni	Ti	V
Typical	0.06	0.6	0.25	1.30	0.55	0.001	0.0035	0.009	0.009	0.003	0.018	0.14	0.002	0.008

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J) - 33°C	Hardness (VPN)
SR at 690°C/ 1 hr	580	500	24	-	-
SR at 690°C/ 2.5 hrs	540	450	28	150	200
SR at 690°C/ 16 hrs	520	390	30	170	-

Diffusible Hydrogen Content: 4 ml/100 gms of weld metal max.

X-Factor: $(10P + 5Sb + 4Sn + As)/100 \leq 12.0$ (Elements in ppm).

J-factor: $(Si + Mn) \times (P + Sn)\ 10^4 \leq 125$.

Step Cooling Requirement: $CvTr40 + 2.5\ \Delta\ CvTr40Sc < 10°C$
(Where CvTr40: Transition temperature at absorbed energy of 40J of heat treated specimen. Δ CvTr40Sc: Shift in 40J transition temperature due to step cooling).

Welding Positions :



Current & Packing Data: AC/DC (+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	250-300	200-250	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	100

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-350°C for 01 hour.
2. Use short arc, low current and stringer beads.

CROMOTHERME-2

Codification :

AWS SFA 5.5	E9018-B3
IS 1395	E63 B B3 2 6 Fe
EN ISO 3580-A	E CrMo2 B 4 2



Characteristics & Applications :

Cromotherme-2 is an iron powder, low hydrogen electrode producing a weld deposit containing 2.25%Cr - 1%Mo which is oxidation resistant up to 575°C. Suitable for welding 2.25%Cr - 1%Mo, Cr-Mo-V steels as well as cast steels of similar composition.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Mo
Typical	0.060	0.80	0.44	0.025	0.020	2.40	1.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J) + 20°C	Creep Strength (1% offset in 10,000 hrs) (MPa)
Typical	644	554	22	70	at 550°C: 118 at 575°C: 85

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	260-320	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : Adani Infra, BHEL, CE, CIB-MP, EIL, NTPC, PDIL, Reliance (SASAN Power)

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer bead.

CROMOTHERME-2L

Codification :

AWS SFA 5.5	E8018-B3L
EN ISO 3580-A	E CrMo2L B 4 2 H5



Characteristics & Applications :

A low hydrogen type electrode depositing 2%Cr-1%Mo low carbon weld metal. The weld metal possesses controlled hardness, excellent mechanical properties, creep properties. Suitable for service temperature up to 600°C.

Typical Chemical Composition Of All Weld Metal (%) :

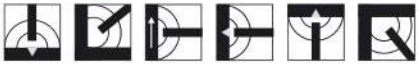
Element	C	Mn	Si	Cr	Mo	S	P
Typical	0.045	0.78	0.50	2.20	1.0	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	634	535	18

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	260-320	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : BV, CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

CROMOTHERME-2(MOD)

Codification :

AWS SFA 5.5	E9018-B3
IS 1395	E63 B B3 2 6 Fe
EN ISO 3580-A	E CrMo2 B 4 2 H5



Characteristics & Applications :

A low hydrogen iron powder electrode depositing 2.25%Cr -1%Mo weld metal having low level of impurities and exhibiting excellent toughness up to -18°C. Weld metal retains its mechanical properties even after prolonged heat treatments. Ideal for welding steels of similar composition to achieve tough weld metals.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Sn
Typical	0.06	0.69	0.30	0.007	0.010	2.25	1.10	0.003

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	
				- 18°C	+ 20°C
Typical	646	554	22	100	120

Diffusible Hydrogen Content: 5 ml/100 gms of weld metal max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	260-320	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	30	50	75	100

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, low current and stringer beads.
   Note : Low carbon version Cromotherme-2L (Mod) conforming to AWS: E8018 - B3L is also available.

CROMOTHERME-2L(MOD)

Codification :

AWS SFA 5.5	E8018-B3L



Characteristics & Applications :

Low carbon, low hydrogen, iron powder electrode depositing 2.25%Cr - 1%Mo weld metal having low level of impurities and exhibiting excellent toughness up to -18°C. Weld metal retains its mechanical properties even after prolonged heat treatments. The weld metal displays excellent creep resistance with controlled hardness. Ideal for welding steels of similar composition to achieve tough weld metals.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Mo	P+Sn
Typical	0.040	0.70	0.30	0.010	0.007	2.25	1.10	0.016

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 18°C
Typical	630	530	24	100

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	260-320	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	100

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour, as per our standard recommended practice.
2. Use short arc and stringer bead.

CROMOTHERME-2(RTE)

Codification :

AWS SFA 5.5	E9018-B3
EN ISO 3580-A	E CrMo2 B 3 2 H5



Characteristics & Applications :

Weld metal having strict control on S, P, As, Sn & Sb will improve the subzero impact property and resists temper embrittlement. Weld metal retains its mechanical properties after prolonged heat treatments. Ideal for welding steam generating equipments and reactor vessels. The weld metal displays excellent tensile strength and creep resistance. Specially applicable wherever temper embrittlement resistance is required.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Mo	Sb	As	S	P	Sn	Al	V	Ni	Cu	Ti
Typical	0.06	0.6	0.2	2.2	1.0	0.002	0.002	0.007	0.007	0.004	0.01	0.01	0.10	0.02	0.003

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Hardness (VPN)
				- 30°C	
SR at 690°C/ 1 hr	640	550	22	-	-
SR at 690°C/ 6 hrs	610	515	24	100	185
SR at 690°C/ 32 hrs	535	425	30	120	175

Diffusible Hydrogen Content: 4 ml/100 gms of weld metal max.

X-Factor: $(10P + 5Sb + 4Sn + As)/100 \leq 15.0$ (Elements in ppm).

J-factor: $(\%Si + \%Mn) \times (\%P + \%Sn)\ 10^4 \leq 125$.

PE: $(C + Mn + Mo + Cr/3 + Si/4) + 3.5(10P + 5Sb + 4Sn + As) < 3$.

Step Cooling Requirement: $CvTr54 + 2.5\ \Delta\ CvTr54SC < 10°C$.
(Where CvTr54: Transition temperature at absorbed energy of 54J of heat treated specimen. Δ CvTr54SC: Shift in 54J transition temperature due to step cooling).

Welding Positions :



Current & Packing Data: AC/DC (+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	250-300	200-250	140-180	100-230	70-100
Qty (Pcs/Carton)	25	35	55	75	100

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

CROMOTHERME-2(16)

Codification :

AWS SFA 5.5	E9016-B3



Characteristics & Applications :

Low hydrogen electrode depositing 2.25%Cr-1%Mo weld metal, display remarkable strength and creep resistance at elevated temperatures up to 575°C. It is used for welding 2.25%Cr-1%Mo creep resistant steel and Cr-Mo-V steels resistant to hydrogen under pressure as well as for cast steels of a similar composition to the weld metal. Typical applications include steam boiler construction, welding of steam and super- heater piping, power plants, oil refinery and chemical plants.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Mo
Typical	0.060	0.80	0.50	0.023	0.022	2.25	1.00

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	650	550	23.0

Welding Positions :



Current & Packing Data: AC/DC (+)

Size (mm) Dia x Length	5x450	4.0x450	3.15x450	2.5x350
Current Range (Amps)	200-250	150-190	100-140	70-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour, as per our standard recommended practice.
2. Use short arc and stringer bead.

CROMOTHERME-2(15)RTE

Codification :

AWS SFA 5.5	E9015-B3



Characteristics & Applications :

Weld metal having strict control on S, P, As, Sn & Sb will improve the sub-zero impact property and resists temper embrittlement. Weld metal retains its mechanical properties after prolonged heat treatments. Ideal for welding steam generating equipments and reactor vessels. The weld metal displays excellent tensile strength and creep resistance. Specially applicable wherever temper embrittlement resistance is required.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Mo	Sb	As	S	P	Sn	Al	V	Ni	Cu	Ti
Typical	0.06	0.5	0.2	2.4	1.0	0.001	0.0035	0.007	0.007	0.0035	0.002	0.01	0.10	0.02	0.002

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J) - 40°C	Hardness (VPN)
SR at 690°C/ 1 hr	640	550	22	-	-
SR at 690°C/ 6 hrs	560	455	24	90	180
SR at 690°C/ 40 hrs	535	425	26	100	-

Diffusible Hydrogen Content : 4 ml/100 gms of weld metal max.

X-Factor : $(10P + 5Sb + 4Sn + As) / 100 \leq 15.0$ (elements in ppm).

PE : $(C + Mn + Mo + Cr/3 + Si/4) + 3.5(10P + 5Sb + 4Sn + As) < 3$.

Step Cooling Requirement : $CvTr54 + 2.5\,\Delta CvTr54SC < 10°C$.

(Where CvTr54: Transition temperature at absorbed energy of 54J of heat treated specimen. Δ CvTr54SC: Shift in 54J transition temperature due to step cooling).

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	250-300	200-250	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	100

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

CROMOTHERME-5

Codification :

AWS SFA 5.5	E8018-B6
EN ISO 3580-A	E CrMo5 B 4 2



Characteristics & Applications :

Low hydrogen, iron powder electrode producing a weld deposit containing 5%Cr - 0.5%Mo, which has excellent creep resistance at elevated temperatures up to 550°C. Typical applications include welding of 4-6%Cr steels in oil refinery, chemical plant and equipment.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Mo	S	P
Typical	0.06	0.90	0.40	5.20	0.50	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Creep Strength at 550°C (1% offset in 10,000 hrs) (MPa)
				RT	
Typical	614	505	22	60	70

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	240-300	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : BHEL, CE, EIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, low current and stringer beads.

Note : Low carbon version Cromotherme - 5L conforming to AWS : E8018-B6L is also available.

CROMOTHERME-5L

Codification :

AWS SFA 5.5	E8018-B6L
EN ISO 3580-A	ECrMo5 B 4 2 H5



Characteristics & Applications :

Low carbon, low hydrogen, iron powder producing a weld deposit containing 5%Cr – 0.5%Mo, which has excellent creep resistance at elevated temperatures up to 550°C. The weld metal displays excellent creep resistance with controlled hardness. The lower levels of carbon limit in weld metal ensuring higher ductility. Ideal for welding steels of similar composition. Typical applications include welding of 4-6%Cr steels in oil refinery, chemical plant and equipment.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Mo
Typical	0.040	0.90	0.40	0.020	0.020	5.20	0.50

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				RT
Typical	580	490	24	60

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	240-300	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE.

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour, as per our standard recommended practice.
2. Use short arc and stringer bead.

CROMOTHERME-5(MOD)

Codification :

AWS SFA 5.5	E8018-B6
EN ISO 3580-A	E CrMo5 B 4 2 H5



Characteristics & Applications :

Cromotherme-5(MOD) is a basic coated, low hydrogen type electrode depositing a weld metal with 5%Cr-0.5%Mo ideally suited for welding of creep resisting steels of similar composition where superior notch toughness required at sub-zero temperatures. The weld metal possesses excellent creep properties up to 550°C. Typical applications include welding of 5%Cr-0.5$Mo steels in oil refinery, chemical plant, and equipments. Specifically applicable wherever prolonged heat treatments are involved.

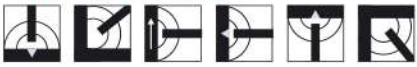
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Mo	S	P+Sn
Typical	0.06	0.90	0.40	5.20	0.50	0.007	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Creep Strength at 550°C (1% offset in 10,000 hrs) (Mpa)
				- 0°C	
Typical	614	505	24	35	70

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	30	50	75	100

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, low current and stringer beads.
   Note: Low carbon version Cromotherme-5L (MOD) conforming to AWS: E8018 B6L is also available.

CROMOTHERME-5L(MOD)

Codification :

AWS SFA 5.5	E8018-B6L



Characteristics & Applications :

Cromotherme-5L(MOD) is a basic coated, low carbon, low hydrogen type electrode depositing a weld metal with 5%Cr-0.5%Mo, ideally suited for welding of creep resisting steels of similar composition where superior notch toughness required at sub-zero temperatures. Typical applications include welding of 5%Cr-0.5%Mo steels in oil refinery, chemical plant, and equipments. Specifically applicable wherever prolonged heat treatments are involved.

Typical Chemical Composition Of All Weld Metal (%) :

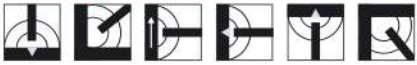
Element	C	Mn	Si	Cr	Mo	S	P+Sn
Typical	0.045	0.90	0.40	5.20	0.50	0.007	0.018

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 20°C
Typical	580	490	26	75

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	30	50	75	100

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, low current and stringer beads.

CROMOTHERME-5(15)MOD

Codification :

AWS SFA 5.5	E8015-B6



Characteristics & Applications :

It is low hydrogen electrode producing a weld deposit containing 5%Cr – 0.5%Mo, which has excellent creep resistance at elevated temperatures up to 550°C. The weld metal displays excellent creep resistance with controlled hardness. This electrode is used for welding creep resistant steel and cast steels of similar composition. Typical applications include steam boiler construction, welding of steam and super-heater piping, power plants, Oil refinery and chemical plants.

Typical Chemical Composition Of All Weld Metal (%) :

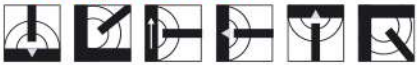
Element	C	Mn	Si	P	S	Cr	Mo
Typical	0.06	0.70	0.40	0.018	0.012	5.10	0.50

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 10°C
Typical	605	500	22	60

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	180-240	140-180	100-140	70-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour, as per our standard recommended practice.
2. Use short arc and stringer bead.

CROMOTHERME-9

Codification :

AWS SFA 5.5	E8018-B8
EN ISO 3580-A	E CrMo9 B 4 2



Characteristics & Applications :

Cromotherme-9 is a low hydrogen electrode yielding 9%Cr-1%Mo deposit having excellent creep strength up to 600°C and resistance to oxidizing atmospheres up to 700°C. Ideal for combating mineral oil attack at elevated temperatures. Applications include welding of 7% to 10%Cr - 1Mo steels.

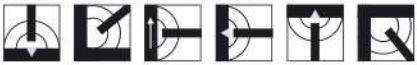
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	Cu
Typical	0.075	0.70	0.40	0.016	0.010	8.60	0.10	1.00	0.02	0.004	0.02

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				+ 20°C
PWHT : 740°C for 1Hr	620	518	25	-
PWHT : 760°C for 2Hr	610	510	26	110

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	280-350	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : BHEL, CE, CIB-MP, PDIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, low current and stringer beads.

CROMOTHERME-9L

Codification :

AWS SFA 5.5	E8018-B8L
EN ISO 3580-A	E CrMo9 B 4 2 H5



Characteristics & Applications :

A low hydrogen type electrode specially designed for welding of ferritic-martensitic chrome steels. The weld deposit contains low carbon 9%Cr-1%Mo air hardanable weld metal calls for suitable preheat and post weld heat treatment. Weld deposits are of radiographic quality. Typical applications include welding of A387 Gr.9 plate, A335 P9 pipe, A217 C12 castings, A213 T9 tubes, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni	Cr	Mo
Typical	0.04	0.60	0.45	0.021	0.020	0.10	9.50	1.00

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	574	485	24

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	280-350	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	25	35	55	75	125

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 01 hour.
2. Use short arc, low current and stringer beads.

CROMOTHERME-9(MOD)

Codification :

AWS SFA 5.5	E9018-B91
EN ISO 3580-A	E CrMo91 B 4 2 H5



Characteristics & Applications :

A low hydrogen, iron powder electrode depositing 9%Cr -1%Mo weld metal modified with Aluminium, Niobium, Vanadium and Nitrogen, designed to provide improved creep strength, toughness, fatigue life, oxidation and corrosion resistance at elevated temperatures. It is designed to weld the materials in power plant and refineries. Following are some of the steels that can be welded with this electrode. I) Plate: A 387 Gr. 91 (II) Pipes: A 335 - P91 (III) Tubes: A 213 - T91

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Cu	Al
Typical	0.10	0.65	0.25	0.007	0.008	9.00	0.45	1.00	0.20	0.06	0.03	0.02	0.02

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 760°C FOR 2 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	Hardness (HV)	CVN Impact Strength (J)
					+ 20°C
Typical	685	575	19	220	60

Diffusible Hydrogen Content: 5 ml / 100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	160-220	130-160	90-120	60-90
Qty (Pcs/Carton)	30	50	75	100

Approvals : CE, CIB-MP

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, low current and stringer beads.

CROMOTHERME-9(15)

Codification :

AWS SFA 5.5	E8015-B8



Characteristics & Applications :

A low hydrogen electrode yielding 9%Cr - 1%Mo deposit having excellent creep strength up to 600°C and resistance to oxidising atmospheres up to 700°C. It is used for welding similar composition plates, pipes, forging and tubes. Typical applications include welding of A387 Gr.9 plate, A335 P9 pipe, A217 C12 castings, A213 T9 tubes etc.

Typical Chemical Composition Of All Weld Metal (%) :

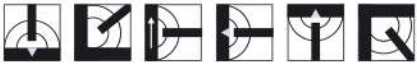
Element	C	Mn	Si	S	P	Cr	Mo
Typical	0.06	0.60	0.40	0.020	0.023	9.10	1.00

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	580	490	21

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer bead.

CROMOTHERME-9M

Codification :

AWS SFA 5.5	E8018-B8



Characteristics & Applications :

Cromotherme-9M is a basic coated, low hydrogen electrode for depositing 9%Cr -1%Mo weld metal. The weld metal is resistant to oxidizing atmospheres up to about 700°C. It is used for welding similar composition plates, pipes, forging and tubes where sub zero impact properties are required. Typical applications include welding of A387 Gr.9 plate, A335 P9 pipe, A217 C12 castings, A213 T9 tubes, etc.

Typical Chemical Composition Of All Weld Metal (%):

Element	C	Mn	Si	P	S	Cr	Mo
Typical	0.06	0.60	0.20	0.012	0.010	9.10	1.00

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				- 10°C
Typical	570	480	24	50

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer bead.

CROMOTHERME-12

Codification :

EN ISO 3580-A	E CrMoWV12 B42



Characteristics & Applications :

Cromotherme-12 is a lime-fluoride type electrode yielding a deposit containing 11%Cr - 0.5%Ni -1.0%Mo -0.3%V -0.5%W. The weld metal has excellent creep and oxidation resistant properties up to 700°C. The electrode is used for welding creep resistant 12%Cr steels in turbines, steam boilers and chemical plant, where operating temperatures of the order of 600°C are encountered. Following are some of the creep-resistant steels that can be welded.

DIN: X 20 Cr Mo 12 1, X 22 Cr Mo V 12 1 , X 20 Cr Mo W V 12 1, G X 22 Cr Mo MV 12 1

Typical Chemical Composition Of All Weld Metal (%) :

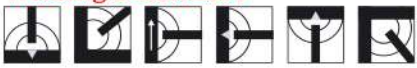
Element	C	Mn	Si	S	P	Cr	Mo	Ni	V	W
Typical	0.18	0.90	0.40	0.020	0.020	11.0	1.00	0.50	0.30	0.50

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C - 780°C FOR 2 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				+20°C
Typical	730	660	18	50

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-220	140-180	100-140	70-90
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc and stringer bead.

CROMOTHERME-23

Codification :

AWS SFA 5.5	E9015-B23



Characteristics & Applications :

Cromotherme-23 is a basic coated, low hydrogen type electrode depositing a weld metal of having less impurities i.e. S, P will improve the impact property at subzero temperatures. It is ideally suited for welding of creep resisting steels of similar composition. The weld deposit has excellent creep resistance at service temperatures up to 550°C. Typical applications include welding of P23 steels wherever prolonged heat treatment cycles are involved.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Al	W	Cu	B
Typical	0.06	0.7	0.3	0.01	0.007	2.2	0.3	0.2	0.2	0.03	0.03	0.02	1.8	0.10	0.004

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 2 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				0°C
Typical	640	550	22	40

Hot Tensile

Temperature	500°C	550°C	580°C
UTS (MPa)	416	374	345
0.2% PS (MPa)	380	367	304
% EI (L = 4d)	11	19	22

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	35	55	75	100

Approvals : Adani Infra, Reliance (SASAN Power)

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 01 hour.
2. Use short arc, low current and stringer beads.

CROMOTHERME-24

Codification :

AWS SFA 5.5	E9015-B24



Characteristics & Applications :

A stable and steady arc which is easy to strike and re-strike. Easy slag removal and finely rippled smooth beads. Weld metal of having lesser impurities i.e. S, P will improve the subzero impact property. The electrode is used for welding similar composition materials and SA-182, F22V SA-336, F22V & SA-541, 22V. Specially applicable wherever prolonged heat treatments cycles are involved. Basically it is used for fabricating desulphurization reactors, heavy section pressure vessels having similar composition.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Al	Ti	Cu	B
Typical	0.06	0.7	0.30	0.012	0.007	2.2	0.3	1.0	0.2	0.03	0.04	0.02	0.05	0.1	0.004

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 740°C FOR 2 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	640	550	22

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	180-240	140-180	100-130	70-100
Qty (Pcs/Carton)	35	55	75	100

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

CROMOTHERME-91

Codification :

AWS SFA 5.5	E9015-B91
EN ISO 3580-A	E CrMo91 B 4 2



Characteristics & Applications :

Cromotherme-91 is 9%Cr-1%Mo, non-synthetic, low hydrogen electrode modified with Aluminium, Niobium, Vanadium and Nitrogen designed to provide improved creep strength, toughness, fatigue life, oxidation and corrosion resistance at elevated temperatures. It is designed to weld the materials in power plant and refineries. Following are some of the steels that can be welded with this electrode.

• Pate:A387Gr.91 • Pipes:A335-P91 • Tubes: A 213 - T91

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Cu	Al
Typical	0.10	0.65	0.25	0.007	0.008	9.00	0.45	1.00	0.20	0.06	0.03	0.02	0.02

Typical Mechanical Properties Of All Weld Metal :

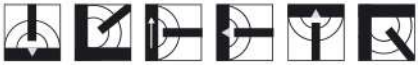
(PWHT: 760°C FOR 2 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J) - 29°C	Hardness (HV)
Typical	690	580	19	60	205

Creep Properties : Completed 40119 Hours at 600°C/100 MPa.

Diffusible Hydrogen Content : 4 ml/100 gms of weld metal Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	170-230	130-170	80-120	60-80
Qty (Pcs/Carton)	30	50	75	100

Approvals : Adani Infra, BHEL, CE, CIB-MP, Reliance (SASAN Power)

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, minimize heat input.

CROMOTHERME-92

Codification :

AWS SFA 5.5	E9015-B92



Characteristics & Applications :

A low hydrogen non synthetic electrode deposits 9%Cr-0.5%Mo-1.7%W and enriched with Niobium, Vanadium and Nitrogen. Tungsten additions provides adequate creep rupture strength at higher steam pressures and temperatures. The controlled addition of alloying elements improves the toughness and weldability. It is designed to weld advanced materials, which are being used to improve thermal efficiency in power plant, refineries etc. Ideal for welding steels of similar composition to achieve adequate creep rupture strength. Some typical materials that are welded with this consumable are A213 T92, A335 P92, A387Gr 92, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Al	W	Cu	B
Typical	0.10	0.6	0.35	0.012	0.007	9.0	0.5	0.5	0.2	0.06	0.05	0.02	1.7	0.10	0.004

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 760°C FOR 2 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	Hardness (BHN)
Typical	690	580	19	225

Creep Properties : Creep Strength at 600°C/160MPa successfully completed for 20157 Hours and test still going on.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	160-220	120-160	90-120	70-100
Qty (Pcs/Carton)	30	50	75	100

Approvals : CIB-MP

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 01 hour.
2. Use short arc, low current and stringer beads.

CROMOTHERME-20Mo

Codification :

AWS SFA 5.5	E9018-G



Characteristics & Applications :

Cromotherme-20Mo is a low hydrogen iron power type electrode yielding a weld deposit containing 1.25%Cr-1.0%Mo-0.25%V. The electrode produces stable and steady arc, easy striking and re-striking. The slag is easily detachable. The welds are of radiographic quality. Ideal for welding Cr – Mo - V steels of similar compositions, filling up work on alloy castings of similar compositions e.g. GS17CrMoV510. The weld metal possesses excellent room temperature and elevated temperature properties.

Typical Chemical Composition Of All Weld Metal :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Typical	0.12	0.70	0.30	0.013	0.015	1.25	0.20	1.00	0.25

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				+20°C
Typical	720	620	21	50

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x450
Current Range (Amps)	180-240	140-180	100-140	70-100
Qty (Pcs/Carton)	35	55	75	100

Approvals : CIB-MP

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, stringer bead and smallest size of electrode possible.

SIA

Codification :

AWS SFA 5.4	E307-15 (Nearest)
IS 5206	E18.8 MnB20



Characteristics & Applications :

SIA is a basic coated multipurpose stainless steel electrode producing a weld metal of 18%Cr-9%Ni-5%Mn. The weld metal has excellent crack resistance and has good scaling resistance up to 850°C. Ideal for joining ferritic to austenitic steels, armour plates, austenitic manganese steels, heat resistant steels, dissimilar materials, for buffer layers etc.

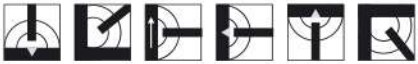
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.09	5.50	0.60	0.015	0.025	19.5	9.2

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	644	38.0

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	170-200	130-170	90-130	60-90
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CIB-MP

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current , short arc and stringer beads.

SIA (RUTILE)

Codification :

AWS SFA 5.4	E307-16 (Nearest)
IS 5206	E18.8Mn-R-26X



Characteristics & Applications :

SIA(Rutile) is an electrode depositing 18%Cr-8%Ni-5%Mn weld metal. Ideally suited for joining and surfacing applications to enhance resistance to impact and abrasion. Ideally suited for joining austenitic manganese steel to carbon steel, low alloy steel, etc. , and also for buffer layers on a variety of steels.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni
Typical	0.07	6.0	0.60	19.0	9.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	Hardness (As welded) (BHN)	Work Hardenss under impact (BHN)
Typical	614	35.0	200-220	500

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	190-240	140-190	90-130	60-100
Qty (Pcs/Carton)	25	40	60	80

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 200-250°C for 01 hour.
2. Use short arc and minimum heat input.

SIA-Mo



Characteristics & Applications :

SIA-Mo is a special stainless steel electrode depositing a stainless steel weld metal having 19%Cr-9%Ni-6%Mn-0.4%Mo. The weld metals highly crack resistant and its unique mechanical properties are maintained even when welding steels of different compositions. It is ideally suited for welding HSLA steels like armour steels etc. in cast or rolled forms. It is also useful for welding materials of similar composition, austenitic manganese steel and for producing stainless steel overlay for corrosion resistance, buffer layers for hard facing and work hardenable deposits.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.06	6.10	0.73	19.8	8.9	0.42	0.014	0.026

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	590	38

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	6x350	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	220-260	160-200	120-160	80-110	60-80
Weight/Carton (kgs)	3.0	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 200-250°C for 01 hour.
2. Use short arc, lowest current possible.

SIA (N)



Characteristics & Applications :

SIA (N) is a low-hydrogen type special stainless steel electrode depositing a stainless steel weld metal having 16%Cr-8%Ni-8%Mn-0.4%Mo-0.12%N. The weld metal highly crack resistant and it has got high strength and good toughness properties even at different temperatures. Nitrogen alloying in this weld metal increases wear resistance and satisfy galling resistant requirements. It is ideally suited for resisting wear in particle to metal & metal-to-metal applications. It is also useful for producing stainless steel overlay for corrosion resistance, surfacing layers for hardfacing and work hardenable deposits.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P	N	V	W	Cb	Cu
Typical	0.07	8.0	0.90	16.5	8.2	0.42	0.014	0.026	0.12	0.10	0.10	0.02	0.02

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	630	38

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	6x350	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	220-270	170-200	130-170	90-130	60-90
Weight/Carton (kgs)	3.0	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 200-250°C for 01 hour.
2. Use short arc, lowest current possible.

RUTOX-A

Codification :

AWS SFA 5.4	E308-16
IS 5206	E19.9 R16
EN ISO 3581-A	E 19 9R 3 2



Characteristics & Applications :

Rutox-A is a stainless steel electrode yielding a weld metal of 19%Cr-10%Ni. The weld metal displays good resistance to cracking, corrosion and scaling. Ideally suited for welding stainless steel materials of similar composition like AISI 301, 302, 304, 308, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.05	1.40	0.40	19.5	9.50	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	604	38

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Adani Infra, BHEL, CE, EIL, NPCIL, NTPC, PDIL

Precautions :

1. Use short arc, low current and minimum weaving.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

BATOX-A(ST)

Codification :

AWS SFA 5.4	E347-15
IS 5206	E 19.9 Nb B 20
EN ISO 3581-A	E 19 9 Nb B 2 2



Characteristics & Applications :

Batox-A(St) is a basic coated electrode depositing 18%Cr-10%Ni - Nb stabilized weld metal, suitable for joining of stainless steels of similar composition. It is ideal for welding of AISI 304, 304L, 321, 347 and their equivalents. The weld metal has excellent resistance to intergranular corrosion.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Nb
Typical	0.05	1.4	0.45	0.020	0.018	19.0	10.0	0.60

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	595	450	34

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

RUTOX-AH

Codification :

AWS SFA 5.4	E308H-16



Characteristics & Applications :

A stainless steel electrode depositing 19%Cr-10%Ni stainless steel weld metal with carbon in the range of 0.04%-0.08%. Weld metal possesses excellent crack resistance and displays good elevated temperature properties. Ideally suited for joining 18/8 stainless steels where the carbon content is in the range of 0.04-0.08 i.e. AISI 304H material.

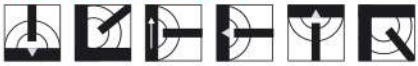
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.06	1.40	0.40	19.5	10.0	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	614	38

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, stringer bead and low current.
3. Avoid build- up of heat during welding.

RUTOX-AH(ST)

Codification :

AWS SFA 5.4	E347-16



Characteristics & Applications :

Rutox-AH(ST) is a stainless steel electrode producing 19%Cr-10%Ni-Nb stabilized welds. Weld metal has excellent resistance to inter granular corrosion. Ideal for joining and surfacing of 18%Cr-8%Ni stainless steel and clad steels of similar composition, 18%Cr-8%Ni cast steel and forged steel, Cladding carbon steel and low alloy steel, Steels conforming to AISI 304, 321, 347, 347H and their equivalents can be welded.

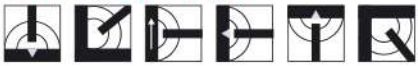
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Nb	S	P
Typical	0.07	1.40	0.45	19.0	10.0	0.60	0.018	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	600	33

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc length and stringer bead to reduce heat input.

RUTOX-A(N)



Characteristics & Applications :

Rutox-A(N) is a stainless steel electrode depositing 22%Cr-10%Ni-0.15%N weld metal. It is a special electrode producing stainless steel weld metal which has excellent operational characteristics. The weld metal has higher resistance to cracking, oxidation and scaling at elevated temperatures up to 1100°C. It is ideally suited for welding of stainless steels of similar composition like ASTM S30815 and equivalent, for overlays, surfacing and repairing castings.

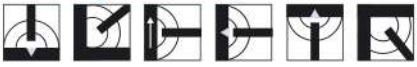
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	N
Typical	0.080	0.75	0.90	0.010	0.020	22.0	10.5	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)
			-20°C
Typical	680	38.0	60

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current, short arc and stringer bead.

RUTOX-B

Codification :

AWS SFA 5.4	E308L-16
IS 5206	E19.9L R16
EN ISO 3581-A	E 19 9 L R 3 2



Characteristics & Applications :

A semi-basic electrode producing an extra low carbon 19%Cr-10&Ni weld metal which has excellent resistance to intergranular corrosion. The weld metal has higher resistance to cracking, oxidation and scaling at elevated temperatures. Ideally suited for welding of stainless steels of similar composition like AISI 304L, 308L and their equivalents for overlays, surfacing applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.03	1.40	0.40	19.8	10.0	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	564	40

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Adani Infra, BHEL, CE, EIL, L&T Power, NPCIL, NTPC, PDIL

Precautions :

1 Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and low currents.

Note : Batox-B conforming to AWS E308L-15 is also available.

BATOX-B

Codification :

AWS SFA 5.4	E308L-15
IS 5206	E 19.9 L B 20



Characteristics & Applications :

Basic coated electrode depositing low carbon 19%Cr-10%Ni stainless steel weld metal which has excellent resistance to Intergranular Corrosion. The weld metal has higher resistance to cracking, oxidation, and scaling at elevated temperatures. It is ideally suited for welding of stainless steels of similar composition like 304L and equivalents, for overlays, surfacing, and repairing castings of similar materials.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni
Typical	0.03	1.40	0.40	0.020	0.020	19.8	10.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)	Lateral Expansion (mm)
			- 196°C	-196°C
Typical	565	40	45	0.50

Ferrite : Upto 4 FN.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, NPCIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer bead.

BATOX-D

Codification :

AWS SFA 5.4	E316L-15
IS 5206	E19.12.2 LB 20



Characteristics & Applications :

Batox-D is a basic coated stainless steel electrode depositing an extra low carbon 18%Cr-12%Ni-2.3%Mo stainless steel weld metal. The weld metal has excellent resistance to intergranular corrosion even at elevated temperatures. Ideally suited for welding stainless steels of similar composition.

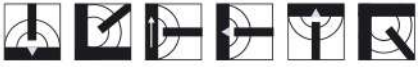
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.035	1.75	0.45	18.5	12.5	2.3	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	540	38

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Use short arc and stringer bead to restrict heat input.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

SECHERON 308L

Codification :

AWS SFA 5.4	E308L-16 (Nearest)



Characteristics & Applications :

Secheron 308L is stainless steel electrode for welding SS304, SS308 and its low carbon versions. The weld deposit displays good corrosion and crack resistance. It meets customer requirements economically. It works well with transformer having low OCV also with good re-striking characteristic. It has no red hot tendency within current range specified and no porosity. It is ideally suited for joining 18-8 stainless steels like AISI 304, 308 and its low carbon versions, etc. and their equivalent grades in cast variety. It is specially recommended for welding lower diameter pipes with 1 mm to 3 mm wall thickness / 1 mm to 3 mm thick plates used in stainless steel furniture, stairs and general fabrication.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni
Typical	0.045	0.80	0.75	0.040	0.020	18.5	8.9

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	560	38

Advantage : Electrodes are Vacumm packed.
This electrode can also be made available in moisture resistant vacuum packed cartons, which can be used without redrying.

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.0	2.0	2.0	2.0

Precautions :

1 Ensure the electrodes are dry. Re-dry the electrodes at 325-350°C for 01 hour.
2 Use low current, short arc and stringer beads.

CRONITHERME-25/12

Codification :

AWS SFA 5.4	E309-16
IS 5206	E23.12R16
EN ISO 3581-A	E (22 12) R 3 2



Characteristics & Applications :

A 25%Cr-12%Ni electrode producing high strength stainless steel weld metal having good oxidation resistance up to 1100°C. The weld metal possesses excellent resistance to corrosion and oxidation. Ideal for welding 18/8 type steels to mild steels, clad side of 18/8 clad steels, lining of 12%Cr steels on mild steels, overlays of ferritic steels, dissimilar steels and difficult to weld steels.

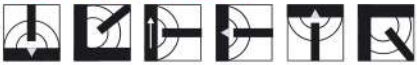
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.06	1.80	0.50	23.5	12.5	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	594	36

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE, CIB-MP, BHEL, EIL, NPCIL, NTPC, PDIL

Precautions :

1. Use lowest possible current, short arc and stringer bead.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

Note : D&H 309-15 conforming to AWS E309-15 is also available.

D&H 307

Codification :

AWS SFA 5.4	E307-16



Characteristics & Applications :

D&H 307 is a special electrode depositing a stainless steel weld metal having 20%Cr-10%Ni-4.0%Mn-1.0%Mo. The weld metal possess high crack resistant with moderate strength. It is ideally suited for moderate strength welds with good crack resistance between dissimilar steels such as austenitic manganese steel and carbon steel forgings or castings.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.060	4.0	0.60	0.014	0.026	20.0	10.0	1.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	600	35

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	170-200	130-170	90-130	60-90
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current, short arc and stringer beads.

D&H 307-15

Codification :

AWS SFA 5.4	E307-15



Characteristics & Applications :

D&H 307-15 is a basic coated electrode depositing a stainless steel weld metal having 20%Cr-10%Ni-4.0%Mn-1.0%Mo. The weld metal possess high crack resistant with moderate strength. It is ideally suited for moderate strength welds with good crack resistance between dissimilar steels such as austenitic manganese steel and carbon steel forgings or castings.

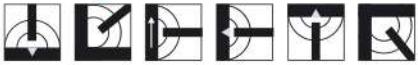
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.05	4.0	0.60	0.014	0.026	20.0	10.0	1.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	620	35

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	170-200	130-170	90-130	60-90
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BV

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, lowest current possible

D&H 307-17

Codification :

AWS SFA 5.4	E307-17



Characteristics & Applications :

D&H 307-17 is a special electrode depositing a stainless steel weld metal, which possess high crack resistant with moderate strength. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. It is ideally suited for moderate strength welds with good crack resistance between dissimilar steels such as austenitic manganese steel and carbon steel forgings or castings.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.060	4.0	0.80	0.014	0.026	20.0	10.0	1.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	600	35

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 308L-17

Codification :

AWS SFA 5.4	E308L-17



Characteristics & Applications :

D&H 308L-17 is a stainless steel electrode for welding SS304, SS308 and its low carbon versions. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The weld deposit displays good corrosion and crack resistance. It is ideally suited for joining 18-8 stainless steels like AISI 304, 308 and its low carbon versions, etc. and their equivalent grades in cast variety.

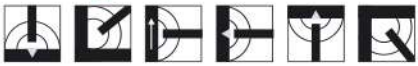
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.03	1.00	0.80	19.0	10.0	0.020	0.030

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	560	38

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 308Mo-17

Codification :

AWS SFA 5.4	E308Mo-17



Characteristics & Applications :

D&H 308Mo-17 is a stainless steel electrode, deposited weld metal displays good resistance to cracking, corrosion & scaling. Electrode works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. It is ideally recommended for welding ASTM CF8M stainless steel castings. It is also used for welding wrought materials such as type 316 stainless when increased ferrite is desired.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.06	1.50	0.70	20.0	9.5	2.5	0.020	0.022

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	580	37

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 308H-17

Codification :

AWS SFA 5.4	E308H-17



Characteristics & Applications :

D&H 308H-17 is a stainless steel electrode depositing 19%Cr-10%Ni stainless steel weld metal with carbon in the range of 0.04%-0.08% It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. Weld metal possesses excellent crack resistance and displays good elevated temperature properties. Ideally suited for joining 18/8 stainless steels where the carbon content is in the range of 0.04%-0.08% i.e. AISI 304H material.

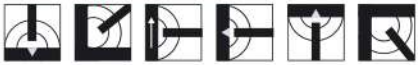
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.06	1.40	0.80	19.5	10.0	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	614	38

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use short arc, stringer bead and low current.
3. Avoid build-up of heat during welding.

D&H 309-15

Codification :

AWS SFA 5.4	E309-15
SI 5206	E 23.12 B 20



Characteristics & Applications :

D&H 309-15 is a basic coated electrode, yielding 25%Cr-12%Ni weld metal. Electrode is producing high strength stainless steel weld metal having good oxidation resistance up to 1100°C. The weld metal possesses excellent resistance to corrosion and oxidation. Ideal for welding 18/8 type steels to mild steels, clad side of 18/8 clad steels, lining of 12%Cr steels on mild steels, overlays of ferritic steels, dissimilar steels and difficult to weld steels.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.06	1.80	0.50	0.020	0.020	23.5	12.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	595	36

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Use low current, short arc length and minimum weaving.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

D&H 309H

Codification :

AWS SFA 5.4	E309H-16



Characteristics & Applications :

D&H 309H electrode is produces high crack resistant weld metal having good resistance to corrosion, high strength stainless steel weld metal having good oxidation resistance up to 1100°C. It is ideally suited for welding similar alloys in wrought or cast form. It can also used for welding dissimilar metals, such as joining SS304H to carbon steel, welding the clad side of SS304H clad steels, and applying stainless steel sheet lining to carbon steel shells.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.08	1.70	0.50	23.5	12.5	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	610	32

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Use lowest possible current, short arc and stringer bead.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

D&H 309L

Codification :

AWS SFA 5.4	E309L-16
IS 5206	E23.12L R16
EN ISO 3581-A	E (23 12L) R 3 2



Characteristics & Applications :

D&H 309L is a stainless steel electrode depositing an extra low carbon 24%Cr-12%Ni weld metal. The weld metal has excellent mechanical properties and possesses good oxidation and scaling resistance at elevated temperatures. Ideally suited for welding stainless steels, wrought and cast materials of similar composition, welding of 18/8 type stainless steels to carbon steels for buffer layers, for welding clad side of 18/8 clad stainless steels, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.03	1.60	0.50	23.6	12.80	0.020	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	576	38

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Adani Infra, BV, BHEL, CE, EIL, L&T Power, NPCIL, NTPC

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer bead.

Note : D&H 309L-15 conforming to AWS E309L-15 is also available.

D&H 309L-15

Codification :

AWS SFA 5.4	E309L-15
IS 5206	E 23.12L B 20



Characteristics & Applications :

Basic coated electrode, yielding an extra low carbon 24%Cr-12%Ni weld metal. The weld metal has excellent mechanical properties and possesses good oxidation and scaling resistance at elevated temperatures. Ideally suited for welding stainless steels, wrought and cast materials of similar composition, welding of 18/8 type stainless steels to carbon steels for buffer layers, for welding clad side of 18/8 clad stainless steels, etc.

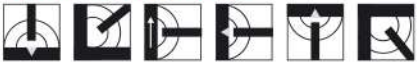
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.03	1.60	0.50	0.020	0.020	23.5	12.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	582	38

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer bead.

D&H 309L-17

Codification :

AWS SFA 5.4	E309L-17



Characteristics & Applications :

D&H 309L-17 is a stainless steel electrode depositing an extra low carbon 23%Cr-13%Ni weld metal. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The weld metal has excellent mechanical properties and possesses good oxidation and scaling resistance at elevated temperatures. Ideally suited for welding stainless steels, wrought and cast materials of similar composition, welding of 18/8 type stainless steels to carbon steels for buffer layers, for welding clad side of 18/8 clad stainless steels, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.03	1.00	0.80	23.0	13.0	0.020	0.030

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	560	38

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 309LMo

Codification :

AWS SFA 5.4	E309LMo-16
IS 5206	E 23.12.2LR26
EN ISO 3581-A	E(23 12 2L) R 3 2



Characteristics & Applications :

D&H 309LMo is a stainless steel electrode yielding a weld deposit of low carbon 25%Cr-12%Ni-2.5%Mo, which has good oxidation resistance up to 1050°C. It is ideally suited for welding wrought and cast stainless steel of similar composition, for overlay applications to resist heat and corrosion, overlays on ferritic steels, buffer layers, for joining dissimilar steels such as 18-11-Mo steel to mild steel, etc.

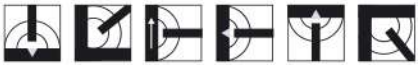
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.030	1.80	0.50	0.020	0.022	23.5	13.0	2.4

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	580	35

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-150	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer bead.

SECHERON 309L

Codification :

AWS SFA 5.4	E309L-16
EN ISO 3581-A	E (23 12 L) R 3 2



Characteristics & Applications :

Stainless steel electrode for welding of similar and dissimilar steels. The weld deposit displays good corrosion, scaling resistance and crack resistance. It meets customer requirements economically. It is ideally suited for welding similar alloys in wrought or cast form. It can also used for welding dissimilar metals, such as joining SS304L to carbon. steel, welding the clad side of SS304L clad steels, and applying stainless steel sheet lining to carbon steel shells.

Typical Chemical Composition Of All Weld Metal (%) :

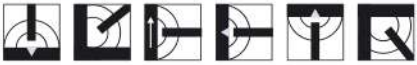
Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.035	0.80	0.80	23.0	12.5	0.022	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	550	35

Advantage : Electrodes are Vacumm packed.
This electrode can also be made available in moisture resistant vacuum packed cartons, which can be used without redrying.

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.0	2.0	2.0	2.0

Approvals : CE

Precautions :

1 Re-dry the electrodes at 325-350°C for 01 hour.
2 Use short arc, stringer beads and low currents.

D&H 309Cb-15

Codification :

AWS SFA 5.4	E309Nb-15
IS 5206	E 23.12Nb B 20
EN ISO 3581-A	E (23 12 Nb) B 2 2



Characteristics & Applications :

D&H 309Cb-15 is a basic coated electrode, depositing a 25%Cr-12%Ni-Niobium stabilized stainless steel weld metal. It is ideally suited for welding stabilized and un-stabilized steels to mild steels, welding the clad side of 18-8 or 18-8-Nb clad steels, overlays on ferritic steels, etc.

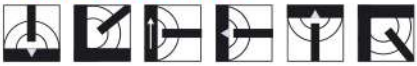
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Nb
Typical	0.07	1.50	0.50	0.020	0.020	23.5	12.5	0.80

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	620	33

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

D&H 309Mo

Codification :

AWS SFA 5.4	E309Mo-16
IS 5206	E23.12.2 R16
EN ISO 3581-B	ES 309Mo-16



Characteristics & Applications :

D&H 309 Mo is a stainless steel electrode yielding a weld deposit of 25%Cr-12%Ni-2.5%Mo, which has good oxidation resistance up to 1050°C. Ideally suited for welding 18-11-Mo type steels to mild steel, welding the clad side of 18-11-Mo clad steels, overlays on ferritic steels, buffer layers, etc.

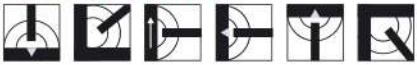
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.05	1.80	0.50	23.50	13.0	2.4	0.020	0.022

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	614	33

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Adani Infra, CE, EIL, PDIL

Precautions :

1. Arc should be as short as possible and welding current should not be too high.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

Note: D&H 309 Mo-15 conforming to AWS E309 Mo-15 is also available.

D&H 309Mo-15

Codification :

AWS SFA 5.4	E309Mo-15
IS 5206	E 23.12.2 B 20



Characteristics & Applications :

D&H 309Mo-15 is a basic coated stainless steel electrode yielding a weld deposit of 25%Cr-12%Ni-2.5%Mo, which has good oxidation resistance up to 1050°C. Ideally suited for welding 18-11-Mo type steels to mild steel, welding the clad side of 18-11-Mo clad steels, overlays on ferritic steels, buffer layers, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.05	1.80	0.50	0.020	0.022	23.5	13.0	2.4

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	620	33

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, stringer bead and low currents.

D& H 309LMo

Codification :

AWS SFA 5.4	E309LMo-16
IS 5206	E 23.12.2LR26
EN ISO 3581-A	E(23 12 2L) R 3 2



Characteristics & Applications :

D&H 309LMo is a stainless steel electrode yielding a weld deposit of low carbon 25%Cr-12%Ni-2.5%Mo, which has good oxidation resistance up to 1050°C. It is ideally suited for welding wrought and cast stainless steel of similar composition, for overlay applications to resist heat and corrosion, overlays on ferritic steels, buffer layers, for joining dissimilar steels such as 18-11-Mo steel to mild steel, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.030	1.80	0.50	0.020	0.022	23.5	13.0	2.4

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	580	35

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and stringer bead.

D&H 310-15

Codification :

AWS SFA 5.4	E310-15
IS 5206	E25.20 B20



Characteristics & Applications :

D&H 310-15 is a basic coated 25%Cr-20%Ni type electrode for welding steels of similar composition. The weld metal has excellent resistance to oxidation and scaling up to 1200°C. The electrode is also suitable for welding of hardenable steels, clad steels, C-Mo, Cr-Mo steels where pre-heat and post weld heat treatment are not feasible.

Typical Chemical Composition Of All Weld Metal :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.17	2.40	0.50	25.8	21.0	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	605	34

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Use low current, short arc length and minimum weaving.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

D&H 310-16

Codification :

AWS SFA 5.4	E310-16
IS 5206	E25.20R16
EN ISO 3581-B	E 25 20 R 3 2



Characteristics & Applications :

D&H 310-16 is a 25%Cr - 20%Ni type electrode for welding steels of similar composition. The weld metal has excellent resistance to oxidation and scaling up to 1200°C. The electrode is also suitable for welding of hardenable steels, clad steels, C-Mo, Cr-Mo steels where pre-heat and post weld heat treatment are not feasible.

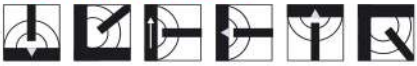
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.17	2.40	0.50	25.8	21.0	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	604	32

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, CE, CIB-MP, PDIL

Precautions :

1. Use low current, short arc length and minimum weaving.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

Note : A high carbon version containing 0.4C D&H 310HC conforming to AWS E310H-16 is also available for welding similar composition alloys like HK40, Thermalloy 47, etc.

SECHERON 310L

Codification :

AWS SFA 5.4	E310L-16(Mod)



Characteristics & Applications :

Secheron 310L is a special electrode depositing 25%Cr-20%Ni with low carbon & low impurity content in weld metal. A soft & smooth arc which is easy to strike & re-strike. Better welder appeal with easy slag detachability. Provide weld metal of X-ray Quality. The weld metal has got excellent corrosion resistance to corrosion in nitric acid, inter granular corrosion & pitting. Due to its excellent corrosion resistance used for heat exchanger tube & pipe in process that treat in nitric acid, acrylic fibers, ammonium nitrate & processing of nuclear reactor fuel.

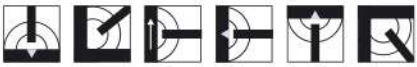
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.05 Max	0.50-2.50	0.75 Max	0.015 Max	0.035 Max	25.0-28.0	20.0-22.5	0.25 Max	0.25 Max

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	610	250	35

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

BATOX-310H

Codification :

AWS: SFA 5.4	E310H-15



Characteristics & Applications :

Batox-310H is a Basic Coated Stainless- steel electrode depositing 0.4%C-25%Cr-20%Ni weld metal. Having Good operating characteristics. It's a fully austenitic stainless steel weld metal with controlled impurity element. The weld metal possesses excellent mechanical properties and resists scaling at high temperatures up to 1200°C. It is Ideal for welding similar stainless steels in wrought and cast form like HK- 40, Thermalloy 47 etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.40	2.40	0.50	0.020	0.020	27.2	20.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	650	13.5

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use lowest size of electrode possible and low current.
3. Use short arc and keep inter-pass temperature minimum.

BATOX-310LMoN

Codification :

EN ISO: 3581	E 25 22 2 N L B



Characteristics & Applications :

It is a basic coated type of electrode that produces low carbon, low silicon and high manganese stainless steel weld to ensure free from micro-fissures. It is a fully austenitic stainless steel that does not have intermetallic phases such as intergranular carbideprecipitations. The nitrogen in the weld metal helps to stabilize and strengthen theaustenitic phase. The weld metal provides improved corrosion-resistance in nitric acid environment and urea carbamate environments such as high-pressure strippers. Typical applications of the welds are in the production and processing of urea and sulphuric acid.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	N	Cu
Typical	0.03	4.0	0.4	0.020	0.005	25.0	22.0	2.20	0.15	0.05

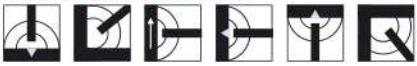
Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Hardness (BHN)
			-50°C	
Typical	580	32	50	143-160

Corrosion Properties Of All Weld Metal :

Corrosion Rate as per ASTM A262 Practice-C: 22.0 mils/year Max.

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use short arc, low current and stringer beads.

D&H 310HC

Codification :

AWS SFA 5.4	E310H-16



Characteristics & Applications :

Stainless steel electrode depositing 0.4%C-25%Cr-20%Ni weld metal. Excellent operating characteristics. Fully austenitic stainless steel weld metal. Weld metal possesses excellent mechanical properties and resists scaling at high temperatures up to 1200°C. Ideal for welding similar stainless steels in wrought and cast form like HK-40, Thermalloy 47 etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.40	2.40	0.50	0.020	0.020	26.8	21.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	640	12

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use lowest size of electrode possible and low current.
3. Use short arc and keep inter-pass temperature minimum.

D&H 310Mo

Codification :

AWS SFA 5.4	E310Mo-16
EN ISO 3581-B	ES 310Mo-16



Characteristics & Applications :

A stainless steel electrode depositing 25%Cr-20%Ni-2.5%Mo weld metal. It possesses excellent mechanical properties and resists at high temperatures. The electrode is suitable for welding of heat resisting castings, type 316 clad steels and overlay of carbon steels.

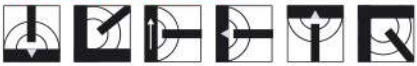
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.06	2.10	0.50	0.015	0.020	26.8	20.5	2.4

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	600	32

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current short arc and minimum weaving.

D&H 310Mo-17

Codification :

AWS SFA 5.4	E310Mo-17



Characteristics & Applications :

D&H 310Mo-17 is a stainless steel electrode depositing weld metal, which possesses excellent mechanical properties and resists at high temperatures. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The electrode is suitable for welding of heat resisting castings, type 316 clad steels and overlay of carbon steels.

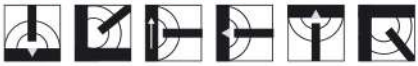
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.06	2.10	0.60	0.015	0.020	26.8	20.5	2.4

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	600	32

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 312

Codification :

AWS SFA 5.4	E312-16
EN ISO 3581-A	E 29 9 R 3 2



Characteristics & Applications :

D&H 312 is a rutile type electrode which can be considered as outstanding by virtue of its excellent performance, characteristics and weld metal of controlled chemical composition. The weld metal is highly resistant to crack and fissures. These electrodes were designed to weld cast alloys of similar composition. The typical application include, welding dissimilar metals, unknown metals, leaf and coil springs, gear teeth, forged shafts, earth moving equipment and machine parts.

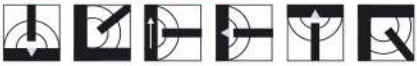
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.08	1.40	0.55	28.8	10.10	0.012	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	832	24

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE, Ordnance Factory

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current short arc and minimum weaving.

D&H 312-17

Codification :

AWS SFA 5.4	E312-17



Characteristics & Applications :

D&H 312-17 is a stainless steel electrode for welding similar composition and dissimilar metals. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The weld metal is highly resistant to crack and fissures. These electrodes were designed to weld cast alloys of similar composition. The typical application include, welding dissimilar metals, unknown metals, leaf and coil springs, gear teeth, forged shafts, earth moving equipment and machine parts.

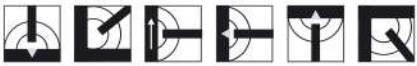
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.08	1.40	0.65	30.0	9.0	0.018	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	750	25

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 316L-17

Codification :

AWS SFA 5.4	E316L-17



Characteristics & Applications :

D&H 316L-17 electrode is low carbon deposits increase the resistance to intergranular corrosion. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. It is ideally suited for Joining AISI 316L and its equivalent materials in a number of industries like rayon, dye, paper, chemical, fertilizer, petrochemicals etc. It is suitable for surfacing, overlay applications & clad steels.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.035	1.50	0.90	18.5	12.5	2.50	0.010	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	560	40

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 317-17

Codification :

AWS SFA 5.4	E317-17



Characteristics & Applications :

D&H 317-17 is a stainless steel electrode for welding steels of similar composition. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. It is ideally suited for welding stainless steels of similar composition and AISI316L varieties and their equivalents.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.05	1.60	0.65	19.0	13.0	3.50	0.018	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	604	36

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 318-17

Codification :

AWS SFA 5.4	E318-17



Characteristics & Applications :

D&H 318-17 is a stainless steel electrode for welding steels of similar composition. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The weld metal possesses good resistance to pitting corrosion, intergranular corrosion and improved creep strength.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	Nb	S	P
Typical	0.05	1.50	0.80	18.5	12.0	2.30	0.60	0.015	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	620	35

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2hours.
2. Use low current short arc and minimum weaving.

D&H 320

Codification :

AWS SFA 5.4	E320-16
EN ISO 3581-A	E Z R 3 2



Characteristics & Applications :

D&H 320 is a rutile type non-synthetic all position electrode depositing 20%Cr-35%Ni-2.5%Mo-3.5%Cu-Nb weld metal. The weld metal has excellent resistance to oxidation and scaling at 1200°C continuous service. Quiet and stable arc. Less spatter loss good bead appearance with equal ripples. It is primarily used to weld base metals of similar composition for applications where resistance to severe corrosion is required for a wide range of chemicals including sulfuric and sulfurous acid and their salts. These electrodes can be used to weld both castings and wrought alloys of similar composition without post weld heat treatment. The typical applications include HV-9A stainless steel, for fabricating carpenter 20 stainless steels etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Nb+Ta
Typical	0.05	1.20	0.40	0.020	0.020	20.5	35.0	2.50	3.5	0.55

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	590	33

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, stringer bead, and smallest possible size of electrode and min. current to reduce the heat input.

Note : D&H 320-15 conforming to AWS E320-15 is also available.

D&H 320LR

Codification :

AWS SFA 5.4	E320LR-16
EN ISO 3581-A	E Z R 3 2



Characteristics & Applications :

D&H 320LR is a non-synthetic all position electrode depositing 20%Cr-35%Ni-2.5%Mo-3.5%Cu-Nb weld metal. The elements C, Si, P and S maintained as low as possible and Nb & Mn are controlled to get better properties. The weld metal has excellent resistance to oxidation and scaling at 1200°C continuous service. Quiet and stable arc. Less spatter loss good bead appearance with equal ripples. The control on chemistry reduces the weld metal fissuring frequently encountered in fully austenitic stainless steel.It is primarily used to weld base metals of similar composition for applications where resistance to severe corrosion is required for a wide range of chemicals including sulfuric and sulfurous acid and their salts. These electrodes can be used to weld both castings and wrought alloys of similar composition without post weld heat treatment. The typical applications include HV-9A stainless steel, for fabricating carpenter 20 stainless steels etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Nb+Ta
Typical	0.020	1.60	0.25	0.011	0.013	20.5	34.0	2.50	3.5	0.35

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	590	37

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, stringer bead, and smallest possible size of electrode and min. current to reduce the heat input.

Note : D&H 320LR-15 conforming to AWS E320LR-15 is also available.

D&H 320LR-15

Codification :

AWS SFA 5.4	E320LR-15



Characteristics & Applications :

D&H 320LR-15 is a basic type non-synthetic all position electrode depositing low residuals 20%Cr-35%Ni-2.5%Mo-3.5%Cu-Nb weld metal. The elements C, Si, P and S maintained as low as possible and Nb & Mn are controlled to get better properties. The weld metal has excellent resistance to oxidation and scaling at 1200°C continuous service. Quiet and stable arc. Less spatter loss good bead appearance with equal ripples. The control on chemistry reduces the weld metal fissuring frequently encountered in fully austenitic stainless steel.D&H 320LR-15 is primarily used to weld base metals of similar composition for applications where resistance to severe corrosion is required for a wide range of chemicals including sulfuric and sulfurous acid and their salts. These electrodes can be used to weld both castings and wrought alloys of similar composition without post weld heat treatment. The typical applications include HV-9A stainless steel, for fabricating carpenter 20 stainless steels etc.

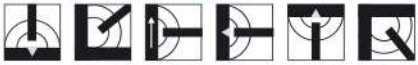
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Cb+Ta
Typical	0.020	1.60	0.25	0.011	0.013	20.5	34.0	2.50	3.5	0.35

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	590	37

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, stringer bead, and smallest possible size of electrode and min. current to reduce the heat input.

D&H 347-17

Codification :

AWS SFA 5.4	E347-17



Characteristics & Applications :

D&H 347-17 is an electrode depositing 19%Cr-10%Ni-Nb stabilized weld metal, suitable for joining of stainless steels of similar composition. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. Ideal for welding of AISI 304, 304L, 321, 347 and their equivalents.The weld metal has excellent resistance to intergranular corrosion.

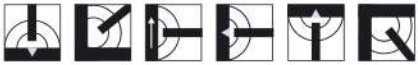
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Nb	S	P
Typical	0.06	1.40	0.80	19.0	10.0	0.60	0.020	0.030

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	590	34

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 383

Codification :

AWS SFA 5.4	E383-16
EN ISO 3581-B	ES 383-16



Characteristics & Applications :

Non-synthetic electrode depositing low carbon 28%Cr-31.5%Ni-3.7%Mo-1%Cu, fully austenitic weld metal. Weld metal exhibits excellent resistance to corrosion in non-oxidizing media like Sulfuric acid, Phosphoric acid, etc. The elements C, P and S are maintained at low levels to eliminate hot cracking & fissuring problems in weld metal. A soft and smooth arc, which is easy to strike and re-strike. Easy slag detachability and well-rippled weld beads. The weld metal is of radiographic quality. Ideally suited for welding stainless steels of similar composition and other equivalent grades of stainless steels.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	P	S	Cu
Typical	0.025	1.5	0.90	27.7	31.5	3.7	0.010	0.005	1.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	574	35

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use stringer beads, short arc and smallest possible size, which helps in reducing the heat input.

D&H 383-17

Codification :

AWS SFA 5.4	E383-17



Characteristics & Applications :

D&H 383-17 is a stainless steel electrode depositing fully austenitic weld metal. It exhibits excellent resistance to corrosion in non- oxidizing media like Sulfuric acid, Phosphoric acid, etc. It works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, prod uce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. Ideally suited for welding stainless steels of similar composition and other equivalent grades of stainless steels.

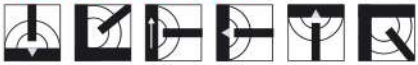
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	P	S	Cu
Typical	0.025	1.5	0.80	27.7	31.5	3.7	0.010	0.005	1.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	570	35

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 385

Codification :

AWS SFA 5.4	E385-16
EN ISO 3581-A	E 20 25 5 CuNL R 3 2



Characteristics & Applications :

D&H 385 is a non-synthetic rutile coated stainless steel electrode depositing a weld metal containing low carbon 20%Cr-25%Ni-5%Mo-2%Cu which exhibits excellent resistance to corrosion in non oxidizing media like sulfuric acid, phosphoric acid, acetic acid, formic lacid, fatty acids, oxalic acid etc. Soft and stable arc, which is easy to strike and re-strike. Low spatter. Smooth weld beads. Easy slag detachability. It is ideally suited for welding materials for application where phosphoric, sulfuric acids, and other non-oxidizing solutions are encountered. The addition of Mo and Cu in the weld metal helps in resisting corrosive attack of these solutions. It is particularly suited for welding Carpenter 20, HV9, HV9A, Uranus B6, UHB 904L, Sandvik 2RK65, and similar materials which are used for these service conditions.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Typical	0.030	2.0	0.40	20.0	24.0	4.4	1.80	0.012	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	545	32

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use stringer beads, short arc and smallest possible size, which helps in reducing the heat input.

D&H 385-17

Codification :

AWS SFA 5.4	E385-17



Characteristics & Applications :

D&H 385-17 is a stainless steel electrode, which exhibits excellent resistance to corrosion in non oxidizing media like sulfuric acid, phosphoric acid, acetic acid, formic acid, fatty acids, oxalic acid etc. It works well with transformer and good restriking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. It is particularly suited for welding Carpenter 20, HV9, HV9A, Uranus B6, UHB 904L, Sandvik 2RK65, and similar materials which are used for these service conditions.

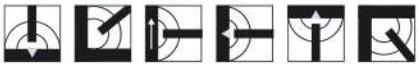
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	Cu	S	P
Typical	0.025	2.0	0.80	20.0	25.0	4.4	1.80	0.012	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	545	32

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 16/8/2

Codification :

AWS SFA 5.4	E16-8-2-16



Characteristics & Applications :

D&H 16/8/2 is a rutile coated, stainless steel electrode depositing 15.5% Cr 8.5% Ni 1.3% Mo stainless steel weld metal. Electrodes provide excellent operating characteristics with easy slag detachability. The lean composition of weld metal minimize the in-service formation of inter-metallic compound, excellent hot ductility properties which offer freedom from weld or crater cracking even under high-restraint conditions. This lean version weld metal is ideally suited for welding stainless steels, such as types 16-8-2, 304H, 316H and 347H for high pressure, high temperature piping systems, and catalytic cracker structures.

Typical Chemical Composition Of All Weld Metal (%) :

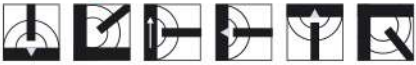
Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.05	1.20	0.52	0.015	0.020	15.5	8.5	1.3

Ferrite (As Welded) : 5.0 FN Max as per WRC 1992

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	590	38

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 350°C for 2 hours.
2. Use short arc, stringer bead, and smallest size of electrode, minimum current to ensure minimum heat input.

D&H 20/18/6 Cu



Characteristics & Applications :

D&H 20/18/6 Cu is a stainless steel electrode depositing an extra low carbon 20%Cr-18%Ni-6%Mo-0.7%Cu stainless steel weld metal. The weld metal has excellent resistance to pitting and crevice corrosion. Ideally suited for welding stainless steels of similar composition. Typical applications include casting repair, heat exchangers and pipelines for seawater contaminated oil and gas plant, pulp bleaching equipments. Suitable for welding S31254 material , CK3MCuN casting, A182 F44 material, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	Cu	S	P	N
Typical	0.035 Max	0.20-1.00	0.20-0.80	19.5-21.0	17.5-20.0	6.0-7.0	0.50-1.00	0.02 Max	0.03 Max	0.15-0.28

Typical Mechanical Properties Of All Weld Metal :

(Solution Annealing 1200-1250°C for 2 hours and WQ).

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)
			-50°C
Typical	710	38	80

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Use short arc and stringer bead to restrict heat input.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

D&H 145L



Characteristics & Applications :

D&H 145L is a special purpose stainless steel electrode depositing 24%Cr-9.5%Ni-2.3%Mo-1.5%Cu weld metal, which is highly corrosive service in fertilizer and chemical plants. It gives stable and smooth arc which is easy to strike and re-strike. It is ideally suited for welding steels of similar composition like HVD-1, CD4MCu, AFNOR Z-5, CNDU 21.08, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Typical	0.035	1.20	0.60	0.020	0.020	24.0	9.50	2.30	1.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	690	28

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current, short arc and stringer beads.

RUTOX-Mo

Codification :

AWS SFA 5.4	E316-16
IS 5206	E19.12.2R16
EN ISO 3581-B	E 19 12 2 R 3 2



Characteristics & Applications :

Rutox-Mo is a stainless steel electrode depositing a weld metal containing 18%Cr-11%Ni-2.3%Mo. The weld metal displays good crack resistance, excellent creep strength and resists scaling at elevated temperatures up to 850°C. The weld metal has excellent resistance to corrosion and pitting. Ideal for joining wrought and cast material of similar composition.

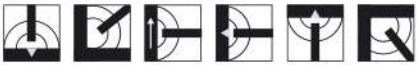
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.05	1.25	0.45	18.8	12.0	2.3	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	564	38

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Adani Infra, BHEL, CE, CIB-MP, EIL, NPCIL, NTPC, PDIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current, short arc length and avoid weaving of the electrodes.

Note : Batox-M oconforming to AWS E316-15 is also available.

RUTOX-Mo(H)

Codification :

AWS SFA 5.4	E316H-16



Characteristics & Applications :

A stainless steel electrode depositing an 18%Cr-12%Ni-2.5%Mo stainless steel weld metal with high carbon up to 0.08% Provides higher tensile and creep strengths at elevated temperatures. Good crack resistance and resistance to scaling up to 850°C Joining AISI 316H and its equivalent materials in a number of industries like rayon, dye, paper, chemical, fertilizer, petrochemicals, etc. Surfacing and overlay applications.

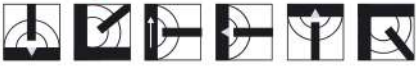
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.07	1.30	0.45	0.020	0.020	18.00	12.00	2.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	590	36

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2 Use short arc, stringer beads, and low currents.

BATOX-HP40Nb

Codification :

EN ISO 3581-A	EZ 25 35 Nb B 6 2



Characteristics & Applications :

Batox-HP40Nb is a basic coated electrode, specially designed to match heat resistant cast alloys. It is also suitable for the Nb free alloys and leaner high carbon Cr-Ni alloys such as HK40, HT40 and IN519. Weld metal is not prone to sigma phase embrittlement and the presence of eutectic and secondary carbides provide excellent hot strength and creep resistance in the typical service temperature up to 1150°C. Typical applications include pyrolysis coils and reformer tubes for ethylene production in the petrochemical industry.

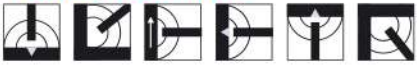
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P	Nb	Ti
Typical	0.40	1.60	1.0	25.0	35.0	0.015	0.018	1.2	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	710	510	12

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-200	100-150	70-110	60-90
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 2 hours.
2. Use short arc, stringer bead and low current.
3. Avoid build- up of heat during welding.

RUTOX-D

Codification :

AWS SFA 5.4	E316L-16
IS 5206	E19.12.3L R26
EN ISO 3581-A	E 19 12 3L R32



Characteristics & Applications :

Rutox-D is a stainless steel electrode depositing an extra low carbon 18%Cr - 12%Ni-2.7%Mo stainless steel weld metal. The weld metal has excellent resistance to intergranular corrosion even at elevated temperatures. Ideally suited for welding stainless steels of similar composition.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.035	1.75	0.45	18.5	12.5	2.7	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	535	38

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, CE, CIB-MP, EIL, L&T Power, NPCIL, PDIL

Precautions :

1. Use short arc and stringer bead to restrict heat input.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

BATOX-D

Codification :

AWS SFA 5.4	E316L-15
IS 5206	E19.12.2 LB 20



Characteristics & Applications :

Batox-D is a basic coated stainless steel electrode depositing an extra low carbon 18%Cr-12%Ni-2.3%Mo stainless steel weld metal. The weld metal has excellent resistance to intergranular corrosion even at elevated temperatures. Ideally suited for welding stainless steels of similar composition.

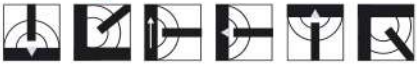
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.035	1.75	0.45	18.5	12.5	2.3	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	540	38

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Use short arc and stringer bead to restrict heat input.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

RUTOX-E

Codification :

AWS SFA 5.4	E317L-16
IS 5206	E19.12.3LR16
EN ISO 3581-A	E 19 13 4 N L R 3 2



Characteristics & Applications :

Rutox-E is a stainless steel electrode depositing an extra low carbon weld metal containing 18%Cr-12%Ni-3%Mo. It is ideally suited for welding stainless steels of similar composition and AISI316L varieties and their equivalents. The extra low carbon content ensures excellent corrosion resistance against sulphuric acids, phosphoric acids, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.035	1.60	0.46	19.0	12.2	3.20	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	604	36

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc length and stringer bead to reduce heat input.

RUTOX-F

Codification :

AWS SFA 5.4	E316L-16
IS 5206	E19.12.2L R16



Characteristics & Applications :

Rutox-F is a stainless steel electrode depositing a weld metal containing 18%Cr-13%Ni-2.3%Mo, which is unique in combination to produce a maximum ferrite content of 2FN in the weld metal. This extra low ferrite content ensures excellent corrosion resistance against severe corrosive media. Ideal for welding AISI 316L, 316 particularly when the weld metal ferrite content has to be controlled at a low level, as in the case of urea equipments.

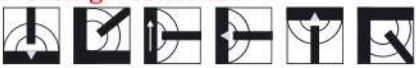
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.03	1.80	0.45	18.0	13.5	2.3	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)	Lateral Expansion (mm)
			- 196°C	- 196°C
Typical	545	38	27	0.42

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : PDIL

Precautions :

1. Use short arc and stringer bead to restrict heat input.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

Note : Batox-F conforming to AWS E316L-15 is also available.

BATOX-F

Codification :

AWS SFA 5.4	E316L-15



Characteristics & Applications :

Basic coated type electrode producing low carbon stainless steel weld, which has excellent to resistance to cracking even on heavy and restrained joints. It has exceptional quality in meeting stringent applications where sub zero temperatures properties are required. Balance Cr-Ni weld deposits with ferrite controlled below 2 FN ensure excellent resistance to the weld metal from formation of sigma phase, corrosion, oxidation and pitting at elevated temperatures. It is suitable for welding of AISI 316 and 316L, particularly when the ferrite in the weld deposit has to be controlled at a low level, as in the case of equipment for urea plant. The presence of Molybdenum enhances the corrosion resistance of the weld metal in reducing media as in urea service.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo
Typical	0.03	1.80	0.45	0.020	0.020	18.0	13.5	2.30

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)	Lateral Expansion (mm)
			- 196°C	- 196°C
Typical	580	35	32	0.5

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

SECHERON 316L

Codification :

AWS SFA 5.4	E316L-16
EN ISO 3581-A	E (19 12 3 L) R 3 2



Characteristics & Applications :

Stainless steel electrode for welding SS316 and its low carbon versions. The weld deposit displays good corrosion and crack resistance. It meets customer requirements economically. It is ideally suited for joining stainless steels like AISI 316 and its low carbon versions, etc. and their equivalent grades in cast variety.

Typical Chemical Composition Of All Weld Metal (%) :

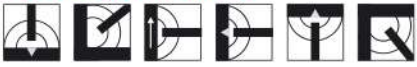
Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.035	0.80	0.80	18.2	12.1	2.2	0.018	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	530	35

Advantage : Electrodes are Vacumm packed.
This electrode can also be made available in moisture resistant vacuum packed cartons, which can be used without redrying.

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2	2	2	2

Approvals : CE

Precautions :

1 Re-dry the electrodes at 325-350°C for 01 hour.
2 Use short arc, stringer beads and low currents.

RUTOX-F(SPL)

Codification :

AWS SFA 5.4	E316L-16 (Nearest)



Characteristics & Applications :

Rutox-F(SPL) is a stainless steel electrode depositing zero ferrite weld metal which displays excellent resistance to corrosion particularly in urea service. The welds are of radiographic quality and possess excellent corrosion resistance. Ideally suited for welding AISI 316L and their equivalents for chemical and fertilizer industries.

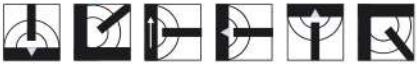
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P
Typical	0.025	2.0	0.50	17.5	15.0	2.60	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)
			- 196°C
Typical	574	36	27

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Welding should be carried out taking care to avoid build up of heat. It is imperative that due control is exercised for keeping interpass temperature low and in any case below 150°C.
2. Size of electrode should be smallest practicable.
3. Arc should be as short as possible.
4. Weaving should be minimised.
5. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.

BATOX-F(U)

Codification :

AWS SFA 5.4	E316L-15 (Modified)



Characteristics & Applications :

Batox-F(U) is a semi-basic coated electrode depositing a weld metal which is fully austenitic in structure, has high strength and good crack resistance. The weld metal displays remarkable corrosion resistance particularly in urea service. Ideally suitable for welding of AISI 316L and their nitrogen bearing versions particularly for urea service.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	N	Mo	S	P
Typical	0.03	4.0	0.45	19.5	16.0	0.15	2.8	0.015	0.020

Ferrite Content : Nil

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	Corrosion Rate (ASTM A262 Practice C)
Typical	634	37.0	7 mils/year

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, stringer bead, smallest size of electrode and minimum current to ensure minimum heat input.

BATOX-F(U)M

Codification :

AWS SFA 5.4	E316LMn-15



Characteristics & Applications :

Batox-F(U)M is a basic coated electrode depositing fully austenitic stainless steel weld metal. The deposit possesses excellent crack resistance and is suitable for welding for high pressure parts of urea plant equipment to resist severe corrosion. It is ideally suited for welding of stainless steels of similar composition and their equivalents for overlays, surfacing applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	N
Typical	0.035	5.50	0.45	0.015	0.025	18.8	16.5	3.00	0.11

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	620	30

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current, short arc and stringer bead.

RUTOX-G

Codification :

AWS SFA 5.4	E240-16



Characteristics & Applications :

Rutox-G is a special purpose stainless steel electrode. It is most often used to weld AISI Type 240 and 241 base metals. These alloys are nitrogen-strengthened austenitic stainless steels exhibiting high strength with good toughness over a wide range of temperatures. Significant improvement in resistance to wear in particle-to metal and metal-to-metal (galling) applications. Nitrogen alloying reduces the tendency for intergranular carbide precipitation in the weld area by inhibiting carbon diffusion and thereby increasing resistance to intergranular corrosion. Nitrogen alloying also improves resistance to pitting and crevice corrosion in aqueous chloridecontaining media. It exhibit improved resistance to transgranular stress corrosion cracking in hot aqueous chloride containing media. It is also suitable for welding dissimilar steels like mild steel and stainless steels, and also suitable for overlay on mild steel for corrosion and wear applications.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	N
Typical	0.04	12.0	0.70	0.020	0.033	18.0	5.0	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	720	18

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	160-200	130-160	90-120	60-100
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and minimum heat input.

RUTOX-Mo(ST)

Codification :

AWS SFA 5.4	E318-16
IS 5206	E19.12.2Nb R16
EN ISO 3581-A	E 19 12 3 Nb R 3 2



Characteristics & Applications :

Rutox-Mo (ST) is a stainless steel electrode producing a Niobium stabilised 18%Cr-12%Ni-2.3%Mo weld metal. The weld metal possesses good resistance to corrosion and pitting and improved creep strength. The weld metal has excellent resistance to intergranular corrosion. Ideally suited for joining stainless steels of similar composition.

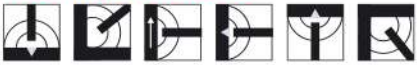
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	Nb	S	P
Typical	0.05	1.5	0.42	18.5	12.0	2.3	0.60	0.018	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	594	35

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE, EIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use low current, short arc and stringer bead.

RUTOX-A(ST)

Codification :

AWS SFA 5.4	E347-16
IS 5206	E19.9Nb R16
EN ISO 3581-A	E (19 9 Nb) R 3 2



Characteristics & Applications :

Rutox-A(ST) is an electrode depositing 18%Cr-10%Ni-Nb stabilised weld metal, suitable for joining of stainless steels of similar composition. Ideal for welding of AISI 304, 304L, 321, 347 and their equivalents. The weld metal has excellent resistance to intergranular corrosion.

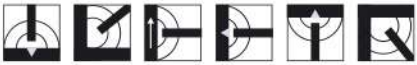
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Nb	S	P
Typical	0.05	1.40	0.45	19.0	10.0	0.60	0.018	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	594	34

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Adani Infra, BHEL, BV, CE, CIB-MP, EIL, NPCIL, NTPC, PDIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc length and stringer bead to reduce heat input.

Note : Batox-A (ST) conforming to AWS E347-15 is also available.

BATOX-A(ST)

Codification :

AWS SFA 5.4	E347-15
IS 5206	E 19.9 Nb B 20
EN ISO 3581-A	E 19 9 Nb B 2 2



Characteristics & Applications :

Batox-A(ST) is a basic coated electrode depositing 18%Cr-10%Ni-Nb stabilized weld metal, suitable for joining of stainless steels of similar composition. It is ideal for welding of AISI 304, 304L, 321, 347 and their equivalents. The weld metal has excellent resistance to intergranular corrosion.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Nb
Typical	0.05	1.4	0.45	0.020	0.018	19.0	10.0	0.60

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	595	450	34

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, low current and stringer beads.

D&H 13Cr

Codification :

AWS SFA 5.4	E410-15
EN ISO 3581-A	E (13) B 2 2



Characteristics & Applications :

D&H 13%Cr is a special flux coated hydrogen controlled electrode depositing 13%Cr weld metal. Ideally suited for joining similar alloys, resurfacing of valve seats, steam and gas turbine components. Ideal for joining straight chromium stainless steels.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.07	0.80	0.60	12.5	0.35	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 750°C FOR 1 HR)

Properties	UTS(MPa)	%El (L=5d)
Typical	554	25

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-220	130-170	90-120	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, CE, CIB-MP, Reliance (SASAN Power)

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use minimum current and stringer bead.

D&H 410

Codification :

AWS SFA 5.4	E410-26



Characteristics & Applications :

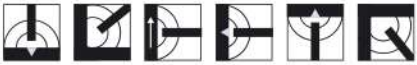
D&H 410 is a high deposition electrode designed for joining of similar alloys and for surfacing and overlay applications on unalloyed steels and chromium steel having 12.5%Cr. The weld deposit displays good resistance to corrosion, erosion, pitting and abrasion. Ideally suited for surfacing of valves and other components of turbine, steam valves made of 13%Cr steel, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	0.08	0.70	0.6	12.5

Weld Metal Hardness : 370-400 VPN

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-220	140-180	90-130	70-100
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and minimum heat input

D&H 430 MC

Codification :

EN ISO 3581-A	E Z17 Mo B 2 2



Characteristics & Applications :

D&H 430 MC is a basic coated all position electrodes depositing 17%Cr-1.3%Mo. The weld metal shows good corrosion resistibility and good oxidation resistibility. This electrode requires suitable post and preheats treatment for obtaining optimum weld metal properties. Weld metal retains hot hardness up to 500°C and scaling resistant up to 900°C. It is ideally suitable for wear resist surfacing on machine parts, sealing faces of gas, valves impellers, blades, propeller shafts, gas turbine, pump parts components, etc.

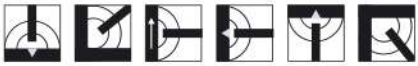
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Mo
Typical	0.22	0.40	0.30	0.025	0.025	17.0	1.30

Weld Metal Hardness :

As Welded: 350-450 BHN
Annealed at 750°C for 2 Hrs Furnace Cool: 200-300 BHN

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc length and stringer bead to reduce heat input.

D&H 430 NM



Characteristics & Applications :

D&H 430 NM is a special purpose electrode depositing16%Cr-5%Ni-1%Mo weld metal, which has excellent resistance to corrosion, erosion, pitting and impact. The electrode shows very good features quite and stable arc, less spatter loss and good bead appearance. It is ideally suited for joining of similar composition GX4CrNiMo16-5-1 material, groove welding and surfacing applications. Typical applications include surfacing of high pressure valves, turbine blades, valve seats, repairs of runners, pumps-and combustion building, pulp and paper plant equipment, etc. The high chromium content enhances the corrosion resistance in water, steam and sea atmosphere.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P	V	Cu
Range	0.06 Max	1.0 Max	0.8 Max	15.0-17.0	4.0-6.0	0.7-1.5	0.025 Max	0.030 Max	0.08 Max	0.30 Max
Typical	0.05	0.60	0.50	16.0	5.0	1.0	0.017	0.022	0.05	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 590°C FOR 8 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	Hardness
				+20°C	(HV 10)
Range	760-960	540 Min	15Min	60 Min	310-365
Typical	920	640	16.0	65	330

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	190-220	150-180	110-140	70-100
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 200-250°C for 01 hour.
2. Use short arc and stringer beads.

D&H 430Nb

Codification :

AWS SFA 5.4	E430Nb-16



Characteristics & Applications :

D&H 430Nb is a rutile coated electrodes depositing 17%Cr-1%Nb. The weld metal is a ferritic microstructure with fine grains for welding of similar chrome steels and steel castings. The weld metal shows good corrosion resistibility and good oxidation resistibility. This electrode requires suitable post and preheats treatment for obtaining optimum weld metal properties. The welds are of radiographic quality. It is also suitable for first layer in the welding of type 405 and 410 clad steels. Typical applications include machine parts, propeller shafts, gas turbine construction, pump parts components in oil refineries, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Nb
Typical	0.05	0.80	0.60	0.025	0.010	17.0	0.20	0.10	1.00

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 760-790°C FOR 2 HR, furnace cool @ not exceeding 55°C/HR to 595°C then air cool to RT)

Properties	UTS(MPa)	%El (L=4d)
Typical	500	23

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5 x 350
Current Range (Amps)	150-190	110-150	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and minimum heat input.

D&H 444L

Codification :

AWS SFA 5.4	E410NiMo-16
EN ISO 3581-A	E 13 4 R 3 2



Characteristics & Applications :

D&H 444L is a special purpose electrode depositing12%Cr-4.6%Ni-0.5%Mo weld metal, which has excellent resistance to corrosion, erosion, pitting and impact. Ideally suited for joining of similar composition materials, groove welding and surfacing applications. Typical applications include surfacing of high pressure valves, turbine blades, valve seats, repairs of runners, pulp and paper plant equipment, etc.

Typical Chemical Composition Of All Weld Metal :

Element	C	Mn	Si	Cr	Ni	Mo
Typical	0.05	0.60	0.50	12.0	4.60	0.50

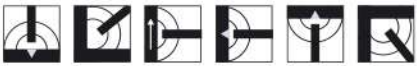
Typical Mechanical Properties Of All Weld Metal :

(PWHT: 610°C FOR 1 HR)

Properties	UTS(MPa)	%El (L=5d)	Hardness (VPN)
Typical	782	17.0	325-360

(PWHT: NR: 1050°C for 3Hrs + SR: 670°C for 3 Hrs + SR: 605°C for 3Hrs)
CVN Impact Strength at - 46°C: 70 Joules

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-190	110-150	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 200-250°C for 01 hour.
2. Use short arc and minimum heat input.

D&H 444L-15

Codification :

AWS SFA 5.4	E410NiMo-15



Characteristics & Applications :

A basic coated high purity electrode yielding a controlled carbon 12%Cr-4%Ni- 0.5%Mo stainless steel weld metal for welding ASTM CA 6 NM castings or similar materials. Easy to operate in all conventional positions. Gives minimum spatter. Weld metal possesses excellent resistance to corrosion, pitting, abrasion, and impact. Ideally suited for surfacing castings of similar composition subjected to wear by corrosion, erosion, abrasion combined with impact. Typical applications include: For welding of guide vanes and runners, hardfacing of valve seats, turbine blades in hydro power plants, pulp and paper machinery, rebuilding of gas, steam turbines, etc.

Typical Chemical Composition Of All Weld Metal (%) :

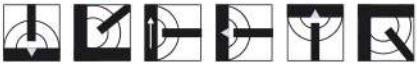
Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.05	0.80	0.45	0.012	0.020	12.2	4.5	0.55

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 610°C FOR 1 HR)

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)
			RT
Typical	820	16	55

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-190	110-150	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 300°C for 01 hour.
2. Use low current, short arc and stringer bead.

D&H 17Cr

Codification :

AWS SFA 5.4	E430-15
EN ISO 3581-A	E (17) B 2 2



Characteristics & Applications :

D&H 17Cr is a heavy coated low hydrogen electrode depositing a weld metal containing 17%Cr. The weld deposit displays good resistance to corrosion and heat. The electrode is suitable for joining stainless steels of similar composition. It is also suitable for surfacing carbon steels, low alloy steels and chromium steels. Typical applications include surfacing of valves, impellers, turbine blades, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	S	P
Typical	0.075	0.60	0.50	17.0	0.35	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 780°C FOR 2 HR)

Properties	UTS(MPa)	%El (L=5d)
Typical	485	20

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	130-170	100-130	80-110	70-90
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use minimum current and stringer bead.

D&H 430

Codification :

AWS SFA 5.4	E430-26



Characteristics & Applications :

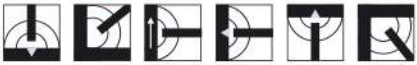
D&H 430 is a heavy rutile type electrode depositing a 17%Cr weld metal. The weld metal displays good resistance to corrosion and heat. Ideally suited for surfacing of straight chromium steels and similar materials.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	0.07	0.65	0.50	17.00

Weld Metal Hardness : 250-280 VPN

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-230	150-180	100-140	70-100
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 200-250°C for 01 hour.
2. Use short arc and minimum heat input.

D&H-3U



Characteristics & Applications :

D&H-3U is a specially designed electrode for welding U3 steel. The weld metal has excellent crack resistance and has good scaling resistance. It produce quiet and stable arc, which is easy to strike and re-strike. Detachability of slag is very easy. The weld metal is of radiographic quality. Ideal for joining ferritic to austenitic steels, armour plates, austenitic manganese steels, dissimilar materials, etc.

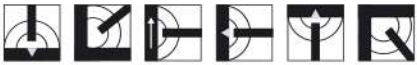
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.04	4.5	0.42	0.020	0.020	17.20	9.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	615	38

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-150	70-100	50-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc, stringer beads, and low currents.

D&H 25/4

Codification :

EN 1600	E 25 4 B42



Characteristics & Applications :

D&H 25/4 is stainless steel electrode for high temperature applications. Weld metal has excellent performance in high temperature up to 1100°C and defend against attack of sulphurous oxidizing or reducing combustion gases. Ideally suitable for joining and surfacing on heat-resistant chromium and chromium-nickel steel and cast steel of similar compositions.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.08	1.50	0.60	0.018	0.018	25.0	5.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	680	480	18

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	90-120	65-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour, as per our standard recommended practice.
2. Use short arc, stringer bead, and low currents.

D&H SECHERON 209

Codification :

AWS SFA 5.4	E209-16



Characteristics & Applications :

D&H Secheron 209 is a special purpose stainless steel electrode. This composition are most often used to weld AISI type 209 (UNS S20910) base metals. The alloy is a nitrogen strengthened austenitic stainless steel exhibiting high strength with good toughness over a wide range of temperatures. Nitrogen alloying reduces the tendency for intergranular carbide precipitation in the weld area by inhibiting carbon diffusion and thereby increasing resistance to intergranular corrosion. Nitrogen alloying coupled with the molybdenum content provides superior resistance to pitting and crevice corrosion in aqueous chloride-containing media. Electrodes have sufficient total alloy content for use in joining dissimilar alloys, like mild steel and the stainless steels, and also for direct overlay on mild steel for corrosion applications.

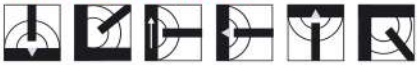
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	N	V
Typical	0.04	5.0	0.70	0.020	0.033	21.5	10.5	2.0	0.15	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	720	18

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	160-190	130-160	90-120	60-90
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use short arc and minimum heat input.

D&H 446L

Codification :

AWS SFA 5.4	E630-16
EN ISO 3581-A	E Z R 3 2



Characteristics & Applications :

D&H 446L is a unique electrode depositing a stainless steel weld metal having a nominal composition of 16%Cr-4.5%Ni-3.5%Cu-Cb weld metal. The weld metal possesses excellent properties and attains high strength on heat treatment. It is ideally suited for welding martensitic precipitation hardening stainless steels of the type 17-4 PH etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Cb	Cu
Typical	0.045	0.50	0.40	0.025	0.025	16.5	4.75	0.30	0.25	3.50

Typical Mechanical Properties Of All Weld Metal :

Heated to 1025-1050°C, held for 1 hour, and air cooled to ambient, and then precipitation hardened at 610-630°C, held for 4 hours and air cooled to ambient.

Properties	UTS(MPa)	%El (L=5d)
Typical	950	12

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. It is preferable to weld the 17-4 PH materials in the solution treated and quenched condition.
3. When welded in the solution treated and quenched condition, the 17-4 PH materials do not require preheat.

D&H 2209 (NS)

Codification :

AWS SFA 5.4	E2209-16
EN ISO 3581-A	E 22 9 3 N L R 3 2



Characteristics & Applications :

D&H 2209(NS) is a non-synthetic electrode depositing duplex stainless steel weld metal. It is ideal for welding duplex stainless steels. The weld metal possesses excellent corrosion resistance in marine & paper environments. Suitable for welding duplex stainless steels having Cr < 25% and other grades like UNS 32205, UNS 31803, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	N
Typical	0.028	1.5	0.4	0.020	0.018	22.5	8.8	3.0	0.14

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J) - 30°C	Hardness (RC)
Typical	723	550	25	70	24

Corrosion Property : Weld metal meets ASTM A262 Practice C, ASTM G-36, ASTM G-48A and NACE TM-01-77 specification at 350 MPa stress level, 16 bar pressure and 90°C temperature requirements in as welded condition.

Ferrite (FN) : 40-55

Bend Test : Satisfactory with plunger diameter equal to 4 times the thickness of the specimen.

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 01 hour.
2. Use stringer beads, short arc and smallest possible size, which helps in reducing the heat input.

Note : D&H 2209-15 (NS) conforming to AWS E2209-15 is also available

D&H 2209-15(NS)

Codification :

AWS SFA 5.4	E2209-15
EN ISO 3581-A	E 22 9 3 N L B 2 2



Characteristics & Applications :

D&H 2209-15(NS) is a non-synthetic basic coated electrode depositing duplex stainless steel weld metal. The weld metal possesses excellent corrosion resistance in marine & paper environments. It is ideal for welding duplex stainless steels and suitable for welding duplex stainless steels having Cr£25% and other grades like UNS 32205, UNS 31803, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	N
Typical	0.028	1.5	0.40	0.018	0.020	22.5	8.8	3.0	0.14

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)	CVN Impact Strength (J)		
			+20°C	-30°C	-40°C
Typical	730	25.0	110	75	50

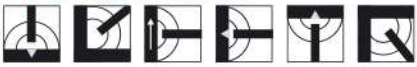
Corrosion Property : Weld Metal meets ASTM A262 Practice C, ASTM G-36, ASTM G-48A and NACE TM-01-77 specification at 350 MPa stress level, 16 bar pressure and 90°C temperature requirements in as welded condition.

Hardness Of Weld Metal : 26 HRC Max.

Bend Test : Satisfactory with plunger diameter equal to 4 times the thickness of the specimen.

Ferrite : 40-55%

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use Low Current, Short arc & stringer bead.

D&H 2209-17(NS)

Codification :

AWS SFA 5.4	E2209-17
EN ISO 3581-A	E22 9 3 NL R32



Characteristics & Applications :

D&H 2209-17(NS) is a non-synthetic electrode depositing duplex stainless steel weld metal. Electrode works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The weld metal possesses excellent corrosion resistance in marine & paper environments. Suitable for welding duplex stainless steels having Cr25% and other grades like UNS 32205, UNS 31803, etc.

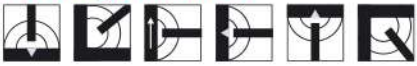
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	N	S	P
Typical	0.030	1.50	0.70	22.5	8.8	3.0	0.14	0.020	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	720	550	25

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.0	2.0	2.0	2.0

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 2307-17

Codification :

AWS SFA 5.4	E2307-17



Characteristics & Applications :

D&H 2307-17 is a special electrode for welding lean, low molybdenum duplex stainless steels. The weld metal possesses excellent resistance to stress corrosion cracking with increased strength. It works well with transformer and good re striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. It is ideal for welding lean duplex stainless steels which include UNS S32101 and UNS S32304.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	P	S	Cu	N
Typical	0.03	0.70	0.80	23.5	8.0	0.25	0.020	0.010	0.25	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	750	20

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 2553(NS)

Codification :

AWS SFA 5.4	E2553-16
EN ISO 3581-B	E S 2553-16



Characteristics & Applications :

Non-synthetic rutile coated electrode depositing duplex stainless steel weld metal. Weld metal consisting of austenite and ferrite matrix, which gives good toughness and freedom from weld cracking. A soft and smooth arc, which is easy to strike and re-strike. Better welder appeal including, easy slag detachability characteristics. The electrode can be used where resistance to pitting corrosive attack and resistance to stress corrosion cracking are required. The major application area includes, oil & gas industry, offshore platforms, petrochemical plants, mechanical & structural components demanding high strength together with high corrosion resistance.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	N
Typical	0.025	1.1	0.45	0.010	0.012	25.0	7.5	3.3	2.0	0.17

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	782	25

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use stringer beads, short arc and smallest possible size, which helps in reducing the heat input.

Note : D&H 2553-15 (NS) conforming to AWS E2553-15 is also available.

D&H 2553-17

Codification :

AWS SFA 5.4	E2553-17



Characteristics & Applications :

D&H 2553-17 is a stainless steel electrode, which depositing duplex stainless steel weld metal. Electrode works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The electrode can be used where resistance to pitting corrosive attack and resistance to stress corrosion cracking are required. The major application area includes, oil & gas industry, offshore platforms, petrochemical plants, mechanical & structural components demanding high strength together with high corrosion resistance.

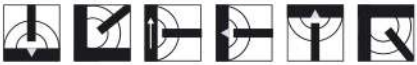
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	N
Typical	0.025	1.1	0.80	0.010	0.012	25.0	7.5	3.3	2.0	0.17

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	780	20.0

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.

D&H 2594(NS)

Codification :

AWS SFA 5.4	E2594-16
EN ISO 3581-A	E Z R 3 2



Characteristics & Applications :

D&H 2594(NS) is a non-synthetic electrode depositing super duplex stainless steel weld metal. The weld metal exhibits high strength, high impact energy, and resistance to stress corrosion cracking, pitting, and crevice corrosion. The weld metal possesses excellent corrosion resistance in marine & paper environments. Examples of application areas are: Oil and gas industry, Off shore plat forms, Petrochemical plants, Mechanical and structural components. It is suitable for welding. ASTM A890/A995 Gr. 5A, CE3Mn, UNS J93404. Super Duplex 2507, UNS S32750, EN 1.4410, NF Z3 CND 25-06AZ, SS2328

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	N
Typical	0.026	1.45	0.42	0.023	0.009	25.0	9.0	4.0	0.20	0.22

Typical Mechanical Properties Of All Weld Metal :

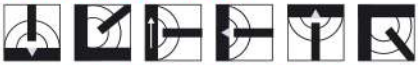
Properties	UTS(MPa)	%El (L=5d)	CVN Impact Strength (J)
			+20°C
Typical	790	23	60

Pitting Resistance Number : Meets the requirement of PREN ≥40

Corrosion Property : Weld metal meets ASTM A 262 Practice C and ASTM G-48A.

Ferrite (FN) : 30-60

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. The heat input should be in the range of 0.5-1.5 KJ/mm.
3. Please ensure inter pass temperature is less than 150°C and better less than 102°C.
4. For better results solution annealing at 1080-1120°C is required.

D&H 2594-15(NS)

Codification :

AWS SFA 5.4	E2594-15
EN ISO 3581-A	E Z R 2 2



Characteristics & Applications :

D&H 2594-15(NS) is a basic coated non-synthetic electrode depositing super duplex stainless steel weld metal. The weld metal exhibits high strength, high impact energy, and resistance to stress corrosion cracking, pitting, and crevice corrosion. The weld metal possesses excellent corrosion resistance in marine & paper environments. Examples of application areas are: Oil and gas industry, Off shore plat forms, Petrochemical plants, Mechanical and structural components. It is suitable for welding. ASTM A890/A995 Gr. 5A, CE3Mn, UNS J93404. Super Duplex 2507, UNS S32750, EN 1.4410, NF Z3 CND 25-06AZ, SS2328

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	N
Typical	0.026	1.45	0.42	0.023	0.009	25.0	9.0	4.0	0.20	0.22

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)	CVN Impact Strength (J)
			-46°C
Typical	800	23	50

Pitting Resistance Number : Meets the requirement of PREN ≥40
Corrosion Property : Weld metal meets ASTM A 262 Practice C and ASTM G-48A.
Ferrite (FN) : 30-60

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. The heat input should be in the range of 0.5-1.5 KJ/mm.
3. Please ensure inter pass temperature is less than 150°C and better less than 102°C.
4. For better results solution annealing at 1080-1120°C is required.

D&H 2594-17(NS)

Codification :

AWS SFA 5.4	E2594-17
EN ISO 3581-A	E Z R 3 2



Characteristics & Applications :

D&H 2594-17(NS) is a non-synthetic electrode depositing super duplex stainless steel weld metal. Electrode works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The weld metal exhibits high strength, high impact energy, and resistance to stress corrosion cracking, pitting, and crevice corrosion. It is ideal for welding duplex and super duplex stainless steels. The weld metal possesses excellent corrosion resistance in marine & paper environments. Examples of application areas are Oil and gas industry, Off shore plat forms, Petrochemical plants, Mechanical and structural, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	N	Cu	S	P
Typical	0.026	1.45	0.80	25.0	9.0	4.0	0.22	0.20	0.020	0.023

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	780	23

Pitting Resistance Number : Meets the requirement of PREN ≥ 40

Corrosion Property : Weld metal meets ASTM A262 Practice C requirements in as welded condition.

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2.0	2.0	2.0	2.0

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.
3. For better results solution annealing at 1080-1120°C is required.

D&H 2595(NS)

Codification :

AWS SFA 5.4	E2595-16
EN ISO 3581-A	E 25 9 4 N L R 3 2



Characteristics & Applications :

D&H 2595(NS) is a non-synthetic electrode depositing super duplex stainless steel weld metal. The weld metal exhibits high strength and resistance to stress corrosion cracking, pitting, and crevice corrosion. It is ideally suited for welding of super duplex stainless steels UNS S32550, S32750 and S32760 (wrought) and UNS J93370, J93380, J93404, CD4MCuN(cast) and similar compositions. Examples of application areas are: Oil and gas industry Oil country tubular Food processing Valves and fittings Flue gas de-sulfurizers Off shore plat forms Petrochemical plants Mechanical and structural components.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	N	W
Typical	0.035	0.80	0.42	0.020	0.020	25.0	9.3	4.0	0.70	0.22	0.70

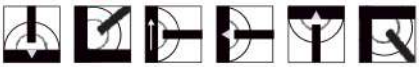
Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	775	650	23

Pitting Resistance Number : Meets the requirement of PREN ≥ 40.

Ferrite (FN) : 40-60

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. The heat input should be in the range of 0.5-1.5 KJ/mm.
3. Please ensure inter pass temperature is less than 150°C and better less than 102°C.
4. For better results solution annealing at 1080-1120°C is required.

D&H 2595-15(NS)

Codification :

AWS SFA 5.4	E2595-15



Characteristics & Applications :

D&H 2595-15(NS) is a non-synthetic basic coated electrode depositing super duplex stainless steel weld metal. The weld metal exhibits high strength and resistance to stress corrosion cracking, pitting, and crevice corrosion. It is ideally suited for welding of super duplex stainless steels UNS S32550, S32750 and S32760 (wrought) and UNS J93370, J93380, J93404, CD4MCuN(cast) and similar compositions. Examples of application areas are: Oil and gas industry Oil country tubular Food processing Valves and fittings Flue gas de-sulfurizers Off shore platforms, Petrochemical plants, Mechanical and structural components.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	N	P	S	Cu	W
Typical	0.035	0.80	0.42	25.0	9.3	4.0	0.20	0.020	0.020	0.70	0.70

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	780	23

Pitting Resistance Number : Meets the requirement of PREN≥40.

Ferrite (FN) : 40-60

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-110	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour.
2. The heat input should be in the range of 0.5-1.5 KJ/mm.
3. Please ensure inter pass temperature is less than 150°C and better less than 102°C.
4. For better results solution annealing at 1080-1120°C is required.

D&H 2595-17(NS)

Codification :

AWS SFA 5.4	E2595-17



Characteristics & Applications :

D&H 2595-17(NS) is a stainless steel electrode, which depositing super duplex stainless steel weld metal. Electrode works well with transformer and good re-striking characteristic. Better welder appeal including, easy slag detachability characteristics. On horizontal fillet welds, produce more of spray arc and a finer rippled weld bead and the bead shape is typically flat to concave. It has no red hot tendency within current range specified and no porosity. The weld metal exhibits high strength and resistance to stress corrosion cracking, pitting, and crevice corrosion. It is ideally suited for welding UNS S32550, S32750 and S32760 (wrought) and UNS J93370, J93380, J93404, CD4MCuN (cast) and similar compositions. Examples of application areas are: Oil and gas industry Oil country tubular Food processing Valves and fittings Flue gas de-sulfurizers Off shore plat forms, Petrochemical plants Mechanical and structural components.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	N	W
Typical	0.035	0.80	0.80	0.02	0.02	25.0	9.3	4.0	0.70	0.22	0.70

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	775	23

Pitting Resistance Number : Meets the requirement of PREN≥40.

Ferrite (FN) : 40-60

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	110-140	80-100	60-80
Weight/Carton (kgs)	2	2	2	2

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300°C for 2 hours.
2. Use low current short arc and minimum weaving.
3. For better results solution annealing at 1080-1120°C is required.

D&H 45S



Characteristics & Applications :

D&H 45S is a special purpose electrodes depositing almost pure iron weld metal which is ideally suited for welding galvanizing baths. The very low silicon content ensures excellent resistance to corrosion by molten zinc. Typical applications include welding of galvanizing baths and filling up of worn out bodies of galvanizing bath to resist corrosion by molten zinc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si
Typical	0.06	0.20	0.18

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	408	30

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450
Current Range (Amps)	200-240	160-180	110-135
Weight/Carton (kgs)	4	4	4

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 150°C for 1 hour.
   Note : The low hydrogen version D&H 45S(LH) is also available.

D&H 45S(LH)



Characteristics & Applications :

D&H 45S(LH) is a special purpose low hydrogen electrodes depositing almost pure iron weld metal which is ideally suited for welding galvanizing baths. The very low silicon content ensures excellent resistance to corrosion by molten zinc. Typical applications include welding of galvanizing baths and filling up of worn out bodies of galvanizing bath to resist corrosion by molten zinc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si
Typical	0.06	0.20	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	450	30

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	180-220	140-180	110-140	60-90
Weight/Carton (kgs)	4	4	4	4

Precautions :

1. Re-dry the electrodes at 250°C for 1 hour.
2. Use smallest size of electrode possible.
3. Use low current, short arc and stringer beads.

BOR-A(R)

Codification :

IS	7303 E Fe-A312(Nearest)



Characteristics & Applications :

BOR-A(R) is a hardfacing electrode operating on AC / DC(-) depositing an air hardening weld metal . The deposit displays excellent toughness and ability to withstand heavy impact loads and has excellent resistance to rolling and sliding friction. The weld deposit is machinable. Ideal for rail points and crossings, axles, wheels, gear shafts, couplings, pinion teeth, rollers, sprockets, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	0.20	0.60	0.40	1.80

Weld Metal Hardness : 250-280 BHN.

Welding Positions :



Current And Packing Data : AC / DC(-)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	190-220	140-180	100-130	65-90
Qty (Pcs/Carton)	40	70	100	150

Precautions :

1. Use short arc.
2. Use low current.
3. Ensure the electrodes are dry. Re-dry the electrodes at 150°C for 01 hour.
4. If the base material has the carbon content of more than 0.25% a buffer layer using a low hydrogen electrode is recommended.

BOR-B



Characteristics & Applications :

BOR-B is a rutile coated electrode producing an air hardening type weld metal for hardfacing of carbon and low alloy steels. The weld metal is highly resistant to abrasive wear and has a fair degree of toughness. Ideally suited for applications in which abrasion resistance is required with a fair degree of toughness. Typical applications include brake shoes, shear blades, wheels, cams, gears, pulleys, drive sprockets, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	0.25	0.60	0.40	2.80

Hardness (As Welded, After 3 Layers on Mild Steel): 350-400 BHN

Welding Positions :



Current And Packing Data : AC / DC(-)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	180-220	140-180	100-130	65-90
Qty (Pcs/Carton)	40	70	100	150

Approvals : BHEL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 150°C for 1 hour.
2. Maintain short arc and avoid weaving.
3. Use suitable buffer layers and preheating, depending on the material composition and thickness.

BOR-C



Characteristics & Applications :

BOR-C is a basic coated electrode producing an air hardening weld metal which has excellent resistance to abrasion or heavy impact or both together. The welds are non-machinable and are ideally suited for applications involving severe abrasion and impact. Typical applications include cane cutting knives, crusher hammers, jaws, rollers, rock drills, tractor grousers, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Mo	V
Typical	0.60	0.70	0.50	6.0	0.25	0.05

Hardness (As Welded, After 3 Layers on Mild Steel): 55-60 HRC

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-250	150-180	100-130	65-90
Qty (Pcs/Carton)	35	55	75	150

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use short arc and stringer bead.

BOR-CR

Codification :

IRS CLASS H4B	M28-2020



Characteristics & Applications :

BOR-CR is a basic coated electrode producing an air hardening weld metal which has resistance to abrasion or heavy impact or both together with machinable hardness up to 30-40HRC. The welds are machinable and are ideally suited for applications involving severe abrasion and impact. Typical applications include reclamations of equalizing beam etc

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Typical	0.20	1.20	0.60	0.02	0.025	5.0	0.50

Hardness Of All Weld Metal :

As Welded, After 3 Layers on Mild Steel : 30-40HRC.

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x450	2.5x350
Current Range (Amps)	200-250	150-180	100-130	65-90
Qty (Pcs/Carton)	35	55	75	150

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. Use short arc and stringer bead.

CCR-20



Characteristics & Applications :

CCR-20 is a special type hardfacing electrode depositing chromium carbide rich weld metal. The electrode operates on AC / DC(+). The weld metal has excellent resistance to severe abrasion with mild impact. Ideally suited for a wide range of hardfacing applications to enhance resistance to severe abrasion, erosion and oxidation. Typical applications include coal crushing hammers, plough shares, drag line bucket lips, tractor grousers, cane knives, rolling mill guides, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	2.10	0.60	0.70	20.8

Weld Metal Hardness : 52-58 HRC

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350
Current Range (Amps)	200-250	160-200	120-160
Weight/Carton (kgs)	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 200-250°C for 1 hour.
2. Do not deposit more than two layers of CCR-20. In case a heavy build-up is required, use buffer layers with Indotherme electrodes and then continue the build-up for two more layers.

CCR-200



Characteristics & Applications :

CCR-200 is a semi-basic super heavy coated hardfacing electrode producing a high carbon, high chromium alloy weld deposit. The deposit resists corrosion and oxidation even at elevated temperature. The weld metal has excellent resistance to high temperature abrasion. Typical applications include hardfacing of blast furnace bells, hoppers, mixer blades, coal handling equipments, coal mill exhauster fan blades, excavator blades, scrapers, earth moving parts, crushing mills, screw conveyors, ash handling pipes, etc.

Hardness Of All Weld Metal :

As Welded, After 3 Layers on Mild Steel : 55 – 60 HRC.

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350
Current Range (Amps)	200-240	140-180	120-140
Weight/Carton (kgs)	2.5	2.5	2.5

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour for best results.
2. Use low current, short arc and stringer beads.

CCR(SPL)



Characteristics & Applications :

CCR(SPL) is a semi-basic super heavy coated hardfacing electrode producing a high carbon, high chromium and nickel alloy weld deposit. The weld metal is extremely hard at room temperature and retains its hardness up to 550°C. The weld metal has excellent resistance to high temperature abrasion. Typical applications include hardfacing of blast furnace bells, hoppers, parts in coke chutes, coal handling equipments, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni
Typical	3.0	1.0	0.60	29.0	4.0

Hardness Of All Weld Metal :

At Room Temperature : 48-54 HRC
At 500°C : 40-44 HRC

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350
Current Range (Amps)	200-240	160-180	120-140
Weight/Carton (kgs)	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250°C for 1 hour.
2. Do not use excess current.

CROMA



Characteristics & Applications :

Croma is a AC/DC (+) type electrode depositing a 16%Cr-4%Mn weld metal which has work hardening characteristics. The weld metal resists impact abrasion and corrosion. Ideally suited for hardfacing applications to enhance resistance to impact abrasion. Ideal for buffer layers before depositing air hardening deposits. Typical applications include surfacing and building up of austenitic manganese steel components, crusher jaws, crusher hammers, roll crushers, mining machineries, dipper teeth, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	0.12	4.30	0.55	16.5

Hardness Of All Weld Metal :

As welded: 200-250 BHN
Work hardens (under impact) : 550 BHN

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-250	150-180	100-140	70-90
Qty (Pcs/Carton)	30	45	65	100

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 200-250°C for 1 hour.
2. Use minimum current and as low heat input as possible.

D&H 535



Characteristics & Applications :

A heavy coated, hydrogen controlled, all conventional position electrode depositing low alloy weld metal. The electrode gives soft & smooth arc which is easy to strike & re-strike. Superior operating characteristics with easy slag detachability. The welds are of radiographic quality. For surfacing of hot forging dies. For repairs of large hot working dies and earth moving equipments made of high tensile steel. Repair of case hardening steel parts after removing the hard zones, for repairing cracks in Ni-Cr hot working dies.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	V
Typical	0.09	1.55	0.45	2.80	2.25	1.20	0.30

Weld Metal Hardness :

on 3 Layers : After SR 560°C for 1 hour : 36-39 HRC

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	8x450	6.3x450	5x450	4x450
Current Range (Amps)	300-350	250-280	200-250	150-180
Weight/Carton (kgs)	5	5	5	5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250°C for 1 hour.
2. When welding on high hardenable materials of large thicknesses, adequate care for preheating, slow cooling & PWHT are necessary.
3. Use short arc & minimum weaving.

D&H 958



Characteristics & Applications :

It is specially designed for hot and cold work tool steels. Ideally suited for hot or cold work trimmers, shears, blanking and forming dies where chipping, spalling and cracking area problem. Typical applications include forging dies, coining dies, header dies, punches, extrusion mandrels, tong bits, blanking dies, fledge hammer files, cutting edges for hatchets and punches. Especially suited for composite fabrication of die sections.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Mo	W	V
Typical	0.45	0.88	0.80	5.51	1.80	1.84	0.50

Weld Metal Hardness : 55-59 HRC

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	4x350	3.15x450
Current Range (Amps)	250-300	180-225	125-175	125-175	80-125
Weight/Carton (kgs)	3	3	3	3	3

Precautions :

1. Re-dry the electrodes at 250-300°C for 1 hour.
2. For repairs prepare area to be welded by removing all cracks or other defects by grinding or scarfing.
3. Preheat the die blocks up to 425°C and maintain temperature during welding.
4. Use stringer bead technique.
5. Peen the weld when hot to relieve stresses.
6. Post-heat at 540°C. Hold at temperature at 1 hour per inch of thickness. Cool in still air to room temperature.

D&H 630-H



Characteristics & Applications :

D&H 630-H is a medium coated rutile type hardfacing electrode depositing an air hardening weld metal resistant to severe abrasion and moderate impact. Ideal for hardfacing applications to combat severe abrasion combined with moderate impact. Typical applications include dredger bucket lips, plough shares, excavator teeth, conveyer buckets, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	0.50	0.30	0.45	6.5

Weld Metal Hardness : 55-60 HRC.

Welding Positions :



Current And Packing Data: AC / DC(-)

Size (mm) Dia x Length	5x450	4x450	3.15x350
Current Range (Amps)	175-210	140-175	90-125
Qty (Pcs/Carton)	40	70	100

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 150°C for 01 hour.

D&H 9650



Characteristics & Applications :

A specially developed AC or DC(+) electrode to produce extra high performance weld metal. Superior operating characteristics. Deposit sound weld metal reaching maximum hardness as deposited. Weld metal highly resistant to heat, corrosion and wear with the shock resistance necessary for forging dies. Ideal for reclamation of forging die, hot working tools impressions, reducers guides-ways, flat dies, etc. Also excellent for a tough build-up when a higher hardness material is required on the surface.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Cr	Mo	V	W
Typical	0.13	1.0	0.60	2.02	10.25	2.75	0.35	0.20

Weld Metal Hardness :

on 3 Layers after SR 560°C for 1 hour : 38-43 HRC.

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x350	4x350	3.15x350
Current Range (Amps)	250-300	180-225	125-175	80-125
Weight/Carton (kgs)	3	3	3	3

Precautions :

1. Remove all the material by scarfing or grinding.
2. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
3. Use the preheat required for the base material.
4. A carefully designed welding procedure with proper preheat, peening, cleaning, interpass temperature and PWHT will yield the desired results.

DIETHERME-HD



Characteristics & Applications :

A hardfacing electrode depositing low hydrogen, low alloy steels weld metal for surfacing hammer dies. The weld metal possesses good toughness and resistance to heat for enhancing the life of the dies.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	V
Typical	0.08	1.45	0.42	2.20	2.10	0.95	0.30

Weld Metal Hardness :

on 3 Layers after SR 560°C for 1 hour : 35-38 HRC.

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	8x450	6.3x450	5x450	4x450	3.15x450
Current Range (Amps)	300-350	270-320	200-250	150-180	100-130
Weight/Carton (kgs)	3	3	3	3	3

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250°C for 1 hour.
2. When welding on high hardenable materials of large thicknesses, adequate care for preheating, slow cooling & PWHT are necessary.
3. Use short arc and minimum weaving.

SHC-SIX



Characteristics & Applications :

SHC-Six is an unique electrode operating on AC / DC(+) depositing an air hardening weld metal which has excellent resistance to severe abrasion with moderate impact as in the case of oil expeller worms, dipper teeth, scraper blades, screw conveyers, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	3.0	1.50	1.50	5.0

Weld Metal Hardness : 54-60 HRC.

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	5x450	4x450	3.15x350
Current Range (Amps)	170-200	140-170	110-130
Qty (Pcs/Carton)	40	60	80

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 200-250°C for 1 hour.
2. Use short arc and stringer beads.
3. Use suitable buffer layers and preheat depending on base material composition and thickness.

SMA



Characteristics & Applications :

SMA is a basic coated electrode operating on AC/DC(+) producing a tough austenitic manganese steel weld metal. The deposit work hardens in service and has excellent resistance to wear by impact. Typical applications include surfacing of parts subjected to abrasion and heavy impact as in the case of crusher jaws, bucket teeth and lips, rail crossing, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	0.85	14.5	0.55	3.0

Weld Metal Hardness :

As welded: 200-250 BHN.
Work hardens (under impact) : 500 BHN.

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x350
Current Range (Amps)	200-270	160-200	130-160	90-120
Qty (Pcs/Carton)	20	35	55	75

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250-300°C for 1 hour.
2. While welding of austenitic manganese steel, restrict the heat input by :
   a) Short arc;
   b) Stringer bead;
   c) Deposit in short length;
   d) Intermittent welding;
   e) Keeping the base material partly immersed in water.

SUPER-Mn



Characteristics & Applications :

Super-Mn is an electrode depositing high manganese steel weld metal. The weld metal possesses excellent toughness and work hardens under impact. The deposit exhibits an austenitic structure and is ideally suited for re-surfacing austenitic manganese steel components like crusher jaws, hammers, etc. for resistance against wear by impact and abrasion.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr
Typical	0.85	15.5	0.55	2.5

Weld Metal Hardness :

As welded (on mild steel-two layers): 200-250 BHN
Work hardens (under impact) : 500 BHN

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450
Current Range (Amps)	200-270	160-200	130-160	90-120
Qty (Pcs/Carton)	20	35	50	75

Precautions :

1. Ensure the surface to be built- up is free of all contaminants.
2. Remove by grinding any work hardened zone. A magnet can detach a work hardened zone.
3. Ensure the electrodes are dry. Re-dry the electrodes at 200-250°C for 1 hour.
4. When welding on austenitic manganese steels, restrict heat input by :
   a) Short arc;
   b) Stringer bead;
   c) Deposits of short lengths and thickness;
   d) Intermittent welding;
   e) Keeping base material partly immersed in water.

D&H 4130



Characteristics & Applications :

D&H 4130 is a specially designed electrode to match the heat treating properties of SAE 4130 and 8630 materials. Basic coated low hydrogen all position electrodes. The electrode shows very good features quite and stable arc, less spatter loss and good bead appearance. It is ideally suited for joining and surfacing of SAE 4130 and 8630 materials. The weld metal fulfills the NACE MR 01-75 requirements for use on oil field equipment in sour (H2S) gas and oil environment.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo
Typical	0.25	1.25	0.50	0.015	0.015	0.50	0.80	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	%RA
WQ:870°C & T:650°C/1hr	860	750	21	59
WQ:885°C & T:590°C/1hr	995	905	15	52
WQ:870°C & T:540°C/1hr	1070	975	16	50
WQ:870°C & T:480°C/1hr	1150	1050	14	45
OQ:870°C & T:540°C/1hr	930	760	17	48

WQ: Water Quenched, OQ: Oil Quenched, T: Tempered.

Welding Positions :



Current And Packing Data : DC(+)

Size (mm) Dia x Length	5x450	4x350	3.15x350	2.5x350
Current Range (Amps)	200-240	150-180	100-130	70-100
Qty (Pcs/Carton)	35	55	75	125

Precautions :

1. Use short arc and stringer bead.
2. Re-dry the electrodes at 250-300°C for 1 hour.

THERMEHARD 55



Characteristics & Applications :

A special type hardfacing electrode depositing Ni-Mo alloy. The weld metal possesses high hardness which is retained even at elevated temperature of 550°C. Ideal for hardfacing components which are subjected to abrasion in combination with impact like blast furnace, belt, hoppers, rolls, tong pins, etc.

Weld Metal Hardness :

At room temperature : 50-55 HRC.
At 500°C : 45 HRC.

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	6.3x450	5x450	4x450	3.15x450
Current Range (Amps)	200-250	160-190	130-160	100-130
Weight/Carton (kgs)	4	4	4	4

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 250°C for 1 hour.
2. Clean the weld area throughly from rust, scale, paint, oil, grease or any other contaminants.
3. Use short arc.

FENITHERME



Characteristics & Applications :

Fenitherme is a special Ferro -Nickel electrode designed for repair welds as well as for joining components of various types of cast irons, including grey and nodular cast irons and for welding them to steel and some ferrous and non-ferrous materials. It is ideally suitable for rectification of defective casting in cast iron foundry; engine heads, pump casings, impellers, rope drums, ingot moulds and a variety of cast iron machine parts and equipments. It is also suitable for welding cast iron to steel and some ferrous and non-ferrous materials.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Fe
Typical	0.90	0.70	0.90	33.0	Balance

Weld Metal Hardness : 250 BHN Max.

Welding Positions :



Current And Packing Data : AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	170-200	130-170	90-130	60-90
Weight/Carton (kgs)	1	1	1	1

Precautions :

1. Re-dry the electrodes at 100°C for 1 hour.
2. Grind the area to be welded so that the casting skin is removed.
3. Clean the area free from all contaminates by degreasing, burning, brushing, grinding, etc.
4. If a crack has to be repaired drill crack arrester holes at the end of the cracks. Remove the crack completely by gouging, grinding, etc. and ensure complete removal by a dye penetrant test.
5. Deposit the welds in small lengths of 50mm at a time.
6. Peen the welds.
7. After welding allow the casting to cool slowly.
8. These are the general steps in cast iron welding. However, the procedures may have to be modified depending on the job.

D&H FN



Characteristics & Applications :

D&H FN is a special Ferro -Nickel electrode designed for repair welds as well as for joining components of various types of cast irons, including grey and nodular cast irons and for welding them to steel and some ferrous and non-ferrous materials. Weld metal have good machinability.It is the right electrode for repair welds as well as for joining components and parts made out of various types of cast irons; rectification of defective casting in cast iron foundry; engine heads, pump casings, impellers, rope drums, ingot moulds and a variety of cast iron machine parts and equipments. It is also suitable for welding cast iron to steel and some ferrous and non-ferrous materials.

Weld Metal Hardness : 180 VPN

Welding Positions :



Current And Packing Data : AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	160-180	120-150	80-110	50-70
Weight/Carton (kgs)	1	1	1	1

Precautions :

1. Re-dry the electrodes at 100°C for 1 hour.
2. Grind the area to be welded so that the casting skin is removed.
3. Clean the area free from all contaminates by degreasing, burning, brushing, grinding, etc.
4. If a crack has to be repaired drill crack arrester holes at the end of the cracks. Remove the crack completely by gouging, grinding, etc. and ensure complete removal by a dye penetrant test.
5. Deposit the welds in small lengths of 50mm at a time.
6. Peen the welds.
7. After welding allow the casting to cool slowly.
8. These are the general steps in cast iron welding. However, the procedures may have to be modified depending on the job.

D&H 1200T(NS)

Codification :

AWS SFA 5.11	ENiCrFe-2
EN ISO 14172	E Ni 6133



Characteristics & Applications :

A non-synthetic electrode depositing homogeneous Ni-Cr-Fe alloy composition. It is good resistance to abrasion, oxidation, and corrosion. It is suitable for welding Ni-Cr-Fe alloys to themselves, dissimilar metals such as carbon steel, 9%nickel steel, stainless steel, pure nickle to themselves or to each other, and for surfacing steel with Ni-Cr-Fe weld metal. It is ideally suitable for welding Ni alloy UNS N06600. It is also used for welding SS201LN type materials to get good toughness together with strength.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	Nb+Ta	Fe
Typical	0.04	2.5	0.4	15.0	Bal.	1.5	1.5	7.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Lateral Expansion (mm)
			-196°C	-196°C
Typical	644	35	45	0.42

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	90-130	70-90	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : Adani Infra, CE, CIB-MP, L&T Power

Precautions :

1. Use short arc and stringer beads.
2. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
3. Best results are obtained in flat position and wherever possible weld in flat position only.

D&H 1212(NS)

Codification :

AWS SFA 5.11	ENiCrFe-3
EN ISO 14172	E Ni 6182



Characteristics & Applications :

A non-synthetic electrode depositing homogeneous Ni-Cr-Fe alloy composition. It is ideally suited for welding alloys of similar compositions to themselves, for surfacing steel with Nickel-Chromium-Iron alloy when high Manganese contents are not detrimental, for welding clad side of Nickel Chromium-Iron clad steel and dissimilar metal combinations. Specially recommended for welding 9%Ni Steels for cryogenic service. Also used for welding of Nickel-Chromium alloys used for high temperature applications like furnace heating elements and reformer tubes.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Fe	Nb
Typical	0.03	6.0	0.25	0.010	0.009	15.0	Bal.	6.0	2.2

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Lateral Expansion (mm)
			-196°C	-196°C
Typical	590	40	85	0.85

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	90-130	70-90	60-70
Weight/Carton (kgs.)	2.5	2.5	2.5	2.5

Approvals : CE, CIB-MP, NPCL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Maintain a short arc, stringer bead and minimize the heat input.
3. Allow the weld to cool down to below 50°C before depositing, the next layer.
4. For dissimilar metal welding, control the dilution by:
   a. Operating at lower currents
   b. Using stringer beads and faster welding speeds.

D&H 1212(MOD)

Codification :

AWS SFA 5.11	ENiCrFe-3 (Approx)
EN ISO 14172	ENi6082



Characteristics & Applications :

Electrode is depositing 65%Ni-20%Cr-2%Nb-1.5%Mo weld metal. Radiographic quality weld metal of superior properties. It is ideally suited for welding alloys of similar compositions to themselves, for surfacing steel with Nickel-Chromium-Iron alloy when high Manganese contents are not detrimental, for welding clad side of Nickel Chromium-Iron clad steel and dissimilar metal combinations. Suitable for overlay of forge plates. Specially recommended for welding 9%Ni Steels for cryogenic service. Also used for welding of Nickel-Chromium alloys used for high temperature applications like furnace heating elements and reformer tubes.

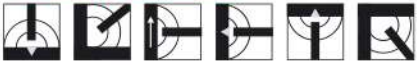
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	Fe	Nb	Cu	Ti
Typical	0.04	4.0	0.50	20.0	Bal	1.5	3.0	2.0	0.30	0.30

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS (MPa)	YS (MPa)	%El (L=5d)	CVN Impact Strength (J)	Lateral Expansion (mm)	Creep Strength MPa
				-196°C	-196°C	600°C for 1000 hrs
Typical	620	500	30	75	0.85	160

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Maintain a short arc, stringer bead and minimize the heat input.
3. Allow the weld to cool down to below 50°C before depositing, the next layer.

D&H 1217(NS)

Codification :

AWS SFA 5.11	ENiCrFe-7



Characteristics & Applications :

Non- synthetic electrode depositing Ni-Cr-Fe weld metal, which is very good resistance to SCC and IGC due to low carbon content and absence of sigma phase. Control boron and zirconium are helpful in reducing the tendency for ductility dip cracking. It has scaling temperature up to 1100°C in air. It is ideally suited for welding the Ni-Cr-Fe alloy of the UNS number N06690. It is also use for the welding of Ni-Cr-Fe alloys to steels and stainless steels, and for corrosion resistant overlays on steels. Typical specifications for Ni-Cr-Fe base metals are ASTM B166, B167 and B168. Ideal for stringent requirements in the construction of nuclear reactors

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni	Cr	Nb+Ta	Mo	Fe
Typical	0.04	3.0	0.50	0.018	0.014	55.0	29.0	1.5	0.15	9.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)	Lateral Expansion (mm)
			RT	RT
Typical	590	35	120	1.0

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Maintain a short arc, stringer bead and minimize the heat input.
3. For dissimilar metal welding, control the dilution by:
   a. Operating at lower currents
   b. Using stringer beads and faster welding speeds.

D&H 1223(NS)

Codification :

AWS SFA 5.11	ENiCrMo-3
EN ISO 14172	E Ni 6625



Characteristics & Applications :

A non-synthetic electrode depositing homogeneous Ni-Cr-Mo alloy composition. It is good resistance to abrasion, oxidation, and corrosion. It is suitable for welding Ni-CrMo alloys to themselves and to steel, and for surfacing steel with Ni-Cr-Mo weld metal and ideally suitable for welding Ni alloy UNS N06625. The electrodes are use in pressure vessel fabrication for minus196°C to 540°C, otherwise up to the scaling resistance temperature of 1200°C (sulphur free atmosphere). Ideal for valves, valve seats, impellers, guide points, bushing, bearings, journals, hot working tools like hot shear blades, forging dies, trimming dies, piercing punches etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	Nb+Ta	Fe
Typical	0.06	0.6	0.50	21	Bal.	9.0	3.5	5.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	772	34.0

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	90-130	70-90	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Use short arc and stringer beads.
2. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
3. Best results are obtained in flat position and wherever possible weld in flat position only.

D&H 1225(NS)

Codification :

AWS SFA 5.11	ENiCrCoMo-1



Characteristics & Applications :

A non-synthetic Inconel type of electrode, depositing weld metal of Ni-Cr-Co-Mo alloy. The weld metal has excellent crack resistance. Electrodes are used for welding similar type of alloys to themselves and to steel and for surfacing steels with Ni-Cr-Co-Mo weld metal. The electrodes are also used for applications where optimum strength and oxidation resistance is required above 820°C & up to 1150°C, especially when welding on base metal of Nickel-Iron-Chromium alloys. Specially recommended for welding furnace heating elements, reformer tubes etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Fe	Si	Ni	Co	Cr	Nb+Ta	Mo
Typical	0.07	1.5	4.5	0.50	48.0	12.0	24.0	0.3	9.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	665	29

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Operate the electrodes wherever possible, weld in flat position only.
3. Maintain a short arc, use stringer bead and minimize the heat input.

D&H 1227(NS)

Codification :

AWS SFA 5.11	ENiCrMo-7



Characteristics & Applications :

A non-synthetic nickel base electrode, depositing weld metal of Ni-Cr-Mo-Co-Ti-W alloys. The weld deposit resists corrosion resistance at room temperature as well as resistance to oxidation and reducing atmospheres at elevated temperatures. Electrodes are used for welding Ni-Cr-Mo alloy, for the welding of the clad side of joints in steel clad with Ni-Cr-Mo alloy, and for joining Ni-Cr-Mo alloys to steel and to other nickel base alloys. Some of the materials, which are welded with these electrodes, are ASTM B 574, B 575, B 619, B 622 and B 626 having UNS number N 06985.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Fe	Ni	Cr	Mo	Co	Ti	W
Typical	0.012	0.90	0.12	0.020	0.024	2.5	64.3	15.0	15.0	1.50	0.20	0.40

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	725	31

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Operate the electrodes wherever possible, weld in flat position only.
3. Maintain a short arc, use stringer bead and minimize the heat input.

D&H 1229(NS)

Codification :

AWS SFA 5.11	ENiCrFe-9



Characteristics & Applications :

D&H1229(NS) is a non-synthetic nickel base electrode. It gives soft and smooth arc, which is easy to strike and re-strike. The weld metal is of radiographic quality and displays a good combination of strength and impact strength even at -196°C. Electrodes of sizes up to 3.15 mm dia can be used for welding in all positions. It is recommended to use other sizes in horizontal and flat positions for achieving better results. Ideal for welding 9% Nickel steel for cryogenic storage tanks for LNG and other similar alloys as well as the clad side of joints in steel clad with a Ni-Cr-Fe alloy and for welding Ni-Cr-Fe alloys to steel and to other nickel base alloys.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni	Mo	Cr	W	Fe	Nb+Ta
Typical	0.09	2.0	0.50	0.015	0.012	Bal	4.0	14.0	1.0	9.0	1.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)
			- 196°C
Typical	690	27	75

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Operate the electrodes wherever possible, weld in flat position only.
3. Maintain a short arc, use stringer bead and minimize the heat input.

D&H 1232(NS)

Codification :

AWS SFA 5.11	ENiCrMo-12



Characteristics & Applications :

Non-synthetic basic coated electrode depositing Ni-Cr-Mo-Nb weld metal. Highly crack resistant weld also possesses good corrosion resistance characteristics. It has scaling temperature up to 1100°C in air. It is ideally suited for welding Cr-Ni-Mo austenitic stainless steels to themselves, to duplex stainless steels, to Ni-Cr-Mo alloys, and to steel or for just overlays. Typical specifications for the Cr-Ni-Mo stainless steel base metal are A240, A167, A182, A249, A276, A312, A358, A373, and A479, most particularly the grade UNS S31254 / 254 SMO / 6% Mo SS type. In a chloride containing environment, the fully austenitic weld-metal exhibits high resistance to Pitting, Crevice Corrosion & Stress Corrosion Cracking. It is ideal for Sulphuric and Phosphoric acid media that has been contaminated by chlorides. It can also be used for welding of 625 and 825 grade Ni-based alloys.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni	Cr	Nb+Ta	Mo	Fe
Typical	0.025	1.00	0.40	0.015	0.010	62.0	21.5	2.4	9.5	3.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)	Lateral Expansion (mm)
			- 196°C	- 196°C
Typical	700	38	75	0.70

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2 Maintain a short arc, stringer bead and minimize the heat input with an IPT of 100°C maximum is of vitally importance.
3 For dissimilar metal welding, control the dilution by:

a. Operating at lower currents b. Using stringer beads and faster welding speeds.

D&H 1233(NS)

Codification :

AWS SFA 5.11	ENiCrMo-13



Characteristics & Applications :

D&H 1233(NS) is a non-synthetic electrode for welding similar and dissimilar alloys like mild steel, stainless steel & nickel base alloys. Weld metal has good pitting and crevice corrosion resistance. It resists scaling up to 1100°C. Ideal for welding low carbon Ni-Cr-Mo alloys, clad side of joints in steel clad with low carbon Ni -Cr- Mo alloys and for welding low carbon Ni- Cr- Mo alloy to steel and to other nickel base alloys.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P	Fe	Cu
Typical	0.015	0.60	0.15	23.0	59.0	15.5	0.008	0.011	1.0	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	720	28

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Use short arc and stringer bead.

D&H 1250

Codification :

AWS SFA 5.11	ENiCu-7
EN ISO 14172	E Ni 4060



Characteristics & Applications :

D&H 1250 is a basic coated electrode depositing monel weld metal. Ideal for welding of monel to monel, Ni-Cu alloys to themselves, Ni-Cu alloy to steels, for welding clad side of Ni-Cu clad steel and for surfacing on steel parts for service against corrosion by sea water, chlorinated solvents, sulphuric acid and alkalies; ideal for marine, chemical, food, dairy and oil refining industries.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Al	Ti	Fe	Cu
Typical	0.05	2.80	0.50	66.0	0.60	0.60	1.30	Balance

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	505	34

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, CE, NPCIL

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Use DC(+) and minimise heat input by using low current and stringer bead.

D&H 1260

Codification :

AWS SFA 5.11	ENiCrMo-6



Characteristics & Applications :

D&H 1260 is a nickel base electrode. It gives soft and smooth arc, which is easy to strike and re-strike. It is easy to operate in AC also. The weld metal is of radiographic quality and displays a good combination of strength and impact strength even at -196°C. Electrodes of sizes up to 3.15 mm dia metal can be used for welding in all positions. It is recommended to use other sizes in horizontal and flat positions for achieving better results. Ideal for welding 9% Nickel steel for cryogenic storage tanks for LNG and other similar alloys as well as the clad side of joints in steel clad with a Ni Cr-Mo alloy and for welding Ni-Cr-Mo alloys to steel and to other nickel base alloys.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni	Mo	Cr	W	Fe	Nb+TA
Typical	0.08	3.0	0.50	0.018	0.014	Bal.	7.0	14.0	1.5	7.0	1.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)	CVN Impact Strength (J)
			-196°C
Typical	650	38	90

Welding Positions :



Current And Packing Data: AC/DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	180-230	140-180	100-130	80-100
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-350°C for 1 hour.
2. Operate the electrodes wherever possible, weld in flat position only.
3. Maintain a short arc, use stringer bead and minimize the heat input.

D&H 1280

Codification :

AWS SFA 5.11	ENi-1
EN ISO 14172	E Ni 2061



Characteristics & Applications :

D&H 1280 is a basic coated electrode depositing a pure nickel weld metal, ideally suited for welding wrought and cast of commercially pure nickel to themselves, welding nickel to carbon steels, overlays on steels to resist corrosion in caustic soda service and marine atmosphere.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Fe	Ti	Al
Typical	0.04	0.60	0.50	Balance	0.60	2.0	0.60

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	436	25

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Clean the weld area thoroughly free from all contamination.
3. Use short arc and minimise heat input.
4. Wherever possible weld in flat position only.

D&H 1400

Codification :

AWS SFA 5.11	ENiCrMo-5
EN ISO 14172	E Ni 6275



Characteristics & Applications :

D&H 1400 is a nickel base electrode depositing a Ni-Cr-Mo-W-Co deposit. The weld deposit has excellent heat resistance and strength up to 1000°C. The deposit work hardens under impact load and the hardness is retained even at elevated temperatures. The deposit has high resistance to static or cyclic loads at high temperatures. Ideally suited for surfacing applications and joining applications to resist corrosion due to chloride environment and for surfacing of hot working tools, dies, punches, etc.

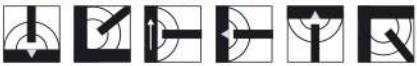
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	W	Fe	Co
Typical	0.05	0.60	0.50	15.0	Balance	15.5	3.5	5.0	2.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	713	28

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Use short arc and minimise heat input.
3. Clean the area thoroughly free from all contamination.
4. Wherever possible weld in flat position only.

D&H 1400(MOD)

Codification :

AWS SFA 5.11	ENiCrMo-4



Characteristics & Applications :

Non-synthetic electrode for joining, repair and surfacing, to resist abrasion, corrosion, oxidation and high temperature service. Weld metal containing low carbon Cr-Mo-W-Co. Excellent resistance to heat, strength and toughness up to 1000°C. Weld metal has good thermal shock resistance, hardness retention even at elevated temperatures and work hardening characteristics. Ideal for welding low carbon Ni-Cr-Mo alloys, clad side of low carbon Ni-Cr-Mo alloys and alloys of similar composition. Ideal for valves, valve seats, impellers, guide points, bushing, bearing, journals, hot working tools like hot shear blades, forging dies, trimming dies, piercing punches etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	W	Fe	Co
Typical	0.018	0.60	0.18	0.022	0.025	15.0	Balance	15.5	3.5	5.0	2.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	720	28

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2. Use short arc, stringer bead, and smallest possible size of electrode and minimum current to reduce the heat input.

D&H 1414(NS)

Codification :

AWS SFA 5.11	ENiCrMo-14



Characteristics & Applications :

D&H 1414(NS) provide excellent operating characteristics for groove and fillet welding in down hand position and smaller diameter electrodes are suitable for all position welding. Weld metal gives good resistance to the corrosion, resistance to reducing, oxidizing, crevice and pitting corrosion. It is suitable to join duplex, super duplex and super austenitic stainless steels and ideally suitable for nickel alloys such as Inconel alloy C-276, 622, 625, 686, UNS N06059 and N06022. Typical applications are include chemical, process, petrochemical, oil and gas, marine industries, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Fe	Si	P	S	Cr	Ni	Mo	W	Cu	Ti
Typical	0.010	0.65	3.5	0.20	0.012	0.015	20.0	Bal	16.0	3.5	0.25	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	720	35

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.

D&H 1423(NS)

Codification :

AWS SFA 5.11	ENiCrMo-10



Characteristics & Applications :

D&H 1423(NS) is an ideal non synthetic electrode for welding Ni-Cr-Mo alloys as well as the clad side of joints in steel clad with a Ni-Cr-Mo alloy and for welding Ni-Cr-Mo alloys to steel and to other nickel base alloys. It is suitable for welding components in plants for chemical processes with highly corrosive media. Typical base materials which are welded with this product are ASTM B574, B575, B619, B622 and B626 with UNS No. N06022. Ideal for C-22 alloys.

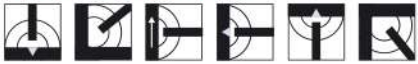
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Fe	W	Cu	V	Co
Typical	0.015	0.80	0.17	0.008	0.02	21.0	Bal.	13.5	<6.0	3.0	0.3	0.2	0.6

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)	CVN Impact Strength (J)	Lateral Expansion (mm)
			+27°C	+27°C
Typical	740	35	75	0.80

Welding Positions :



Current And Packing Data: DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-180	120-150	80-110	60-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 300-325°C for 1 hour.
2 Use short arc, stringer beads, and low currents.

D&H MONEL

Codification :

AWS SFA 5.15	ENiCuB



Characteristics & Applications :

D&H Monel is a nickel-copper alloy electrode depositing a monel weld metal for welding of cast irons. The weld metal bonds easily and strongly with the cast iron. Ideal for repairing defects in foundry cast iron castings, repairing of cracks, broken parts of cast iron, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Fe	Cu
Typical	0.42	1.0	0.6	64.0	3.5	Balance

Weld Metal Hardness : 150-175 VPN

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-170	100-130	70-100	50-70
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Ensure the electrode are dry. Re-dry the electrodes at 120°C for 1 hour.
2. Over heating of casting should be avoided by putting intermittent weld beads
3. Allow the weld to cool slowly.

NFM

Codification :

AWS SFA 5.15	ENiCl
EN ISO 1071	E C Ni-CI



Characteristics & Applications :

NFM is an electrode depositing high nickel weld metal for welding of cast irons. The deposit is soft and has good resistance to cracking. Ideally suited for welding of cast iron to produce machinable weld deposit. Also suitable for repairing of cracks filling up and surfacing applications.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Fe
Typical	0.80	0.15	0.80	Balance	4.0

Typical Weld Metal Hardness : 150 VPN

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	140-170	110-130	80-100	60-80
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : BHEL, CE

Precautions :

1. Ensure the electrode are dry. Re-dry the electrodes at 120°C for 1 hour.
2. Over heating of casting should be avoided by putting intermittent weld beads
3. Allow the weld to cool slowly.

D&H 1111CI

Codification :

AWS SFA 5.15	ENiFe-Cl
EN ISO 1071	E C NiFe-1



Characteristics & Applications :

D&H 1111CI is an electrode depositing a ferro-nickel alloy weld metal, ideal for welding of several types of cast irons and components for producing strong crack free with good toughness weld joints. The weld deposit has good machinability and good colour match with the parent metal. It is ideally suited for joining cast iron to mild steel.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	Fe
Typical	0.90	0.70	0.90	45.0 Min	Balance

Typical Weld Metal Hardness : 190 VPN

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	170-200	130-170	90-130	60-90
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Approvals : CE

Precautions :

1. Ensure the electrodes are dry. Re-dry the electrodes at 120°C for 1 hour.
2. Over heating of casting should be avoided by putting intermittent weld beads.
3. Allow the weld to cool slowly.

D&H NM-CI

Codification :

AWS SFA 5.15	E St



Characteristics & Applications :

Weld metal from D&H NM-CI is not readily machinable. It is the most economical for repairing various types of cast iron where machinability of the weld deposit is not required, where weld shrinkage stress is not a concern and color match of the base metal should not be expected. It melts at relatively low temperatures which permit the use of low welding currents. Commonly used on gears, motor housings, machine parts, farm equipment, large fames, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Fe
Typical	0.12	0.50	0.13	0.03	0.03	Balance

Typical Weld Metal Hardness : 300-400 BHN

Welding Positions :



Current And Packing Data: AC / DC(+)

Size (mm) Dia x Length	5x350	4x350	3.15x350	2.5x350
Current Range (Amps)	150-200	110-150	80-110	60-95
Weight/Carton (kgs)	2.5	2.5	2.5	2.5

Precautions :

1. Clean the base material thoroughly free from any surface contamination.
2. Machine or chamfer the casting skin from weld area.
3. Use low current, stringer beads and short weld runs followed by peening.
4. Over heating of casting should be avoided by putting intermittent weld beads.
5. Allow the weld to cool slowly.

57 YEARS Since 1968

Estd. 1968
D&H sécheron
Complete Welding Support

GMAW
Solid Wire



AUTOTHERME - 1

Codification :

AWS SFA 5.18	ER70S-6
EN ISO 14341-B	G 49A 3 C1 S6



Characteristics & Applications :

Autotherme-1 is a copper coated mild steel GMAW wire for welding of mild steel, low carbon steel and other structural steels of tensile strength up to 540 MPa. The wire burns with smooth arc and minimum spatter under optimum welding conditions. It is designed for single and multi-pass welding of low and medium carbon steels like; SA-36, A/B/C/D grades of SA-283, A/B/C grades of SA-285, A/B grades of SA-414, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Typical	0.09	1.60	0.90	0.018	0.018	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	550	480	28	55

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
0.80	28-32	170-200
1.2	27-31	260-290
1.6	26-30	330-360

Shielding Gas : Co_2/(80%Ar+20%Co_2)

Approval : Adani Infra, BHEL, CE, CIB-MP, L&T Power, NTPC

Packing Data :

Standard Size : Diameter 0.8 mm, 1.2 mm & 1.6 mm

Quantity : 12.5 / 15.0 kgs wire, random/ layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME 70S-2

Codification :

AWS SFA 5.18	ER70S-2
EN ISO 14341-B	G 49A 3 C1 S2



Characteristics & Applications :

Autotherme 70S-2 is triple deoxidized copper coated mild steel wire for GMAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is suitable for mild steel pipes. Ideal for welding A36, A285 Grade C, A515-55, A516-70, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Ti	Zr	Al	Cu	Ni	Cr	Mo
Typical	0.05	1.25	0.55	0.02	0.02	0.10	0.09	0.09	0.06	0.10	0.10	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	530	440	28	60

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
0.80	28-32	170-200
1.2	27-31	260-290
1.6	26-30	330-360

Shielding Gas : Ar / Co_2

Approval : CE

Packing Data :

Standard Size : Diameter 0.8 mm, 1.2 mm & 1.6 mm

Quantity : 15.0 kgs wire, random/ layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME 70S-2(NACE)

Codification :

AWS SFA 5.18	ER70S-2
EN ISO 14341-B	G 49A 3 C1 S2



Characteristics & Applications :

Autotherme 70S-2(NACE) is triple deoxidized copper coated mild steel wire for GMAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is designed for single and multi-pass welding of low and medium carbon steels. Ideal for welding A36, A285 Gr. C, A333 Gr.6, A515-55, A516-70, EN 10025-2 S355J2 etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Ti	Zr	V	Al	Cu	Ni	Cr	Mo
Typical	0.05	1.25	0.55	0.010	0.008	0.10	0.09	0.01	0.09	0.06	0.10	0.10	0.10

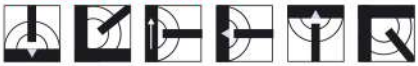
Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				-45°C
Typical	530	440	28	45

Corrosion Test : Passes corrosion test as per NACE standard TM-01-77-96 (SSCC) and TM-02-84-96 (HIC).

Hardness Of Weld Metal : 200 HV5 Max.

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
0.80	28-32	170-200
1.2	27-31	260-290
1.6	26-30	330-360

Shielding Gas : Ar / Co_2

Approval : CE

Packing Data :

Standard Size : Diameter 0.8 mm, 1.2 mm & 1.6 mm

Quantity : 15.0 kgs wire, random/ layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME 80S-D2

Codification :

AWS SFA 5.28	ER80S-D2
EN ISO 14341-B	G 55A 3 M13 4Mo



Characteristics & Applications :

Autotherme 80S-D2 is a copper-coated solid wire for GMAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is recommended for welding of molybdenum (~0.5%) containing high strength fine-grained structural steels. The wire also is suitable for welding of penstock pipe-line, fabrication of earth moving equipments, etc. where high tensile strength property is desired from the weld metal. Suitable for welding of ASTM steels: SA-455/ SA-455M, Gr.60, Gr.65 steels of SA-515/ SA-515M, Gr.60, Gr.65 steels of SA-516/ SA-516M, Class 1 of A, B, C, D grades of SA-533/ SA-533M, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Typical	0.075	1.78	0.55	0.014	0.015	0.45	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				-30°C
Typical	680	560	22	55

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 1-5% O_2

Approval : CE

Packing Data :

Standard Size : Diameter 1.2 mm & 1.6 mm

Quantity : 15.0 kgs wire, random/ layer wound in a plastic spool that conforms to DIN-8559 SD-300.

Note : 1. The product satisfies the requirement of AWS SFA 5.28 ER90S-D2 class also.
2. Please check availability and minimum order quantity before placing the order.

AUTOTHERME C-Mo

Codification :

AWS SFA 5.28	ER70S-A1
EN ISO 21952-B	G 52 M13 1M3



Characteristics & Applications :

Autotherme C-Mo is a copper-coated solid wire for GMAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is ideally suited for welding of low alloy ferritic steels of similar composition. The weld metal possesses good high temperature properties. Typical applications include the welding of Carbon Molybdenum steels such as, ASTM Grade F1 of SA-182 & SA-336, Grade A of SA-204, Grade T1/T1a/T1b of SA-209, Grade WC1 of SA-217, Grade A of SA-302, Grade P1 of SA-335, Class 1 of A grades of SA-533, etc.

Typical Chemical Composition Of Solid Wire (%) :

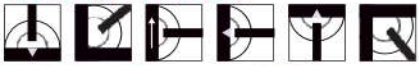
Element	C	Mn	Si	S	P	Mo	Cu
Typical	0.065	1.20	0.45	0.010	0.012	0.55	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	560	450	25

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon/ 1-5% O_2

Approval : CE, CIB-MP

Packing Data:

Standard Size : Diameter 1.2 mm & 1.6 mm

Quantity : 15.0 kgs wire, random/ layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Cr-Mo 1

Codification :

AWS SFA 5.28	ER80S-B2
EN ISO 21952-B	G 55 M13 1CM



Characteristics & Applications :

Autotherme Cr-Mo 1 is a copper-coated solid wire for GMAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is suitable for welding 1.25%Cr-0.5%Mo steel. The weld metal possesses good high temperature properties. It deposits notch free weld deposit with excellent mechanical properties. Especially suitable for welding of pipes & tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F2, F11, F12 class 1 & 2 of SA-182, Grade T11 of SA-199, Grade T2, T11 & T12 of SA-213, Grade WC6 of SA-217, Grade P2, P11 & P12 of SA-335, Grade FP2, FP11 & FP12 of SA-369, Grade 2, 11 & 12 of SA-387, Grade CP2, CP11 & CP12 of SA-426, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.08	0.50	0.55	0.010	0.012	1.30	0.55	0.1

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	620	550	24

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 1-5% O_2

Approval : CE, CIB-MP

Packing Data :

Standard Size : Diameter 1.2 mm & 1.6 mm

Quantity : 15.0 kgs wire, random/ layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Cr-Mo 1 (MOD)

Complete Welding Support

Codification :

AWS SFA 5.28	ER80S-B2
EN ISO 21952-B	G 55 M13 1CM



Characteristics & Applications :

Autotherme Cr-Mo 1 (MOD) is a copper-coated solid wire for GMAW available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. This wire having lesser impurities i.e. S, P, will improve the subzero impact property. It gives radiographic quality welds. It is suitable for welding 1.25%Cr-0.5%Mo steel. The weld metal possesses good high temperature properties. Especially suitable for welding of pipes & tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F2, F11, F12 class 1 & 2 of SA-182, Grade T11of SA-199, Grade T2, T11 & T12 of SA-213, Grade WC6 of SA-217, Grade P2, P11 & P12 of SA-335, Grade FP2, FP11 & FP12 of SA-369, Grade 2, 11 & 12 of SA-387, Grade CP2, CP11 & CP12 of SA-426, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu	Sn	As	Sb
Typical	0.08	0.50	0.45	0.007	0.009	1.30	0.50	0.05	0.003	0.003	0.002

X-factor: $(10P + 5Sb + 4Sn + As) / 100 \leq 12$ ppm (elements in ppm)

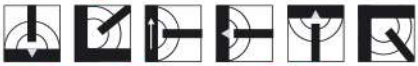
J-factor: $(Mn+Si) \times (P+Sn)\ 10^4 \leq 120$

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 20°C
Typical	620	550	24	80

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 1-5% O_2

Approval : CE

Packing Data :

Standard Size : Diameter 1.2 mm & 1.6 mm

Quantity : 15.0 kgs wire layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Cr-Mo 2

Codification :

AWS SFA 5.28	ER90S-B3
EN ISO 21952-B	G 62 M13 2C1M



Characteristics & Applications :

Autotherme Cr-Mo 2 is a copper-coated solid wire for GMAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is suitable for welding 2.25%Cr-1%Mo steel. The weld metal possesses good high temperature properties. It deposits notch free weld deposit with excellent mechanical properties. Especially suitable for welding of pipes and tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F22 (class 1 & 3) of SA-182 and SA-336, Grade T4, T22 of SA-199, Grade T22 of SA-213, Grade WC9 of SA-217, Grade P22 of SA-335, Grade FP22 of SA-369, Grade 22, 22L of SA-387, Grade CP22 of SA-426, Grade 22 of SA-541, Class 1 of A, B types of SA-542, etc.

Typical Chemical Composition Of Solid Wire (%) :

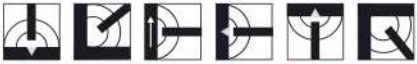
Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.09	0.50	0.55	0.010	0.012	2.50	1.10	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 690°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	680	600	19

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 1-5% O_2

Approval : CE, CIB-MP

Packing Data :

Standard Size : Diameter 1.2 mm & 1.6 mm.

Quantity : 15.0 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Cr-Mo 2 (MOD)

Codification :

AWS SFA 5.28	ER90S-B3
EN ISO 21952-B	G 62 M13 2C1M



Characteristics & Applications :

Autotherme Cr-Mo 2 (MOD) is a copper-coated solid wire for GMAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. This wire having lesser impurities i.e. S, P, will improve the subzero impact property. It gives radiographic quality welds. It is suitable for welding 2.25%Cr-1%Mo steel. The weld metal possesses good high temperature properties. Especially suitable for welding of pipes and tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F22 (class 1 & 3) of SA-182 and SA-336, Grade T4, T22 of SA-199, Grade T22 of SA-213, Grade WC9 of SA-217, Grade P22 of SA-335, Grade FP22 of SA-369, Grade 22, 22L of SA-387, Grade CP22 of SA-426, Grade 22 of SA-541, Class 1 of A, B types of SA-542, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu	Sn	As	Sb
Typical	0.08	0.46	0.50	0.007	0.009	2.50	1.00	0.05	0.003	0.003	0.002

X-factor: $(10P + 5Sb + 4Sn + As) / 100 \leq 12$ ppm (elements in ppm)
J-factor: $(Mn+Si) \times (P+Sn)\ 10^4 \leq 120$

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 690°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength
				-20°C
Typical	680	600	22	50

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 1-5% O_2

Approval : CE

Packing Data:

Standard Size : Diameter 1.2 mm & 1.6 mm.

Quantity : 15.0 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Cr-Mo 5

Codification :

AWS SFA 5.28	ER80S-B6
EN ISO 21952-B	G 55 M13 5CM



Characteristics & Applications :

Autotherme Cr-Mo 5 is a copper-coated solid wire for GMAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is suitable for welding 5%Cr 0.5%Mo steel. The weld metal possesses good high temperature properties. The weld metal possesses excellent creep property up to 550°C. Especially suitable for welding of pipes and tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F5/ F5a & F21 of SA-182, Grade T4, T22 of SA-199, Grade T22 of SA-213, Grade C5 of SA-217, Grade P22 of SA-335, Grade F5 & F21 (class 1&3) of SA-336, Grade FP5, FP21 of SA-369, Grade 5, 21 & 21L of SA-387, Grade CP5, CP21 of SA-426, Class 4, 4a of E types of SA-542, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.06	0.50	0.40	0.010	0.012	5.20	0.55	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 745°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	600	520	28

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 1-5% O_2

Approval : CE

Packing Data :

Standard Size : Diameter 1.2 mm & 1.6 mm.

Quantity : 15.0 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Cr-Mo 9

Codification :

AWS SFA 5.28	ER80S-B8
EN ISO 21952-B	G55 M13 9C1M



Characteristics & Applications :

Autotherme Cr-Mo 9 is a copper-coated solid wire for GMAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is designed for creep resistant steels. It is used for welding base metal of similar compositions, usually in the form of pipe or tubing. Typical applications include welding of A387 Grade 9 plate, A335 P9 pipe, A213 T9 tubes, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.08	0.60	0.30	0.020	0.020	9.00	1.00	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 745°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	570	500	18

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 1-5% O_2

Approval : CE

Packing Data :

Standard Size : Diameter 1.2 mm & 1.6 mm.

Quantity : 15.0 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Cr-Mo 91

Codification :

AWS SFA 5.28	ER90S-B91
EN ISO 21952-B	G62 M13 9C1MV



Characteristics & Applications :

Autotherme Cr-Mo 91 is copper-coated a solid wire for GMAW, yielding 9%Cr - 1%Mo and modified with Niobium, Vanadium and Nitrogen designed to provide improved creep strength, toughness, fatigue life, oxidation and corrosion resistance at elevated temperatures. The wire gives stable arc, smooth welding performance and deposits radiographic quality welds. It is designed to weld the materials in power plant, refineries, naptha cracker units, etc. Following are some of the steels that can be welded with this wire. I) Plate: A 387 Gr.91 (II) Pipes: A 335-P91 (III) Tubes: A 213 - T91

Typical Chemical Composition Of Solid Wire (%) :

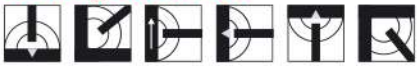
Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Al	Cu
Typical	0.11	0.95	0.25	0.007	0.008	9.35	0.35	1.0	0.2	0.03	0.04	0.02	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 760°C FOR 2HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	680	550	21

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 5% O_2

Approval : CE

Packing Data :

Standard Size : Diameter 1.2 mm & 1.6 mm.

Quantity : 15.0 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Cr-Mo 92

Codification :

AWS SFA 5.28	ER90S-B92



Characteristics & Applications :

Autotherme Cr-Mo 92 is a copper-coated solid wire for GMAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It deposits 9%Cr–0.5%Mo-1.7%W and enriched with Niobium, Vanadium and Nitrogen. Tungsten additions provides adequate creep rupture strength at higher steam pressures and temperatures. The controlled addition of alloying elements improves the toughness and weldability. It is designed to weld advanced materials, which are being used to improve thermal efficiency in power plant, refineries etc. Ideal for welding steels of similar composition to achieve adequate creep rupture strength. Some typical materials that are welded with this consumable are A213 T92, A335 P92, A387Gr 92, etc.

Typical Chemical Composition Of Solid Wire (%) :

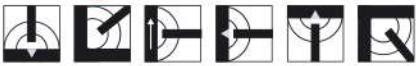
Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Al	Cu	W	B
Typical	0.12	0.60	0.20	0.009	0.007	9.0	0.50	0.50	0.2	0.06	0.05	0.02	0.15	1.7	0.003

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 760°C FOR 2HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	690	580	19

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : Argon / 5% O_2

Packing Data :

Standard Size : Diameter1.2 mm & 1.6 mm.

Quantity : 15.0 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME Mn-Mo

Codification :

AWS SFA 5.28	ER80S-G
EN ISO 14341-B	G 55A Z C1 4Mo



Characteristics & Applications :

Autotherme Mn-Mo is a copper-coated solid wire for GMAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is suitable for welding high strength fine-grained structural steels containing ~0.5%Mo. The wire is also suitable for welding of penstock pipe-line, fabrication of earth moving equipments, etc. where high tensile strength property is desired from the weld metal. Suitable for welding of ASTM steels: SA-455/ SA-455M, Gr.60, Gr.65 steels of SA-515/ SA-515M, Gr.60, Gr.65 steels of SA-516/ SA-516M, Class 1 of A, B, C, D grades of SA-533/ SA-533M, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Typical	0.06	1.75	0.53	0.010	0.015	0.40	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	640	540	23

Welding Positions :



Welding Parameter: DC(+)

Diameter (mm)	Volt (V)	Current (A)
1.2	27-32	300-360
1.6	25-30	340-420

Shielding Gas : CO_2 / 80% Ar & 20 % Co_2

Approval : CE

Packing Data :

Standard Size : Diameter 1.2 mm & 1.6 mm.

Quantity : 15.0 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME-308L

Codification :

AWS: SFA 5.9	ER308L
EN ISO: 14343-A	G 19 9L



Characteristics & Applications :

Autotherme-308L is a solid wire for GMAW process, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. Wire contains low carbon 20%Cr - 10%Ni. The weld metal exhibits excellent resistance to Intergranular Corrosion. It is ideally suited for welding of stainless steels of similar composition like 304L and equivalents, for overlays, surfacing, and repairing castings of similar materials.

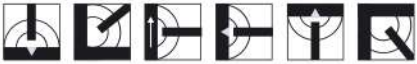
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.022	1.20	0.40	0.015	0.018	20.0	10.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	570	40.0

Welding Positions :



Welding Parameter: DC(+)

Shielding Gas : Argon

Approval : CE

Packing Data :

Standard Size : Diameter 0.8mm, 1.2 mm & 1.6 mm.

Quantity : 12.5 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME-309L

Codification :

AWS SFA 5.9	ER309L
EN ISO 14343-A	G 23 12L



Characteristics & Applications :

Autotherme-309L is a solid wire for MIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The weld metal has excellent mechanical properties and possesses good oxidation and scaling resistance at elevated temperatures. It is ideally suited for welding stainless steels, wrought and cast materials of similar composition, welding of 18/8 type stainless steels to carbon steels for buffer layers, for welding clad side of 18/8 clad stainless steels, etc.

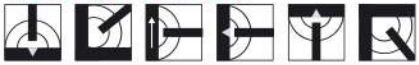
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.02	1.75	0.35	0.020	0.010	23.3	13.8

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	550	32.0

Welding Positions :



Welding Parameter: DC(+)

Shielding Gas : Argon

Approval : CE

Packing Data :

Standard Size : Diameter 0.8mm, 1.2 mm & 1.6 mm.

Quantity : 12.5 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME-316L

Codification :

AWS SFA 5.9	ER316L
EN ISO 14343-A	G (19 12 3L)



Characteristics & Applications :

Autotherme 316L is a solid wire for MIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The weld metal has excellent resistance to intergranular corrosion even at elevated temperatures. It is ideally suited for welding stainless steel of similar composition in wrought or cast form and for overlay application to resist heat and corrosion. It is suitable for number of industries like rayon, dye, paper, chemical, fertilizer, petrochemicals, etc.

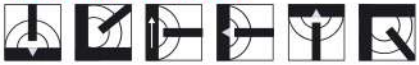
Typical Chemical Composition Of All Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.020	1.50	0.50	0.010	0.020	19.0	12.5	2.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	520	32.0

Welding Positions :



Welding Parameter: DC(+)

Shielding Gas : Argon

Approval : CE

Packing Data :

Standard Size : Diameter 0.8mm, 1.2 mm & 1.6 mm.

Quantity : 12.5 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

AUTOTHERME-347

Codification :

AWS SFA 5.9	Er347
EN ISO 14343-A	G (19 9 Nb)



Characteristics & Applications :

Autotherme 347 is a solid wire for MIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The Nb reduces the possibility of intergranular chromium carbide precipitation and thus susceptibility to intergranular corrosion and high temperature strength. It is suitable for welding Cr–Ni stabilized stainless steels of type AISI 347, 321, etc.

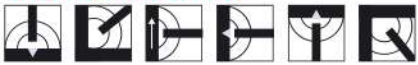
Typical Chemical Composition Of All Solid Wire (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Nb
Typical	0.04	1.40	0.37	0.015	0.010	19.15	9.5	0.55

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	580	33.0

Welding Positions :



Welding Parameter: DC(+)

Shielding Gas : Argon

Approval : CE

Packing Data :

Standard Size : Diameter 0.8mm, 1.2 mm & 1.6 mm.

Quantity : 12.5 kg wire, layer wound in a plastic spool that conforms to DIN-8559 SD-300.

57 YEARS Since 1968

Estd. 1966
D&H sécheron
Complete Welding Support

GTAW
TIG Rod



F 70S-6

Codification :

AWS SFA 5.18	ER70S-6
EN ISO 636-A	W 42 3 3Si1



Characteristics & Applications :

F 70S-6 is a copper coated mild steel wire for GTAW. Suitable for welding of mild steel, low carbon steel and other structural steels of tensile strength up to 540 MPa. The wire burns with smooth arc. It is designed for welding of low and medium carbon steels like; SA-36, A/B/C/D grades of SA-283, A/B/C grades of SA-285, A/B grades of SA-414, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Typical	0.09	1.60	0.90	0.018	0.018	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 30°C
Typical	510	440	26	45

Welding Positions :



Shielding Gas : Argon

Current Condition : DCEN

Approval : BV, CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F 70S-2

Codification :

AWS SFA 5.18	ER70S-2
EN ISO 636-A	W 42 3 2Ti



Characteristics & Applications :

F 70S-2 is triple deoxidized copper-coated mild steel wire for GTAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is suitable for root run of mild steel pipes. Ideal for welding A36, A285 grade C, A515-55, A516-70, etc

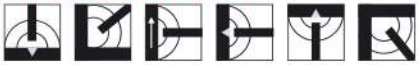
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Ti	Zr	Al	Cu	Ni	Cr	Mo
Typical	0.05	1.25	0.55	0.02	0.02	0.10	0.09	0.09	0.06	0.10	0.10	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				-30°C
Typical	530	440	28	60

Welding Positions :



Shielding Gas : Argon

Current Condition : DCEN

Approval : Adani Infra, CE, CIB-MP, L&T Power, NPCIL, PDIL, Reliance (Engineering) BV.

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F 70S-2(NACE)

Codification :

AWS SFA 5.18	ER70S-2
EN ISO 636-A	W 42 4 2Ti



Characteristics & Applications :

F 70S-2(NACE) is triple deoxidized copper coated mild steel wire for GTAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is suitable for root run of mild steel pipes. Ideal for welding A36, A285 Gr. C, A333 Gr. 6, A515-55, A516-70, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Ti	Zr	V	Al	Cu	Ni	Cr	Mo
Typical	0.05	1.25	0.55	0.010	0.008	0.10	0.09	0.01	0.09	0.06	0.10	0.10	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				-45°C
Typical	530	440	28	45

Welding Positions :



Corrosion Test : Passes corrosion test as per NACE standard TM-01-77-96 (SSCC) and TM-02-84-96 (HIC)

Hardness Of Weld Metal : 200 HV5 Max.

Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F 80S-D2

Codification :

AWS SFA 5.28	ER80S-D2
EN ISO 14341-B	W 55A 3I14 Mo



Characteristics & Applications :

F 80S-D2 is a copper-coated solid wire for GTAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is recommended for welding of molybdenum (~0.5%) containing high strength fine-grained structural steels. The wire also is suitable for welding of penstock pipe-line, fabrication of earth moving equipments, etc. where high tensile strength property is desired from the weld metal. Suitable for welding of ASTM steels: SA-455/ SA-455M, Gr.60, Gr.65 steels of SA-515/ SA-515M, Gr.60, Gr.65 steels of SA-516/ SA-516M, Class 1 of A, B, C, D grades of SA-533/ SA-533M, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Typical	0.075	1.78	0.55	0.014	0.015	0.45	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				-30°C
Typical	680	560	22	55

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F 90S-D2

Codification :

AWS SFA 5.28	ER90S-D2
EN ISO 14341-B	W 55A 3I14 Mo



Characteristics & Applications :

F 90S-D2 is a copper-coated solid wire available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. This wire is recommended for welding of molybdenum (~0.5%) containing high strength fine-grained structural steels. The wire also is suitable for welding of penstock pipe-line, fabrication of earth moving equipments, etc. where high tensile strength property is desired from the weld metal. Suitable for welding of ASTM steels: SA-455/ SA-455M, Gr.60, Gr.65, Gr.70 steels of SA-515/ SA-515M, Gr.60, Gr.65, Gr.70 steels of SA-516/ SA-516M, Class 1 of A grades of SA-533/ SA-533M, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Typical	0.075	1.78	0.55	0.014	0.015	0.45	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				-30°C
Typical	680	560	22	55

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F C - Mo

Codification :

AWS SFA 5.28	ER70S-A1
EN ISO 21952-B	W 52 I1 1M3



Characteristics & Applications :

F C-Mo is a copper-coated solid wire for GTAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is ideally suited for welding of low alloy ferritic steels of similar composition. The weld metal possesses good high temperature properties. Typical applications include the welding of Carbon Molybdenum steels such as, ASTM Grade F1 of SA-182 & SA-336, Grade A of SA-204, Grade T1/T1a/T1b of SA-209, Grade WC1 of SA-217, Grade A of SA-302, Grade P1 of SA-335, Class 1 of A grades of SA-533, etc.

Typical Chemical Composition Of Solid Wire (%) :

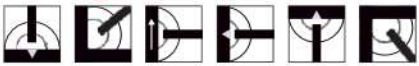
Element	C	Mn	Si	S	P	Mo	Cu
Typical	0.065	1.20	0.45	0.010	0.012	0.55	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	560	450	25

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : Adani Infra, BHEL, CE, CIB-MP

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Cr-Mo 1

Codification :

AWS SFA 5.28	ER80S-B2
EN ISO 21952-B	W 55 I1 1CM



Characteristics & Applications :

F Cr-Mo 1 is a copper-coated solid wire for GTAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is suitable for welding 1.25%Cr-0.5%Mo steel. The weld metal possesses good high temperature properties. It deposits notch free weld deposit with excellent mechanical properties. Especially suitable for welding of pipes & tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F2, F11, F12 class 1 & 2 of SA-182, Grade T11 of SA-199, Grade T2, T11 & T12 of SA-213, Grade WC6 of SA-217, Grade P2, P11 & P12 of SA-335, Grade FP2, FP11 & FP12 of SA-369, Grade 2, 11 & 12 of SA-387, Grade CP2, CP11 & CP12 of SA-426, etc.

Typical Chemical Composition Of Solid Wire (%) :

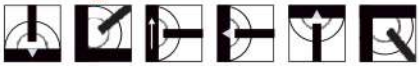
Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.08	0.50	0.55	0.010	0.012	1.30	0.55	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	620	550	24

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : Adani Infra, BHEL, BV, CE, CIB-MP

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Cr-Mo 1 (MOD)

Codification :

AWS SFA 5.28	ER80S-B2
EN ISO 21952-B	W 55 I1 1CM



Characteristics & Applications :

F Cr-Mo 1 (MOD) is a copper-coated solid wire for GTAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. This wire having lesser impurities i.e. S, P, will improve the subzero impact property. It gives radiographic quality welds. It is suitable for welding 1.25%Cr-0.5%Mo steel. The weld metal possesses good high temperature properties. Especially suitable for welding of pipes & tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F2, F11, F12 class 1 & 2 of SA-182, Grade T11of SA-199, Grade T2, T11 & T12 of SA213, Grade WC6 of SA-217, Grade P2, P11 & P12 of SA-335, Grade FP2, FP11 & FP12 of SA-369, Grade 2, 11 & 12 of SA-387, Grade CP2, CP11 & CP12 of SA-426, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu	Sn	As	Sb
Typical	0.08	0.50	0.45	0.007	0.009	1.30	0.50	0.05	0.003	0.003	0.002

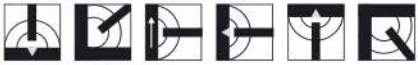
X-factor: $(10P + 5Sb + 4Sn + As) / 100 \leq 12$ ppm (elements in ppm)
J-factor: $(Mn+Si) \times (P+Sn)\ 10^4 \leq 120$

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 20°C
Typical	620	550	24	80

Welding Positions :



Shielding Gas : Argon
Current Conditions : DCEN
Approval : CE
Packing Data :
Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.
Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Cr-Mo 1L

Codification :

AWS SFA 5.28	ER70S-B2L



Characteristics & Applications :

F Cr-Mo 1L is a copper-coated solid wire for GTAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is suitable for welding low carbon 1.25%Cr-0.5%Mo steel. The weld metal possesses good high temperature properties. Especially suitable for welding of pipes & tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F2, F11, F12 class 1 & 2 of SA-182, Grade T11 of SA-199, Grade T2, T11 & T12 of SA-213, Grade WC6 of SA-217, Grade P2, P11 & P12 of SA-335, Grade FP2, FP11 & FP12 of SA-369, Grade 2, 11 & 12 of SA-387, Grade CP2, CP11 & CP12 of SA426, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.04	0.50	0.55	0.010	0.012	1.30	0.55	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	530	450	21

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Cr-Mo 2

Codification :

AWS SFA 5.28	ER90S-B3
EN ISO 21952-B	W 62 I1 2C1M



Characteristics & Applications :

F Cr-Mo 2 is a copper-coated solid wire for GTAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is suitable for welding 2.25%Cr-1%Mo steel. The weld metal possesses good high temperature properties. Especially suitable for welding of pipes and tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F22 (class 1 & 3) of SA-182 and SA-336, Grade T4, T22 of SA-199, Grade T22 of SA-213, Grade WC9 of SA-217, Grade P22 of SA-335, Grade FP22 of SA-369, Grade 22, 22L of SA-387, Grade CP22 of SA-426, Grade 22 of SA-541, Class 1 of A, B types of SA-542, etc

Typical Chemical Composition Of Solid Wire (%) :

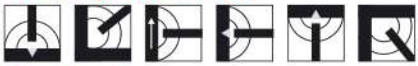
Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.09	0.50	0.55	0.010	0.012	2.50	1.10	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 690°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	680	600	20

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : BHEL, BV, CE, CIB-MP, L&T Power, Reliance (SASAN Power)

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.

Identification AWS code is punched on each wire.

F Cr-Mo 2 (MOD)

Codification :

AWS SFA 5.28	ER90S-B3
EN ISO 21952-B	W 62 I1 2C1M



Characteristics & Applications :

F Cr-Mo 2 (MOD) is a copper-coated solid wire for GTAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. This wire having lesser impurities i.e. S, P, will improve the subzero impact property. It gives radiographic quality welds. It is suitable for welding 2.25%Cr-1%Mo steel. The weld metal possesses good high temperature properties. Especially suitable for welding of pipes and tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F22 (class 1 & 3) of SA-182 and SA-336, Grade T4, T22 of SA-199, Grade T22 of SA213, Grade WC9 of SA-217, Grade P22 of SA-335, Grade FP22 of SA-369, Grade 22, 22L of SA-387, Grade CP22 of SA-426, Grade 22 of SA-541, Class 1 of A, B types of SA-542, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu	Sn	As	Sb
Typical	0.08	0.46	0.50	0.007	0.009	2.50	1.00	0.05	0.003	0.003	0.002

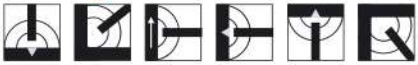
X-factor: $(10P + 5Sb + 4Sn + As) / 100 \leq 12$ ppm (elements in ppm)
J-factor: $(Mn+Si) \times (P+Sn)\ 10^4 \leq 120$

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 690°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				-20°C
Typical	680	600	22	50

Welding Positions :



Shielding Gas : Argon
Current Conditions : DCEN
Approval : CE
Packing Data :
Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.
Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.

F Cr-Mo 2L

Codification :

AWS SFA 5.28	ER80S-B3L



Characteristics & Applications :

F Cr-Mo 2L is a copper-coated solid wire for GTAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is suitable for welding low carbon 2.25%Cr-1%Mo steel. The weld metal possesses good high temperature properties. Especially suitable for welding of pipes and tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F22 (class 1 & 3) of SA-182 and SA-336, Grade T4, T22 of SA-199, Grade T22 of SA213, Grade WC9 of SA-217, Grade P22 of SA-335, Grade FP22 of SA-369, Grade 22, 22L of SA-387, Grade CP22 of SA-426, Grade 22 of SA-541, Class 1 of A, B types of SA-542, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.04	0.50	0.55	0.010	0.012	2.50	1.10	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 690°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	580	500	20

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Cr-Mo 5

Codification :

AWS SFA 5.28	ER80S-B6
EN ISO 21952-B	W 55 I1 5CM



Characteristics & Applications :

F Cr-Mo 5 is a copper-coated solid wire for GTAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is suitable for welding 5%Cr-0.5%Mo steel. The weld metal possesses good high temperature properties. The weld metal possesses excellent creep property upto 550°C. Especially suitable for welding of pipes and tubes of matching composition in Power plants, Refineries, Petrochemicals, Fertilizer plants, etc. Suitable for welding of ASTM steels: Grade F5/ F5a & F21 of SA-182, Grade T4, T22 of SA-199, Grade T22 of SA-213, Grade C5 of SA-217, Grade P22 of SA-335, Grade F5 & F21 (class 1&3) of SA-336, Grade FP5, FP21 of SA-369, Grade 5, 21 & 21L of SA-387, Grade CP5, CP21 of SA-426, Class 4, 4a of E types of SA-542, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.06	0.50	0.40	0.010	0.012	5.20	0.55	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 745°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	600	520	25

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Cr-Mo 9

Codification :

AWS SFA 5.28	ER80S-B8
EN ISO 21952-B	W55 I1 9C1M



Characteristics & Applications :

F Cr-Mo 9 is a copper-coated solid wire for GTAW, available in bright finish. The wire gives stable arc, smooth welding performances and deposits radiographic quality welds. It is designed for creep resistant steels. It is used for welding base metal of similar compositions, usually in the form of pipe or tubing. Typical applications include welding of A387 Grade 9 plate, A335 P9 pipe, A213 T9 tubes, etc.

Typical Chemical Composition Of Solid Wire (%) :

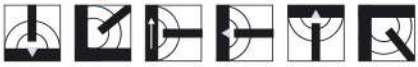
Element	C	Mn	Si	S	P	Cr	Mo	Cu
Typical	0.08	0.60	0.30	0.020	0.020	9.00	1.00	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 745°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	570	500	18

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Cr-Mo 91

Codification :

AWS SFA 5.28	ER90S-B91
EN ISO 21952-B	W62 I1 9C1MV



Characteristics & Applications :

F Cr-Mo 91 is copper-coated a solid wire for GTAW, yielding 9%Cr - 1%Mo and modified with Niobium, Vanadium and Nitrogen designed to provide improved creep strength, toughness, fatigue life, oxidation and corrosion resistance at elevated temperatures. The wire gives stable arc, smooth welding performance and deposits radiographic quality welds. F Cr-Mo 91 designed to weld the materials in power plant, refineries, naptha cracker units, etc. Following are some of the steels that can be welded with this wire.

I) Plate: A 387 Gr.91 (II) Pipes: A 335-P91 (III) Tubes: A 213 - T91

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Al	Cu
Typical	0.11	0.95	0.25	0.007	0.008	9.35	0.35	1.0	0.2	0.03	0.04	0.02	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 760°C FOR 2HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	680	550	21

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : Adani Infra, CE, CIB-MP, L&T Power, Reliance (SASAN Power)

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Cr-Mo 92

Codification :

AWS SFA 5.28	ER90S-B92



Characteristics & Applications :

F Cr-Mo 92 is a copper-coated solid wire for GTAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It deposits 9%Cr-0.5%Mo-1.7%W and enriched with Niobium, Vanadium and Nitrogen. Tungsten additions provides adequate creep rupture strength at higher steam pressures and temperatures. The controlled addition of alloying elements improves the toughness and weldability. It is designed to weld advanced materials, which are being used to improve thermal efficiency in power plant, refineries etc. Ideal for welding steels of similar composition to achieve adequate creep rupture strength. Some typical materials that are welded with this consumable are A213 T92, A335 P92, A387Gr 92, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	V	Nb	N	Al	Cu	W	B
Typical	0.12	0.60	0.20	0.009	0.007	9.0	0.50	0.50	0.2	0.06	0.05	0.02	0.15	1.7	0.003

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 760°C FOR 2HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	690	580	19

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F Mn - Mo

Codification :

AWS SFA 5.28	ER80S-G
EN ISO 14341-B	W 55A Z I14 Mo



Characteristics & Applications :

F Mn-Mo is a copper-coated solid wire for GTAW, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is suitable for welding high strength fine-grained structural steels containing ~0.5%Mo. The wire is also suitable for welding of penstock pipe-line, fabrication of earth moving equipments, etc. where high tensile strength property is desired from the weld metal. Suitable for welding of ASTM steels: SA-455/ SA-455M, Gr.60, Gr.65 steels of SA-515/ SA-515M, Gr.60, Gr.65 steels of SA-516/ SA-516M, Class 1 of A, B, C, D grades of SA-533/ SA-533M, etc.

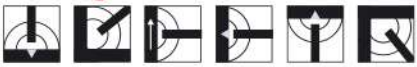
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Typical	0.06	1.75	0.53	0.010	0.015	0.40	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)
Typical	640	540	23

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

F 80S - Ni 1

Codification :

AWS SFA 5.28	ER80S-Ni1



Characteristics & Applications :

F 80S-Ni1 is a copper-coated solid wire available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It is specially designed to produce weld metal with increase strength and notch toughness at temperature up to -45°C. It gives radiographic quality welds. Ideally suitable for welding fine grained and Nickel steels. Typical applications include storage tanks for liquefied gases, distillers in coke oven batteries and petrochemical industries.

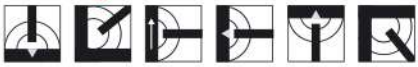
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cu
Typical	0.06	0.50	0.60	0.010	0.012	1.00	0.05	0.25	0.02	0.20

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-45°C
Typical	600	520	28	75

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.

Identification – AWS code is punched on each wire.

F 80S - Ni 2

Codification :

AWS SFA 5.28	ER80S-Ni2
EN ISO 636-A	W 46 6 2Ni2



Characteristics & Applications :

F 80S-Ni2 is a copper-coated solid wire available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It is specially designed to produce weld metal with increase strength and notch toughness at temperature up to -60°C. It gives radiographic quality welds. Ideally suitable for welding fine grained and Nickel steels. Typical applications include containers and piping systems and tanks used for storage, transportation of liquefied propane and butane, A&P brackets etc.

Typical Chemical Composition Of Solid Wire (%) :

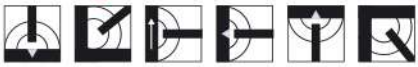
Element	C	Mn	Si	S	P	Ni	Cu
Typical	0.06	0.50	0.60	0.010	0.012	2.50	0.20

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				-60°C
Typical	600	520	28	75

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

F 100S-G

Codification :

AWS SFA 5.28	ER100S-G



Characteristics & Applications :

F 100S-G is a copper-coated solid wire available in bright finish, gives smooth flow, stable are spatter free under optimum welding conditions. The weld metal displays excellent crack resistance and produces sound weld metal possessing excellent strength combined with good impact properties. It gives radiographic quality welds. It is ideally suited for welding of high strength Q&T steels, like WEL-TEN80, SA 517 SA335 P36 grades, WB36 pipes, and their equivalent grades.

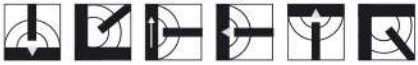
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	Cu	Ni	Mo	Cr	Nb	Al	S	P
Typical	0.08	1.0	0.40	0.60	1.2	0.40	0.20	0.02	0.02	0.014	0.018

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Typical	720	620	22

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : Reliance (SASAN Power)

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 500 mm / 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 308

Codification :

AWS SFA 5.9	ER308



Characteristics & Applications :

FW 308 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is ideally suited for welding of stainless steels of similar composition like 304 and equivalents, for overlays, surfacing, and repairing castings of similar materials.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.04	1.20	0.30	0.015	0.018	20.0	10.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	570	40

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 308L

Codification :

AWS SFA 5.9	ER308L
EN ISO 14343-A	W 19 9L



Characteristics & Applications :

FW 308L is a solid wire for TIG process, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. Wire contains low carbon 20%Cr-10%Ni. The weld metal exhibits excellent resistance to Intergranular Corrosion. It is ideally suited for welding of stainless steels of similar composition like 304L and equivalents, for overlays, surfacing, and repairing castings of similar materials.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.022	1.20	0.40	0.015	0.018	20.0	10.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	570	40

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 309

Codification :

AWS SFA 5.9	ER309



Characteristics & Applications :

FW 309 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The weld metal has excellent mechanical properties and possesses good oxidation and scaling resistance at elevated temperatures. It is ideally suited for welding stainless steels, wrought and cast materials of similar composition, welding of 18/8 type stainless steels to carbon steels for buffer layers, for welding clad side of 18/8 clad stainless steels, etc.

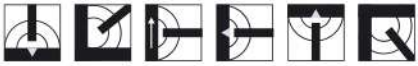
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.05	1.75	0.35	0.010	0.020	23.3	13.8

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	570	32

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.

Identification – AWS code is punched on each wire.

FW 309L

Codification :

AWS SFA 5.9	ER309L
EN ISO 14343-A	W 23 12L



Characteristics & Applications :

FW 309L is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The weld metal has excellent mechanical properties and possesses good oxidation and scaling resistance at elevated temperatures. It is ideally suited for welding stainless steels, wrought and cast materials of similar composition, welding of 18/8 type stainless steels to carbon steels for buffer layers, for welding clad side of 18/8 clad stainless steels, etc.

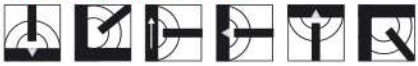
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.02	1.75	0.35	0.010	0.020	23.3	13.8

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	550	32

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 310

Codification :

AWS SFA 5.9	ER310
EN ISO 14343-A	W (25 20)



Characteristics & Applications :

FW 310 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. The weld metal has excellent resistance to oxidation and scaling up to 1200°C. It is ideally suited for the welding of similar and dissimilar compositions, including hardenable steels, clad steels, Carbon - Molybdenum and Chromium - Molybdenum steels where pre-heat, and post weld heat treatments are impracticable.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni
Typical	0.10	2.0	0.50	0.015	0.018	26.0	21.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	600	32

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 316

Codification :

AWS SFA 5.9	ER316



Characteristics & Applications :

FW 316 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The weld metal has excellent resistance to intergranular corrosion even at elevated temperatures. It is ideal for welding stainless steel of similar composition in wrought or cast form and for overlay application to resist heat and corrosion. It is suitable for number of industries like rayon, dye, paper, chemical, fertilizer, petrochemicals, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.04	1.5	0.50	0.010	0.020	19.0	12.5	2.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	540	32

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.

Identification – AWS code is punched on each wire.

FW 316L

Codification :

AWS SFA 5.9	ER316L
EN ISO 14343-A	(W 19 12 3L)



Characteristics & Applications :

FW 316L is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The weld metal has excellent resistance to intergranular corrosion even at elevated temperatures. It is ideal for welding stainless steel of similar composition in wrought or cast form and for overlay application to resist heat and corrosion. It is suitable for number of industries like rayon, dye, paper, chemical, fertilizer, petrochemicals, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.02	1.5	0.50	0.010	0.020	19.0	12.5	2.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	520	32

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 317L

Codification :

AWS SFA 5.9	ER317L



Characteristics & Applications :

FW 317L is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is ideally suited for welding of stainless steels of similar composition and their equivalents. Low carbon weld metal increases the resistance to intergranular corrosion. It is also excellent resistance against Sulfuric, Sulfurous and phosphoric acids.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.025	1.2	0.40	0.015	0.018	19.5	14.0	3.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	540	32

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 320

Codification :

AWS SFA 5.9	ER320



Characteristics & Applications :

FW 320 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The weld metal provides resistance to intergranular corrosion. Ideally suited to weld base metal of similar composition for applications where resistance to severe corrosion involving a wide range of chemicals, including sulfuric and sulfurous acids and their salts, is required. It can be used to weld both castings and wrought alloys of similar composition.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Nb+Ta
Typical	0.03	1.50	0.35	0.010	0.012	20.0	34.0	2.5	3.5	0.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	580	36

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 347

Codification :

AWS SFA 5.9	ER347
EN ISO 14343-A	W (19 9 Nb)



Characteristics & Applications :

FW 347 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The Nb reduces the possibility of intergranular chromium carbide precipitation and thus susceptibility to intergranular corrosion and high temperature strength. It is suitable for welding Cr – Ni stabilized stainless steels of type AISI 347, 321, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Nb
Typical	0.04	1.4	0.37	0.010	0.015	19.15	9.5	0.55

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	580	33

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 385

Codification :

AWS SFA 5.9	ER385
EN ISO 14343-A	W 20 25 5 Cu L



Characteristics & Applications :

FW 385 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Wire contains low carbon 20%Cr-25%Ni- 5%Mo-2%Cu which exhibits excellent resistance to corrosion in non oxidizing media like sulfuric acid, phosphoric acid, acetic acid, formic acid, fatty acids, oxalic acid etc. It is ideally suited for welding materials for application where phosphoric, sulfuric acids, and other non oxidizing solutions are encountered. The addition of Mo and Cu helps in resisting corrosive attack of these solutions. It is particularly suited for welding Carpenter 20, HV9, HV9A, Uranus B6, UHB 904L, Sandvik 2RK65, and similar materials which are used for these service conditions.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Typical	0.022	1.2	0.30	0.015	0.018	20.0	25.0	4.80	1.60

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	540	32

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 410

Codification :

AWS SFA 5.9	ER410



Characteristics & Applications :

FW 410 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Weld metal possesses excellent resistance to corrosion, pitting, abrasion, and impact. It is suitable for joining of similar alloys and for surfacing and overlay applications on unalloyed steels. Ideally suited for surfacing of valves and other components of turbine, steam valves made of 13%Cr steel, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr
Typical	0.06	0.5	0.40	0.025	0.025	12.0

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 740°C FOR 1HR)

Properties	UTS(MPa)	%El (L=4d)
Typical	550	23

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 410NiMo

Codification :

AWS SFA 5.9	ER410NiMo



Characteristics & Applications :

FW 410NiMo is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Weld metal possesses excellent resistance to corrosion, pitting, abrasion, and impact. Welding for surfacing of ASTM CA 6 NM castings and similar composition subjected to wear by corrosion, erosion, abrasion combined with impact. Ideally suitable for welding of guide vanes and runners, hard facing of valve seats, turbine blades in hydro power plants, pulp and paper machinery, rebuilding of gas, steam turbines, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Typical	0.05	0.50	0.40	0.025	0.025	11.5	4.5	0.50

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 600°C FOR 1HR)

Properties	UTS(MPa)	%El (L=4d)	Hardness (VPN)
Typical	800	17	325-360

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.

Identification – AWS code is punched on each wire.

FW 430

Codification :

AWS SFA 5.9	ER430



Characteristics & Applications :

FW 430 is a solid wire for TIG process available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Weld metal possesses excellent resistance to corrosion, abrasion, and impact. It is designed for joining of similar alloys and for surfacing and overlay application on unalloyed steels. Ideally suited for surfacing of valves impellers, turbine, blades etc.

Typical Chemical Composition Of Solid Wire (%) :

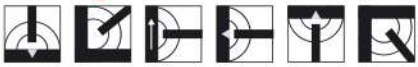
Element	C	Mn	Si	S	P	Cr
Typical	0.06	0.5	0.40	0.015	0.018	16.5

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 780°C FOR 2 HR)

Properties	UTS(MPa)	%El (L=4d)
Typical	490	24

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 2209

Codification :

AWS SFA 5.9	ER2209
EN ISO 14343-A	W 22 9 3 NL



Characteristics & Applications :

FW 2209 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Deposits have duplex microstructures consisting of an austenite - ferrite matrix, which is characterized by high tensile strength, resistance to stress corrosion cracking, and improved resistance to pitting. It is used primarily to weld duplex stainless steels, which contain approximately 22%Cr such as UNS S31803 and S32205.

Typical Chemical Composition Of Solid Wire (%) :

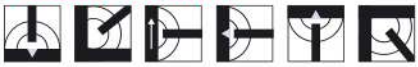
Element	C	Mn	Si	S	P	Cr	Ni	Mo	N
Typical	0.020	1.30	0.30	0.020	0.020	22.5	8.5	3.0	0.12

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 780°C FOR 2HR)

Properties	UTS(MPa)	%El (L=5d)
Typical	720	25

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 2553

Codification :

AWS SFA 5.9	ER2553



Characteristics & Applications :

FW 2553 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. The duplex stainless steel weld metal is characterized by high tensile strength, resistance to stress corrosion cracking and improved resistance to pitting. The major application area includes, oil & gas industry, offshore platforms, petrochemical plants, mechanical & structural components demanding high strength together with high corrosion resistance.

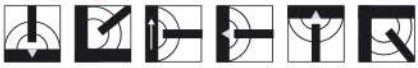
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	N
Typical	0.025	1.10	0.45	0.010	0.012	25.0	5.5	3.5	2.0	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	780	17

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 2594

Codification :

AWS SFA 5.9	ER2594
EN ISO 14343-A	W 25 9 4 NL



Characteristics & Applications :

FW 2594 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. The weld metal exhibits high strength, high impact energy, and resistance to stress corrosion cracking, pitting, and crevice corrosion. The weld metal possesses excellent corrosion resistance in marine & paper environments. Examples of application areas are: Oil and gas industry, Off shore plat forms, Petrochemical plants, Mechanical and structural components. It is suitable for welding. ASTM A890/A995 Gr. 5A, CE3Mn, UNS J93404, Super Duplex 2507, UNS S32750, EN 1.4410, NF Z3 CND 25-06AZ, Ss2328, ASTM A890/A995 Gr. 6A UNS 32760, J93380, CD3MWCuN.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Cu	N	W
Typical	0.025	1.50	0.50	0.015	0.010	25.0	9.0	3.5	0.30	0.22	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)	CVN Impact Strength (J)
			+20°C
Typical	790	23	60

Welding Positions :



Pitting Resistance Number : Meet the requirement of PREN ≥ 40
Corrosion Property : Weld metal meets ASTM A262 Practice C and ASTM G-48A
Ferrite Number (FN) : 30-60
Shielding Gas : Argon
Current Conditions : DCEN
Approval : CE
Packing Data :
Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.
Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 1223

Codification :

AWS SFA 5.14	ERNiCrMo-3
EN ISO 8274 S	Ni 6625



Characteristics & Applications :

FW 1223 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is ideal for welding Ni-Cr-Mo alloys to themselves and to steel, and for surfacing steel. The wires are use in pressure vessel fabrication for -196°C to 540°C, otherwise up to the scaling resistance temperature of 1200°C (sulphur free atmosphere). It is also suitable for welding Ni base alloys to steel. Ideal for valves, valve seats, impellers, guide points, bushing, bearings, journals, hot working tools like hot shear blades, forging dies, trimming dies, piercing punches etc.

Typical Chemical Composition Of All Solid Wire (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	Fe	Al	Cu	Ti	Nb+Ta
Typical	0.06	0.40	0.30	0.015	0.008	21.0	61.0	9.0	4.0	0.20	0.25	0.20	3.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	770	34

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 1225

Codification :

AWS SFA 5.14	ERNiCrCoMo-1



Characteristics & Applications :

FW 1225 is a solid wire for GTAW available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. It is used for welding Nickel-Chromium-Cobalt-Molybdenum alloys to themselves and to steel and for surfacing steel with Ni-Cr-Co-Mo weld metal. It is also used for applications where optimum strength and oxidation resistance is required above 820°C up to 1150°C especially when welding on base metal of Nickel Iron-Chromium alloys. Specially recommended for welding furnace heating elements, reformer tubes etc.

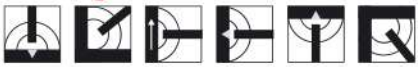
Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Fe	P	S	Si	Cr	Ni	Mo	Co	Ti	Cu	Al
Typical	0.08	0.80	1.5	0.015	0.008	0.30	22.0	53.0	9.0	12.0	0.20	0.20	1.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	620	25

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 1250

Codification :

AWS SFA 5.14	ERNiCu-7



Characteristics & Applications :

FW 1250 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. The weld metal possesses good resistance to corrosion by seawater, chlorinated solvents, sulfuric acid and alkalies. It is ideally suited for welding of monel-to-monel, Ni-Cu alloys to themselves, Ni-Cu alloy to steels, for welding clad side of Ni-Cu clad steel and for surfacing on steel parts. It is ideal for marine, chemical, food, dairy and oil refining industries.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Ni	Cu	Ti
Typical	0.025	0.87	0.16	0.010	0.006	63.8	31.0	2.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	520	30

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 1280

Codification :

AWS SFA 5.14	ERNi-1



Characteristics & Applications :

FW 1280 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Weld metal enhanced resistance to corrosion in caustic soda service and marine atmosphere. It is suitable for welding wrought and cast forms of pure nickel alloys like ASTM B160, B161, B162 and B163 having UNS number N02200 or N02201 to itself.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	P	S	Ni	Ti
Typical	0.025	0.44	0.20	0.007	0.010	96.2	2.6

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	430	25

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW 1400

Codification :

AWS SFA 5.14	ERNiCrMo-4
EN ISO 18274 S	Ni 6276



Characteristics & Applications :

FW 1400 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Weld metal enhanced resistance to heat and strength up to 1000°C. Weld metal has good thermal shock resistance, hardness retention even at elevated temperatures, work hardening characteristics and corrosion resistance. It is suitable for welding low carbon Ni–Cr–Mo alloys, clad side of low carbon Ni–Cr–Mo alloys and alloys of similar composition. Suitable for surfacing for increased resistance to abrasion, oxidation & corrosion. Ideal for valves, valve seats, impellers, guide points, bushing, bearing, journals, hot working tools like hot shear blades, forging dies, trimming dies, piercing punches etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Cr	Ni	Mo	W	Fe	Co
Typical	0.018	0.60	0.06	0.025	0.022	15.0	58.0	15.5	3.5	5.0	2.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	720	28.0

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval: CE

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kg wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification AWS code is punched on each wire.

FW 1423

Codification :

AWS SFA 5.14	ERNiCrMo-10



Characteristics & Applications :

FW 1423 is a solid wire for TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Weld metal enhanced resistance to pitting, crevice corrosion, and stress corrosion cracking. It has outstanding corrosion resistance to both reducing and oxidizing media. It is suitable for welding Nickel – Chromium – Molybdenum alloy to itself, to steel, to other nickel base alloys, and for cladding steel. Typical applications include the welding of Nickel – Chromium – Molybdenum alloys such as, ASTM B574, B575, B619, B622 & B628 having UNS number N 06022.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Fe	P	S	Si	Ni	Co	Cr	Mo	V	W
Typical	0.010	0.40	4.5	0.015	0.008	0.07	55.5	2.0	21.0	13.0	0.20	3.0

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Typical	740	30

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FW NiCr-3

Codification :

AWS SFA 5.14	ERNiCr-3
EN ISO 18274 S	Ni 6082



Characteristics & Applications :

FW NiCr-3 is a solid wire for GTA / TIG welding, available in bright finish, gives smooth flow, stable arc and spatter free under optimum welding conditions. It gives radiographic quality welds. This wire is used for welding a range of Inconel 600, 601, 690, Incoloy 800, 800H, 800HT, 9% Nickel steel, ASTM B 163, B 166, B 167, B 168 etc. Used for dissimilar applications with carbon steel to stainless steels, low alloy steel to stainless steel and also for 200 and 400 type alloys.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Fe	P	S	Si	Ni	Cu	Co	Ti	Cr	Nb+Ta
Typical	0.08	3.0	2.0	0.015	0.008	0.20	71.5	0.20	0.004	0.50	20.0	2.5

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=5d)
Typical	600	36

Welding Positions :



Shielding Gas : Argon

Current Conditions : DCEN

Approval : CE, BHEL, CIB-MP

Packing Data :

Standard Size : Diameter 1.6 mm, 2.0 mm, 2.4 mm & 3.2 mm in cut lengths of 1000 mm each.

Quantity : 5 kgs wire put in an air-tight polythene bag and finally packed in a plastic container.
Identification – AWS code is punched on each wire.

FCAW

Flux Cored Wire



MAXFIL-12R

Codification :

AWS/SFA 5.20	E71T-1C
EN ISO 17632-B	T492T1-1CA-K
IS 15769:2008	ET 531RC9H5



Characteristics & Applications :

Maxfil-12R is an all-position mild steel flux cored wire designed for optimum performance when using 100%CO_2 shielding. The wire is characterized with smooth metal transfer, uniform welding even on vertical-up stringer beads and easy slag removal. Filler contour is flat to slightly convex with equal leg lengths and uniform sidewall wetting. Weld metal is of radiographic quality. Maxfil-12R is designed for single and multi-pass welding of low and medium carbon steels like;SA-36, A/B/C/D grades of SA-283, A/B/C grades of SA-285, A/B grades of SA-414, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	P	S	Ni	Cr	Mo	V
Range	0.15	2.00	0.50	0.030	0.030	0.50	0.20	0.30	0.08
Typical	0.053	1.20	0.36	0.015	0.007	0.006	0.030	0.002	0.021

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-20°C
Range	510-610	360 Min	20 Min	27 Min
Typical	550	480	29	60

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Approvals : CE, RDSO, BIS, DNV

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an airtight polythene bag and then packed in a corrugated box.

MAXFIL-12M

Codification :

AWS SFA 5.20	E71T-1M/E71T-9M
EN ISO 17632-B	T493T1-1MA-K
IS 15769: 2008	ET 541RM9-H5



Characteristics & Applications :

Maxfil-12M is an all-position flux cored wire with Argon-CO_2 gas shielding to deposit weld metal with improved impact resistance characteristics. The wire facilitates easy deposition of vertical-up stringer beads and provide flat to slightly convex contour with equal leg lengths and uniform sidewall wetting. The slag coverage is complete and designed for easy removal. The deposited weld metal contains very low diffusible hydrogen and is of radiographic quality. Maxfil-12M is designed for single and multi-pass welding of low and medium carbon steels like; A-36/ A-36M A/B/C/D grades of SA-283, A/B/C grades of SA-285, A/B grades of SA-414, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu
Range	0.12	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	0.35
Typical	0.05	1.28	0.41	0.010	0.014	0.010	0.010	0.005	0.018	0.010

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
				-20°C	-30°C
Range	490-670	390 Min	22 Min	27 Min	
Typical	564	504	28.6	65	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Approvals : CE, BIS, BV

Shielding Gas : Argon - Carbon Dioxide CO_2 (80:20%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-MC-31

Codification :

AWS SFA 5.18	E70C-6M H4
EN ISO 17632-B	T493T15-0MA-K
IS 15769:2008	ET540MM9-H10



Characteristics & Applications :

Maxfil-MC-31 is a gas shielded metal-cored wire designed for welding of low & medium tensile steels structures subjected to dynamic loading. The wire encompasses the deposition advantages of flux cored wire along with the high deposition efficiencies of a solid wire with both single and multi-layer applications. The deposited weld metal is virtually free from slag covering and thus reduces post-weld cleaning time. The wire burns with smooth arc and low spatter. Weld metal contains extremely low diffusible hydrogen (<4ml per 100gm). Maxfil-MC-31 is suitable for welding of similar composition steels and equivalent grade steels like; D/E/F/G grades of SA-414, Gr.60/Gr.65 steels of SA-515, Gr.60/Gr.65 steels of SA-516, etc. The wire can be used for robotic welding applications.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Cr	Mo	V	Cu
Range	0.12	1.75	0.90	0.030	0.030	0.50	0.20	0.30	0.08	0.50
Typical	0.12	1.60	0.50	0.011	0.018	0.50	0.20	0.30	0.080	0.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-30°C
Range	480 Min	400 Min	22.0 Min	27.0 Min
Typical	556	474	26.0	72

Diffusible hydrogen content is 2.8ml per 100 gm of all-weld metal.
Tensile test piece aged for 48 hrs at 104°C.

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	32-36	280-400	32-36	280-40
1.60	32-36	300-500	32-36	300-500

Approvals : CE, BIS

Shielding Gas : Argon - Carbon Dioxide CO_2 (80:20%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.
Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-12RJ

Codification :

AWS SFA 5.20	E71T-1C/MJ/E71T-9C/ MJ/E71T-12MJ H4
EN ISO 17632-B	T494T1-1CA-K



Characteristics & Applications :

Maxfil-12RJ is an all-position mild steel flux cored wire designed for optimum performance and excellent impact properties when using 100%CO_2 &Ar+CO_2 gas shielding. The wire is characterized with smooth metal transfer, uniform welding even on vertical-up stringer beads and easy slag removal. Filler contour is flat to slightly convex with equal leg lengths and uniform sidewall wetting. Weld metal is of radiographic quality and contains extremely low diffusible hydrogen (<4ml per 100gms).

Maxfil-12RJ is designed for single and multi-pass welding of low and medium carbon steels like; SA-36, A/B/C/D grades of SA-283, A/B/C grades of SA-285, A/B grades of SA-414, etc. The wire is suitable for structural fabrication, ship building, converter vessels, rotary kiln shells, heavy duty structures & tanks, boilers, dredgers, etc.

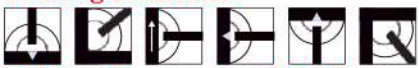
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu
Typical	0.070	1.50	0.75	0.010	0.015	0.012	0.010	0.006	0.018	0.010

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
				-20°C	-30°C	-40°C
Range	490-670	390 Min	22 Min	27 Min		
Typical	560	505	26.0	90	70	62

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-30	160-280	20-26	120-170	22-25	100-160
1.60	24-30	180-300	20-26	120-170	22-25	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) / Argon - Carbon Dioxide CO_2 (80:20%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supply approximately 11Kgs in a plastic spool & total weight of the box 12.5 Kgs maximum. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-15R

Codification :

AWS SFA 5.20	E71T-5C
EN ISO 17632-B	T493T1-1CA-K



Characteristics & Applications :

Maxfil-15R is a semi-basic mild steel flux cored wire designed for all position welding with 100%CO_2 shielding. The wire gives smooth burning characteristics, low spatter and easy slag removal. Filler contour is flat to slightly convex with equal leg lengths and uniform sidewall wetting. The deposited weld metal is of radiographic quality. Maxfil-15R is designed for single and multi-pass welding of low and medium carbon steels grades like; C, D, E grades of SA-414, Gr.55, Gr.60 steels of SA-516 and equivalent grade steels, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu
Range	0.12	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	0.35
Typical	0.062	1.10	0.37	0.015	0.020	0.015	0.020	0.001	0.015	0.008

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-29°C
Range	490-670	390 Min	22 Min	27 Min
Typical	520	424	25.0	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-30H

Codification :

DIN EN 14700	TFe-1



Characteristics & Applications :

Maxfil-30H is a low alloy steel flux cored wire designed for surfacing applications to achieve all-weld metal hardness between 280-340 BHN. The wire gives good performance under CO_2 shielding with radiographic quality weld deposits. Weld metal is free from cracks, possesses good metal-to-metal abrasion resistance and can withstand impact loading. The wire produces thin & friable slag covering with shiny bead appearance. Maxfil-30H is suitable for single and multi-pass weld-surfacing of rollers, pulleys, track links, track rollers, crane wheels, gear shafts, idlers, brake shoes, conveyor parts, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Typical	0.14	1.35	0.56	0.011	0.018	1.41	0.15

Typical Mechanical Properties Of All Weld Metal :

Properties	2 Layer Hardness (BHN)	3 Layer Hardness (BHN)
Typical	300-340	340-380

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260
1.60	24-28	180-300	24-28	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-31B

Codification :

AWS SFA 5.20	E70T-5C
EN ISO 17632-B	T493T5-0CA-K



Characteristics & Applications :

Maxfil-31B is a low alloy steel flux cored wire designed for welding of low & medium tensile steels structures subjected to dynamic loading. The wire gives good performance under CO_2 shielding with radiographic quality weld deposits. The wire produces thin & friable slag covering with shiny bead appearance. Maxfil-31B is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; D/E/F/G grades of SA-414, Gr.60/Gr.65 steels of SA-515, Gr.60/Gr.65 steels of SA-516, etc. Suitable for shipbuilding, bridge construction, pressure vessels & boilers, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu
Range	0.12	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	0.35
Typical	0.06	1.38	0.45	0.011	0.018	0.015	0.020	0.050	0.001	0.005

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-30°C
Range	490-670	390 Min	22 Min	27 Min
Typical	548	470	26.0	52

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	18-22	100-160
1.60	24-30	180-300	18-22	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-31B(SPL)

Codification :

AWS SFA 5.20	E71T-5M
EN ISO 17632-B	T493T1-1MA-K



Characteristics & Applications :

Maxfil-31B(Spl) is a mild steel flux cored wire suitable for all position welding with Argon-CO_2 gas shielding. The wire gives smooth burning characteristics, low spatter and easy slag removal. Filler contour is flat to slightly convex with equal leg lengths and uniform sidewall fusion. The deposited weld metal is of radiographic quality. The deposited weld metal contains very low diffusible hydrogen (<5ml/100gms of weld metal). Maxfil-31B (Spl) is designed for single and multi-pass welding of low and medium carbon steels grades like; C, D, E grades of SA-414, Gr.55, Gr.60 steels of SA-516 and equivalent grade steels, etc.

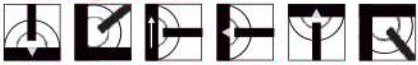
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Cu
Range	0.12	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	0.35
Typical	0.10	0.80 -1.70	0.30 -0.80	0.30 -0.80	0.025	0.015	0.020	0.005	0.018	0.010

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
				-20°C	-30°C
Range	490-670	390 Min	22 Min	27 Min	
Typical	560	450	28.0	50	35

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-30	160-300	20-26	100-160	22-25	100-160
1.60	24-30	180-300	20-26	110-200	22-25	110-200

Approvals : TATA Steel Growth Shop Jamshedpur, CE

Shielding Gas : Carbon Dioxide CO_2 (80:20%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-34B(MDH)

Codification :

AWS SFA 5.29	E81T5G-M



Characteristics & Applications :

Maxfil-34B(MDH) is a low alloy steel flux cored wire designed for welding of medium tensile (containing Nickel, Molybdenum) steels structures subjected to dynamic loading. The wire gives good performance under Argon-CO_2 gas shielding with radiographic quality deposits. Presence of Nickel & Molybdenum in the weld metal, imparts an excellent crack resistance & toughness properties. Maxfil-34B (MDH) is suitable for single and multi-pass welding of similar composition steels, fine grained steels and equivalent grade steels like; Gr. F1 of SA-182 and SA-336, Gr. A of SA-204, Gr. T1/T1a/T1b of SA-209, Gr. WC1 of SA-217, Gr. A of SA-302, Gr. P1 of SA-335, Class 1 of A grade of SA-533 etc. Suitable for fabrication of heavy machinery, steel plant equipments & structures, high strength fabricated structures etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo	Ni
Typical	0.058	1.42	0.45	0.010	0.016	0.42	0.40

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-30°C
Typical	647	536	26.0	112

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Approvals : TATA Steel Growth Shop, Jamshedpur

Shielding Gas : Argon - Carbon Dioxide CO_2 (80:20%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-36R

Codification :

AWS/SFA 5.29	E81T1-K2C/M
EN ISO 17632-B	T553T1-1MA N3



Characteristics & Applications :

Maxfil-36R is an alloy steel flux cored wire containing nickel and few micro-alloying elements. The wire is suitable for welding of moderate strength (Yield strength>490 Mpa), fine-grained steels to meet sub-zero impact resistance property down to -30°C. The wire is suitable for positional welding application, results easy slag removal and has excellent welders appeal suitable with CO_2/Ar+CO_2 gas shielding. Weld bead is smooth & uniform and satisfies the requirements of radiographic quality. Maxfil-36R is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; A/B grades of SA-203, A/B/C grades of SA-662, etc. This wire is used for fabrication of penstock pipelines, pressure vessels & valves, refineries, off-shore structures and similar applications, etc.

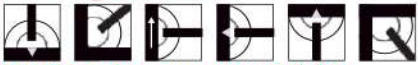
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Al
Range	0.15	0.50-1.75	0.80	0.03	0.03	0.15	1.00-2.00	0.35	0.05	1.8
Typical	0.055	1.44	0.47	0.012	0.014	0.015	1.48	0.15	0.015	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-30°C
Range	550-690	470 Min	19.0 Min	27 Min
Typical	655	550	22.0	42

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Approvals : CE

Shielding Gas : Argon - Carbon Dioxide CO_2 (80:20%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-36B2

Codification :

AWS SFA 5.29	E80T5-B2C
EN ISO 17632-B	T55ZTS-0CP-G



Characteristics & Applications :

Maxfil-36B2 is a low alloy steel flux cored wire designed for welding of creep resisting steels like; 0.5%Cr-0.5%Mo, 1%Cr-0.5%Mo, 1.25%Cr-0.5%Mo etc. for high temperature and pressure service conditions in steam pipes and boilers. The wire gives optimum performance under CO_2 shielding with radiographic quality weld deposits. The wire produces thin & friable slag covering with shiny bead appearance. Maxfil-36B2 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; Gr. F2/F11/F12 of SA-182, Gr. T11 of SA-199, Gr. T2/T11/T12 of SA-213, Gr. WC6 of SA-217, Gr. P2/P11/P12 of SA-335, Gr. FP2/FP11/FP12 of SA-369, Gr. 2/11/12 of SA-387, Gr. CP2/CP11/CP12 of SA-426, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Range	0.05-0.12	1.25	0.80	0.030	0.030	1.00-1.50	0.40-0.65
Typical	0.065	0.96	0.34	0.011	0.018	1.24	0.51

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Range	550-690	470 Min	19.0 Min
Typical	584	490	24.0

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-36B

Codification :

AWS SFA 5.29	E80T5G-C
EN ISO 17632-A	T46 3 Z B C



Characteristics & Applications :

Maxfil-36B is a low alloy steel flux cored wire designed for welding of medium tensile steels structures subjected to dynamic loading, pressure vessels, etc. The wire gives good performance under CO_2 shielding with radiographic quality deposits. The weld metal has excellent crack resistance & toughness at sub-zero temperatures. Maxfil-36B is designed for single and multi-pass welding of medium tensile steels like; Aldur 45/60, BH 39/47, BHW 27/30, fine grained steels and equivalent grade steels like; SA-841, A/B/C grades of SA-662, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Typical	0.06	1.60	0.45	0.011	0.016	0.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-30°C
Typical	647	534	23.0	80

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-36B(M)

Codification :

AWS SFA 5.29	E81T1G-C



Characteristics & Applications :

Maxfil-36B(M) is an all position low alloy steel flux cored wire suitable for welding of high strength and low temperature service steels. The wire is formulated to use with 100%CO_2 shielding gas. The weld has excellent bead appearance and easy slag removal. The deposited weld metal is of radiographic quality. Maxfil-36B (M) is designed for single and multi-pass welding of similar composition high strength steels and equivalent grade steels like; ASTM A 537 Class 2, HY-80 and other similar high strength steels. Typical application includes the welding & fabrication of submarines, aircraft carriers and many structural applications.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Typical	0.06	1.00	0.40	0.012	0.018	0.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-30°C
Typical	588	510	22.0	65

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-37B

Codification :

AWS SFA 5.29	E80T5-NilC
EN ISO 17632-B	T555T5-0CP N2



Characteristics & Applications :

Maxfill-37B is a low alloy steel flux cored wire designed for welding of high strength, fine grained quenched & tempered steels to meet sub-zero impact resistance property down to -51°C. The wire gives optimum performance under CO_2 shielding and deposits radiographic quality weld metal. The weld has excellent bead appearance and easy slag removal. Maxfil-37B is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; A/B grades of SA-203, A/B/C grades of SA-662, B/C grades of SA-737, N-A-XTRA-60/65, etc. This wire is used for heavy fabrication work subjected to dynamic loading, earth moving equipments, off-shore platforms and similar kind of applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Al
Range	0.12	1.50	0.80	0.03	0.03	0.15	0.80-1.10	0.35	0.05	1.8
Typical	0.062	1.26	0.45	0.014	0.010	0.10	1.00	0.28	0.001	0.020

Typical Mechanical Properties Of All Weld Metal :

(PWHT : 620°C FOR 1HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-50°C
Range	550-690	470 Min	19.0 Min	27 Min
Typical	625	536	23.0	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-37R

Codification :

AWS SFA 5.29	E81T1-NilC
EN ISO 17632-B	T553T1-1CA N2



Characteristics & Applications :

Maxfil-37R is a low alloy steel flux cored wire designed for welding of high strength, fine grained quenched & tempered steels to meet sub-zero impact resistance property. The wire gives optimum performance under CO_2 shielding and deposits radiographic quality weld metal. The weld has excellent bead appearance and easy slag removal. The wire sets low diffusible hydrogen content (<4ml/100gm) in the weld metal. Maxfil-37R is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; A/B grades of SA-203, A/B/C grades of SA-662, B/C grades of SA-737, N-A-XTRA-60/65, etc. This wire is used for heavy fabrication work subjected to dynamic loading, earth moving equipments, off-shore platforms and similar kind of applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	AI
Range	0.12	1.50	0.80	0.03	0.03	0.15	0.80-1.10	0.35	0.05	1.8
Typical	0.052	1.26	0.45	0.014	0.018	0.10	1.00	0.25	0.001	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-30°C
Range	550-690	470 Min	19.0 Min	27 Min
Typical	625	516	22.0	55

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-37RJ

Codification :

AWS SFA 5.29	E81T1-Ni1M-J H4



Characteristics & Applications :

Maxfil-37RJ is a low alloy steel flux cored wire designed for welding of high strength, fine grained quenched & tempered steels to meet sub-zero impact resistance property. The wire gives optimum performance under Ar+CO_2 shielding and deposits radiographic quality weld metal. The weld has excellent bead appearance and easy slag removal. The wire sets low diffusible hydrogen content (<4ml/100gm) in the weld metal. Maxfil-37RJ is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; A/B grades of SA-203, A/B/C grades of SA-662, B/C grades of SA-737, N-A-XTRA-60/65, etc. This wire is used for heavy fabrication work subjected to dynamic loading, earth moving equipments, off-shore platforms and similar kind of applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Al
Range	0.12	1.50	0.80	0.03	0.03	0.15	0.80-1.10	0.35	0.05	1.8
Typical	0.050	0.95	0.50	0.010	0.015	0.020	1.05	0.080	0.018	0.025

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
				-30°C	-40°C
Range	550-690	470 Min	19.0 Min	27 Min	
Typical	640	585	25	56	48

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Shielding Gas : Argon + Carbon Dioxide CO_2 (80:20%) at a gas flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-38R

Codification :

AWS SFA 5.29	E91T1-K2C
EN ISO 17632-B	T572T1-1CA N3



Characteristics & Applications :

Maxfil-38R is a low alloy steel flux cored wire designed for welding of moderate strength fine-grained steels to meet sub-zero impact resistance property down to -18°C. The wire is suitable for positional welding application, results easy slag removal and has excellent welders appeal. Weld bead is smooth & uniform and satisfies the requirements of radiographic quality. Maxfil-38R is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; A/B grades of SA-203, A/B/C grades of SA-662, etc. This wire is used for fabrication of penstock pipelines, pressure vessels & valves, refineries, off-shore structures and similar applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Al
Range	0.15	0.50-1.75	0.80	0.03	0.03	0.15	1.00-2.00	0.35	0.05	1.8
Typical	0.056	1.48	0.45	0.013	0.018	0.12	1.85	0.30	0.001	0.010

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-20°C
Range	620-760	540 Min	17.0 Min	27 Min
Typical	697	588	21.0	35

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-39R

Codification :

AWS SFA 5.29	E81T1-Ni2C
IRS: M-46/2020	CLASS II



Characteristics & Applications :

Maxfil-39R is a low alloy steel flux cored wire designed for welding of high strength, fine grained quenched & tempered steels to meet sub-zero impact resistance property. The wire gives optimum performance under CO_2 shielding and deposits radiographic quality weld metal. The weld has excellent bead appearance and easy slag removal. The wire sets low diffusible hydrogen content (<4ml/100gm) in the weld metal. Maxfil-39R is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; SA-203, Grade-E, HY-80, HY-100, HSLA-80, HSLA-100, ASTM A 516/A 516M-17, Gr.70 or equivalent where low temperature (at -46°C) is required. This wire is used for heavy fabrication work subjected to dynamic loading, earth moving equipment's, off- shore platforms and similar kind of applications Penstock Fabrication.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni
Range	0.12	1.50	0.80	0.03	0.03	1.75-2.75
Typical	0.052	1.26	0.45	0.014	0.018	1.95

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)	% Reduction In Area
				-46°C	
Range	540	390	24	25	45
Typical	625	516	29	46	50

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-32	160-260	22-27	100-160	22-28	100-160
1.60	24-32	180-300	22-27	110-200	22-28	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute and Ar+1 to 5% O_2

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-40B

Codification :

AWS SFA 5.29	E100T5-K3C



Characteristics & Applications :

Maxfil-40B is a low alloy steel flux cored wire designed for welding of high strength fine grained quenched & tempered steels to meet sub-zero impact resistance property down to -51°C. The wire gives optimum performance under CO_2 shielding and deposits radiographic quality weld metal. The weld has excellent bead appearance and easy slag removal. Maxfil-40B is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; HY-80, NAXTRA-60/65, T-1, A/B grades of SA-203, A/B/C grades of SA-662, etc. This wire is used for fabrication of crane plate, earth moving equipments, off-shore platforms and similar high strength applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Range	0.15	0.75-2.25	0.80	0.030	0.030	0.15	1.25-2.60	0.25-0.65	0.05
Typical	0.072	1.76	0.44	0.012	0.016	0.10	2.25	0.45	0.001

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-50°C
Range	690-830	610 Min	16.0 Min	27 Min
Typical	740	660	20	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160
1.60	24-28	180-300	20-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-40R

Codification :

AWS SFA 5.29	E101T1-K3C



Characteristics & Applications :

Maxfil-40R is a low alloy steel flux cored wire designed for welding of high strength fine grained quenched & tempered steels to meet sub-zero impact resistance property down to -20°C. The wire is suitable for positional welding application, results easy slag removal and has excellent welders appeal. Weld bead is smooth & uniform and satisfies the requirements of radiographic quality. Maxfil-40R is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; HY-80, NAXTRA-60/65, T-1, A/B grades of SA-203, A/B/C grades of SA-662, B/C grades of SA-737, etc. This wire is used for fabrication of penstock pipelines, crane plate, earth moving equipments and similar high strength applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Range	0.15	0.75-2.25	0.80	0.030	0.030	0.15	1.25-2.60	0.25-0.65	0.05
Typical	0.062	1.60	0.43	0.014	0.018	0.14	2.14	0.35	0.005

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-20°C
Range	690-830	610 Min	16.0 Min	27 Min
Typical	728	680	19	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	26-30	160-260	23-27	140-180	24-28	140-180
1.60	26-30	180-280	23-27	140-180	24-28	140-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-41B

Codification :

AWS SFA 5.29	E90T5-K2C
EN ISO 17632-B	T575T5-0CA N2



Characteristics & Applications :

Maxfil-41B is a low alloy steel flux cored wire designed for welding of high tensile strength steel where sub-zero impact resistance property of the weld metal is also desired. The wire gives optimum performance under CO_2 shielding with radiographic quality weld deposits that meet the impact requirements down to -51°C. The weld has excellent bead appearance and easy slag removal. Maxfil-41B is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; HY-80, NAXTRA-60/65, T-1, A/B grades of SA-203, A/B/C grades of SA-662, B/C grades of SA-737, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V	Al
Range	0.15	0.50-1.75	0.80	0.03	0.03	0.15	1.00-2.00	0.35	0.05	1.8
Typical	0.05	1.48	0.42	0.012	0.018	0.10	1.80	0.30	0.001	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-50°C
Range	620-760	540 Min	17.0 Min	27 Min
Typical	730	628	23.0	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	20-22	100-160
1.60	24-28	180-300	24-28	180-300	20-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-41B3

Codification :

AWS SFA 5.29	E90T5-B3C
EN ISO 17632-B	T57ZT5-0CP-G



Characteristics & Applications :

Maxfil-41B3 is a low alloy steel flux cored wire designed to deposit approximately 2.25%Cr-1.0%Mo weld metal for high temperature creep resistance applications. The wire gives optimum performance under CO_2 shielding with radiographic quality weld deposits. The wire produces thin & friable slag covering with shiny bead appearance. Maxfil-41B3 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; Gr. F22 of SA-182 & and SA-336, Gr. T4/T22 of SA-199, Gr. T22 of SA-213, Gr. WC9 of SA-217, Gr. P22 of SA-335, Gr. FP22 of SA-369, Gr. 22/22L of SA-387, Gr. CP22 of SA-426, Gr. 22 of SA-541, Class 1 of A, B types of SA-542, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Range	0.05-0.12	1.25	0.80	0.030	0.030	2.00-2.50	0.90-1.20
Typical	0.055	1.00	0.32	0.012	0.018	2.34	1.01

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 Hr)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Range	620-760	540 Min	17.0 Min
Typical	692	608	20.0

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vrtical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-41R

Codification :

AWS SFA 5.29	E91T1-B3C
EN ISO 17632-B	T57ZT1-1CA-G



Characteristics & Applications :

Maxfil-41R is an all position low alloy steel flux cored wire designed to deposit approximately 2.25%Cr-1.0%Mo weld metal. The wire is suitable for positional welding application, results easy slag removal and has excellent welders appeal. The weld bead is smooth & uniform and meets the radiographic requirements. Maxfil-41R is designed for single and multi-pass welding of similar composition creep resistant steels and equivalent grade steels like; Gr. F22 of SA-182 & and SA-336, Gr. T4/T22 of SA-199, Gr. T22 of SA-213, Gr. WC9 of SA-217, Gr. P22 of SA-335, Gr. FP22 of SA-369, Gr. 22/22L of SA-387, Gr. CP22 of SA-426, Gr. 22 of SA-541, Class 1 of A, B types of SA-542, etc.

Typical Chemical Composition Of All Weld Metal (%) :

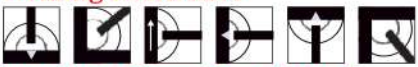
Element	C	Mn	Si	S	P	Cr	Mo
Range	0.05-0.12	1.25	0.80	0.030	0.030	2.00-2.50	0.90-1.20
Typical	0.068	0.76	0.38	0.012	0.016	2.38	1.05

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 Hr)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Range	620-760	540 Min	17.0 Min
Typical	678	584	20.0

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-42B

Codification :

AWS SFA 5.29	E110T5-K4C



Characteristics & Applications :

Maxfil-42B is a low alloy steel flux cored wire designed for welding of high strength fine grained quenched & tempered steels to meet sub-zero impact resistance property down to -51°C. The wire gives optimum performance under CO_2 shielding and deposits radiographic quality weld metal. The weld has excellent bead appearance and easy slag removal. Maxfil-42B is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; HY-80, NAXTRA-60/65, T-1, A/B grades of SA-203, A/B/C grades of SA-662, B/C grades of SA-737, etc. This wire is used for fabrication of crane plate, earth moving equipments and similar high strength applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Range	0.15	1.20-2.25	0.80	0.030	0.030	0.20-0.60	1.75-2.60	0.20-0.65	0.03
Typical	0.075	1.60	0.42	0.012	0.016	0.40	2.2	50.45	0.12

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-50°C
Range	760-900	680 Min	15.0 Min	27 Min
Typical	805	710	18	40

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-42R

Codification :

AWS SFA 5.29	E111T1-K4C



Characteristics & Applications :

Maxfil-42R is a low alloy steel flux cored wire designed for welding of high strength fine grained quenched & tempered steels to meet sub-zero impact resistance property down to -18°C. The wire is suitable for positional welding application, results easy slag removal and has excellent welders appeal. Weld bead is smooth & uniform and satisfies the requirements of radiographic quality. Maxfil-42R is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; HY-80, NAXTRA-60/65, T-1, A/B grades of SA-203, A/B/C grades of SA-662, B/C grades of SA-737, etc. This wire is used for fabrication of penstock pipelines, crane plate, earth moving equipments and similar high strength applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	V
Range	0.15	1.20-2.25	0.80	0.030	0.030	0.20-0.60	1.75-2.60	0.20-0.65	0.03
Typical	0.062	1.50	0.33	0.014	0.018	0.36	2.34	0.38	0.005

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-20°C
Range	760-900	680 Min	15.0 Min	27 Min
Typical	815	716	19	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60 mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-44B

Codification :

AWS SFA 5.29	E100T5-D2C



Characteristics & Applications :

Maxfil-44B is a low alloy steel flux cored wire designed for welding of high strength fine grained quenched & tempered steels to meet good sub-zero impact resistance property. The wire gives optimum performance under CO_2 shielding and deposits radiographic quality weld metal. The weld has excellent bead appearance and easy slag removal. Maxfil-44B is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; SA-455M, Gr.60, Gr.65 steels of SA-515M, Class 1 of A, B, C, D grades of SA-533M. This wire is used for fabrication of crane plate, earth moving equipments, penstock pipelines and similar high strength applications, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Range	0.15	1.65-2.25	0.80	0.030	0.030	0.25-0.55
Typical	0.065	2.21	0.65	0.011	0.014	0.46

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 Hr)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-40°C
Range	690-830	610 Min	16.0 Min	27 Min
Typical	815	716	19	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-50H

Codification :

DIN EN 14700	TFe-2



Characteristics & Applications :

Maxfil-50H is a basic type medium alloy gas shielded wire designed for air hardening type hard surfacing deposit. It has good welder's appeal & easy slag detachability. The weld is not machinable and finished by grinding. The wire deposits a crack-free, martensitic weld metal suitable for heavy impact and moderate abrasion resistant applications. Maxfil-50H wire is suitable for weld-surfacing & reclamation of agricultural equipments, forging dies, excavator components, conveyor buckets & screws, drill bits, scraper blades, conveyor parts, dredge rollers, concrete mixer blades, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Typical	0.55	1.30	0.54	0.012	0.017	5.45	0.51

Typical Mechanical Properties Of All Weld Metal :

Properties	2 Layer Hardness (BHN)	3 Layer Hardness (BHN)
Range	520-550	550-600

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260
1.60	24-28	180-300	24-28	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-55H

Codification :

DIN EN 14700	TFe-2



Characteristics & Applications :

Maxfil-55H is a basic type medium alloy gas shielded wire designed for air hardening type hard surfacing deposit. It has good welder's appeal & easy slag detachability. The weld is not machinable and finished by grinding. The wire deposits a crack-free, martensitic weld metal suitable for heavy impact and moderate abrasion resistant applications. Maxfil-55H wire is suitable for weld-surfacing & reclamation of agricultural equipments, forging dies, excavator components, conveyor buckets & screws, drill bits, scraper blades, conveyor parts, dredge rollers, concrete mixer blades, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Typical	0.55	1.30	0.54	0.012	0.017	5.45	0.51

Typical Mechanical Properties Of All Weld Metal :

Properties	2 Layer Hardness (HRC)	3 Layer Hardness (HRC)
Range	45-50	54-58

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	18-22	100-160
1.60	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-70A1

Codification :

AWS SFA 5.29	E70T5-A1C
EN ISO 17632-B	T493T5-0CP 2M3



Characteristics & Applications :

Maxfil-70A1 is a low alloy steel flux cored wire designed for welding of 0.5%Molybdenum and 1%Chromium and 0.5%Molybdenum steels. The wire gives optimum performance under CO_2 shielding with radiographic quality weld deposits. The wire produces thin & friable slag covering with shiny bead appearance. Maxfil-70A1 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; Gr. F1 of SA-182 and SA-336, Gr. A of SA-204, Gr. T1/T1a/T1b of SA-209, Gr. WC1 of SA-217, Gr. A of SA-302, Gr. P1 of SA-335, Class 1 of A grade of SA-533, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Range	0.12	1.25	0.80	0.030	0.030	0.40-0.65
Typical	0.060	1.18	0.45	0.012	0.018	0.52

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-30°C
Range	490-620	400 Min	20.0 Min	27 Min
Typical	548	460	25.0	65

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-71A1

Codification :

AWS SFA 5.29	E71T1-A1C/M
EN ISO 17632-B	T493T1-1CA 2M3



Characteristics & Applications :

Maxfil-71A1 is an all position low alloy steel flux cored wire designed for welding of 0.5%Molybdenum and 1%Chromium and 0.5%Molybdenum steels. The wire gives optimum performance under both 100% CO_2 and 80%Ar:20%CO_2 gas shielding with radiographic quality weld deposits. The wire produces full slag covering. Slag detachability is very good and is of fast freezing nature. Maxfil-71A1 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; Gr. F1 of SA-182 and SA-336, Gr. A of SA-204, Gr. T1/T1a/T1b of SA-209, Gr. WC1 of SA-217, Gr. A of SA-302, Gr. P1 of SA-335, Class 1 of A grade of SA-533, etc.

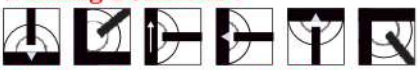
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Range	0.12	1.25	0.80	0.030	0.030	0.40-0.65
Typical (CO_2)	0.060	1.18	0.45	0.012	0.018	0.52
Typical (Ar+CO_2)	0.060	1.22	0.50	0.012	0.016	0.51

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J) -30°C
Range	490-620	400 Min	20.0 Min	27 Min
SR : 620°C/1Hr (CO_2)	528	440	24	40
SR : 620°C/1Hr (Ar+CO_2)	561	458	25	52

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Vertical Up		Over Head	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-26	100-180	22-28	100-180
1.60	24-28	180-300	20-26	110-200	22-28	110-220

Approvals : CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-71W

Codification :

AWS SFA 5.29	E71T1-GC



Characteristics & Applications :

Maxfil-71W designed for single and multi pass welding on Weathering Corten Weathering A1 steels. The wire burns with smooth arc and low spatter. Weld metal contains extremely low diffusible hydrogen (<4ml per 100gm). The wire gives optimum performance with 100%CO_2 shielding and characterized with smooth metal transfer, uniform welding even on vertical-up stringer beads and easy slag removal.The weld metal mechanical properties afford a high degree of security against heavy stress and for welds on thick plates. The weld deposit has excellent atmospheric corrosion resistance.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Cr	Cu
Typical	0.035	0.60	0.38	0.006	0.010	0.35	0.26	0.40

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-20°C
Typical	590	520	25	90

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	22-26	100-160	22-25	100-160
1.60	24-28	180-300	22-26	110-200	22-25	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-80R

Codification :

AWS SFA 5.29	E81T1-B1C



Characteristics & Applications :

Maxfil-80R is an all position low alloy steel flux cored wire designed to deposit approximately 2.25%Cr-1.0%Mo weld metal. The wire is suitable for positional welding application, results easy slag removal and has excellent welders appeal. The weld bead is smooth & uniform and meets the radiographic requirements. Maxfil-80R is designed for single and multi-pass welding of similar composition creep resistant steels and equivalent grade steels like; Gr. F22 of SA-182 & and SA-336, Gr. T4/T22 of SA-199, Gr. T22 of SA-213, Gr. WC9 of SA-217, Gr. P22 of SA-335, Gr. FP22 of SA-369, Gr. 22/22L of SA-387, Gr. CP22 of SA-426, Gr. 22 of SA-541, Class 1 of A, B types of SA-542, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Range	0.05-0.12	1.25	0.80	0.030	0.030	2.00-2.50	0.90-1.20
Typical	0.068	0.76	0.38	0.012	0.016	2.38	1.05

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Range	620-760	540 Min	17.0 Min
Typical	678	584	20.0

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-81A1

Codification :

AWS SFA 5.29	E81T1-A1C
EN ISO 17632-B	T55ZT1-1CP 2M3



Characteristics & Applications :

Maxfil-81A1 is an all position low alloy steel flux cored wire designed for welding of 0.5%Molybdenum and 1%Chromium and 0.5%Molybdenum steels. The wire gives optimum performance under 100%CO_2 shielding with radiographic quality weld deposits. The wire produces full slag covering. Slag detachability is very good and is of fast freezing nature. Maxfil-81A1 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; Gr. F1 of SA-182 and SA-336, Gr. A of SA-204, Gr. T1/T1a/T1b of SA-209, Gr. WC1 of SA-217, Gr. A of SA-302, Gr. P1 of SA-335, Class 1 of A grade of SA-533, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Range	0.12	1.25	0.80	0.030	0.030	0.40-0.65
Typical	0.065	1.10	0.45	0.015	0.018	0.52

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				RT
Range	550-690	470 Min	19.0 Min	-
Typical	596	510	24.0	85

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-26	100-180	22-28	100-180
1.60	24-28	180-300	20-26	110-200	22-28	110-220

Approvals: CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-81R(SPL)

Codification :

AWS SFA 5.29	E81T1-B2C
EN ISO 17632-B	T55ZT1-1CA-G



Characteristics & Applications :

Maxfil-81R(Spl) is an all position low alloy steel (1.25%Cr-0.5%Mo) flux cored wire especially designed to achieve the desired all-weld metal mechanical properties even in as-weld condition. The wire gives smooth burning characteristics, low spatter, easy slag removal and radiographic quality weld metal. The wire is suitable for high temperature and pressure service conditions in steam pipes, boilers, etc. Maxfil-81R (Spl) is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; Gr. F2/F11/F12 of SA-182, Gr. T11 of SA-199, Gr. T2/T11/T12 of SA-213, Gr. WC6 of SA-217, Gr. P2/P11/P12 of SA-335, Gr. FP2/FP11/FP12 of SA-369, Gr. 2/11/12 of SA-387,Gr. CP2/CP11/CP12 of SA-426.

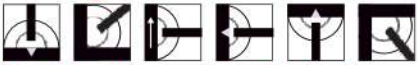
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Range	0.05-0.12	1.25	0.80	0.030	0.030	1.00-1.50	0.40-0.65
Typical	0.060	0.68	0.32	0.014	0.019	1.23	0.50

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Range	550-690	470 Min	19.0 Min
As Weld	630	560	22.0
PWHT: 690°C/1Hr	602	540	25.0

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	20-22	100-160	22-25	100-160
1.60	24-28	180-300	20-22	110-200	22-25	110-200

Approvals: CE

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-81R

Codification :

AWS SFA 5.29	E81T1-B2M
EN ISO 17632-B	T55ZT1-1MP-G



Characteristics & Applications :

Maxfil-81R is an all position low alloy steel flux cored wire designed for welding of 1.25%Cr-0.5%Mo steel with high temperature and pressure service conditions in steam pipes and boilers. The slag coverage is complete and easy to remove. This wire burns with low spatter & minimal fumes with radiographic quality deposits. Maxfil-81R is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; Gr. F2/F11/F12 of SA-182, Gr. T11 of SA-199, Gr. T2/T11/T12 of SA-213,Gr.WC6 of SA-217, Gr. P2/P11/P12 of SA-335, Gr. FP2/FP11/FP12 of SA-369, Gr. 2/11/12 of SA-387, Gr.CP2/CP11/CP12 of SA-426.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo
Range	0.05-0.12	1.25	0.80	0.030	0.030	1.00-1.50	0.40-0.65
Typical	0.062	0.80	0.40	0.012	0.017	1.25	0.52

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 Hr)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)
Range	550-690	470 Min	19.0 Min
Typical	600	520	25.0

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	26-32	160-260	22-26	100-160	24-28	100-160
1.60	26-32	180-300	22-26	110-200	24-28	110-200

Approval: CE

Shielding Gas: Argon - Carbon Dioxide CO_2 (80:20%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-81W

Codification :

AWS SFA 5.29	E81T1-W2C
EN ISO 17632-B	T553T1-1CA NCC1
IRS:M-46 -2013	Clause IV



Characteristics & Applications :

Maxfil-81W is an all position low alloy steel flux cored wire designed for welding of high strength weather-resistant grade steels. The wire gives optimum performance with 100%CO_2 shielding and characterized with smooth metal transfer, uniform welding even on vertical-up stringer beads and easy slag removal. In fillet welds, the bead contour is flat to slightly convex with equal leg lengths and uniform sidewall wetting. Weld metal is free from porosity and conforms to X-ray soundness. Maxfil-81W is designed for single and multi-pass welding of weather resistant steels - Corten steels grade A/B, Class 1 steels of type A of SA-533, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Cr	Cu
Range	0.12	0.50-1.30	0.35-0.80	0.030	0.030	0.40-0.80	0.45-0.70	0.30-0.75
Typical	0.060	1.12	0.41	0.012	0.014	0.65	0.50	0.36

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	R.A. (%)	CVN Impact Strength (J)
					-20°C
Range	490 Min	350 Min	22.0 Min	40.0 Min	50 Min
Typical	620	550	26.0	57.0	55

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	22-26	100-160	22-25	100-160
1.60	24-28	180-300	22-26	110-200	22-25	110-200

Approval : CE, RDSO

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supply approximately 11Kgs in a plastic spool & total weight of the box 12.5 Kgs maximum. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-91D1

Codification :

AWS SFA 5.29	E91T1-D1C
IRS: M-46/2020	CLASS III



Characteristics & Applications :

Maxfil-91D1 is an all-position low alloy steel flux cored wire designed for welding of 1.25%Mn-0.5%Mo steel designed to achieve the mechanical properties and corrosion resistance of the high strength, low alloy pressure vessel steels. The slag coverage is complete and easy to remove. This wire burns with low spatter, convex bead contour, good slag detachability & minimal fumes with radiographic quality deposits. Maxfil-91D1 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; ASTM A49, A291 and A735. For welding of steels to IS: 2062-11 (R 2016) grade E410, E450 of all quality, IS : 2002-2009 (R2018) Grade -III IS: 1875-1992 (R2014) Class IIIA or other equivalent steels.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo
Range	0.12	1.25-2.00	0.80	0.030	0.030	0.25-0.55
Typical	0.080	1.96	0.61	0.010	0.028	0.53

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=5d)	R.A. (%)	CVN Impact Strength (J)
					-20°C
Range	590 Min	450 Min	20.0 Min	40	27 Min
Typical	680	570	25.0	50	50

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-32	160-260	22-27	100-160	22-28	100-160
1.60	24-32	180-300	22-27	110-20	22-28	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute and Ar + 1 to 5% O2

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 11 Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-701G5

Codification :

AWS SFA 5.29	E70T5-GC



Characteristics & Applications :

Maxfil-701G5 is a low alloy steel flux cored wire designed for welding of medium & high tensile strength steel, quenched & tempered steels, etc. where sub-zero impact resistance property of the weld metal is desired. The weld metal is designed for thick plates so that properties are maintained after stress relief heat treatment also. The wire is results optimum performance and radiographic quality weld deposits under CO_2 shielding. The weld has excellent bead appearance and easy slag removal. Maxfil-701G5 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; NAXTRA-60/65, Sumiten-610, A/B grades of SA-203, D/E/F/G grades of SA-414, steel grades conforming to SA-455, Gr.60 & Gr.65 steels of SA-515 & SA-516, etc. Based on the composition & plate thickness, preheating & inter-pass temperature shall be maintained.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Typical	0.062	1.24	0.44	0.015	0.022	0.65	0.25

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 2 Hr)

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-46°C
Typical	562	518	24.0	38

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-801G5

Codification :

AWS SFA 5.29	E80T5-GC



Characteristics & Applications :

Maxfil-801G5 is a low alloy steel flux cored wire designed for welding of medium & high tensile strength steel, quenched & tempered steels, etc. where sub-zero impact resistance property of the weld metal is desired. The wire produces optimum performance and radiographic quality weld deposits under CO_2 shielding. The weld has excellent bead appearance and easy slag removal.Maxfil-801G5 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; NAXTRA-60/65, Sumiten-610, A/B grades of SA-203, D/E/F/G grades of SA-414, steel grades conforming to SA-455, Gr.60 & Gr.65 steels of SA-515 & SA-516, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Typical	0.060	1.28	0.42	0.015	0.022	0.80	0.25

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
				-46°C
Typical	610	530	22.0	54

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-901G5

Codification :

AWS SFA 5.29	E90T5-GC



Characteristics & Applications :

Maxfil-901G5 is a low alloy steel flux cored wire designed for welding of high tensile strength steel, quenched & tempered steels, etc. where sub-zero impact resistance property of the weld metal is also desired. The wire gives optimum performance under CO_2 shielding with radiographic quality weld deposits. The weld has excellent bead appearance and easy slag removal with diffusible hydrogen of less than 4ml/100gms of weld metal.

Maxfil-901G5 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; HY-80, NAXTRA-60/65, Sumiten-610, A/B grades of SA-203, A/B/C grades of SA-662, B/C grades of SA-737, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Typical	0.050	1.48	0.42	0.012	0.018	1.80	0.30

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
				-30°C	-51°C
Typical	716	620	21.0	96	50

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-1101G5

Codification :

AWS SFA 5.29	E110T5-GC



Characteristics & Applications :

Maxfil-1101G5 is a low alloy steel flux cored wire designed for welding of high tensile strength steel, quenched & tempered steels, etc. The weld metal also results good impact resistance property at sub-zero temperatures. The wire gives optimum performance under CO_2 shielding with radiographic quality weld deposits. The weld has excellent bead appearance and easy slag removal. Maxfil-1101G5 is designed for single and multi-pass welding of similar composition steels and equivalent grade steels like; HY-80, Sumiten-610, C/D grades of SA-225, B/C grades of SA-543, steels conforming to SA-612 grade, A/B/C grades of SA-738, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Typical	0.080	1.42	0.46	0.012	0.018	2.20	0.36

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
				-40°C	-51°C
Typical	815	710	20.0	67	45

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-1201G5

Codification :

AWS SFA 5.29	E120T5-GC-H4



Characteristics & Applications :

Maxfil-1201G5 is a low alloy steel flux cored wire designed for welding of high tensile strength steel, quenched, and tempered steels etc. The weld metal is suitable for fabrication of dynamically loaded structures and results good impact resistant property at sub-zero temperatures. The wire gives optimum performance under CO_2 shielding with radiographic quality weld deposits. The weld has excellent bead appearance and easy slag removal. Maxfil-1201G5 is designed for single and multi-pass welding of similar composition steels, fine grained steels and equivalent grade steels like; HY-80, Sumiten-610, C/D Grades of SA-225, B/C Grades of SA-543, steels conforming to SA-612 grade, A/B/C grades of SA-738, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo
Typical	0.057	2.05	0.62	0.012	0.017	2.83	0.49

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
				-40°C	-51°C
Typical	899	780	19.0	85	55
Diffusible hydrogen content is <4ml per 100 gm of all-weld metal.					

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-20 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-1401G5

Codification :

AWS SFA 5.29	E140T5-GC-H4



Characteristics & Applications :

Maxfil-1401G5 is a low alloy steel flux cored wire designed for welding of high tensile strength steel, quenched, and tempered steels etc. The weld metal is suitable for fabrication of dynamically loaded structures and results good impact resistant property at sub-zero temperatures. The wire gives optimum performance under CO_2 shielding with radiographic quality weld deposits. The weld has excellent bead appearance and easy slag removal. Maxfil-1401G5 is designed for single and multi-pass welding of similar composition steels, fine grained steels and equivalent grade steels like; HY-80, Sumiten-610, C/D Grades of SA-225, B/C Grades of SA-543, steels conforming to SA-612 grade, A/B/C grades of SA-738, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Cr	Ni	Mo	S	P	V
Typical	0.08	1.8	0.40	1.0	2.5	0.90	0.015	0.015	0.06

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
				RT	-51°C
Typical	1000 Min	930 Min	18	70 Min	27 Min
Diffusible hydrogen content is <4ml per 100 gm of all-weld metal.					

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-28	160-260	24-28	160-260	18-22	100-160
1.60	24-28	180-300	24-28	180-300	18-22	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

COREFIL-Ni(MOD)

Codification :

AWS SFA 5.29	E81T1-G
DNV-CP-0069	IV Y40 MS H5



Characteristics & Applications :

Corefil-Ni(Mod) is a low alloy and hydrogen controlled (4ml max) flux cored wire designed for welding of medium tensile steels structures subjected to dynamic loading and impact resistance requirements down to -50°C. The wire gives good performance under CO_2 shielding with radiographic quality weld deposits. The wire produces thin & friable slag covering with shiny bead appearance. Corefil-Ni (Mod) is designed for single and multi pass welding of ship building grade DMR 249 grade A steels. The wire is also suitable for fabrication of heavy & rigid structure, pressure vessels etc.

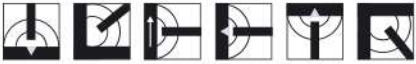
Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	Ni	S	P	Mo	Cu	Ti	Al	Nb	V
Range	0.080 Max	0.50-2.00	0.90 Max	1.80-2.80	0.012 Max	0.015 Max	0.25 Max	0.20 Max	0.10 Max	0.08 Max	0.05 Max	0.05 Max

Typical Mechanical Properties Of All Weld Metal :

Properties :	UTS(MPa)	YS(MPa)	%El (L=5d)	CVN Impact Strength (J)
				- 50°C
As Weld 1G	600 Min	500 Min	22 Min	50 Min

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal / Flat		Vertical Up	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	20-26	120-220	20-22	90-120
1.60	20-26	140-240	20-22	100-140

Shielding Gas : Argon-Carbon Dioxide CO_2 (80:20%) at flow rate 15-22 litres per minute

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-308L

Codification :

AWS SFA 5.22	E308LT0-1



Characteristics & Applications :

Maxfil-308L is an all-position stainless steel flux cored wire designed for optimum performance with 100%CO_2 gas shielding. This wire is designed with fast freezing slag characteristics and good slag detachability. The wire welds satisfactorily in the flat & horizontal position. The weld metal is of radiographic quality, resistant to cracking, and very good oxidation & scaling resistant at elevated temperature. Maxfil-308L is designed for welding of low carbon similar composition steels like AISI 304/ 304L and their equivalents with excellent weld ability.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.040	0.5-2.5	1.00	0.030	0.040	18.0-21.0	9.0-11.0	0.75	0.75
Typical	0.025	1.32	0.60	0.010	0.015	19.5	9.5	0.010	0.030

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Range	520 Min	30 Min
Typical	540	38

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat	
	Volt (V)	Current (A)
1.20	24-30	160-260
1.60	24-30	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene ag and then packed in a corrugated box.

MAXFIL-308H

Codification :

AWS SFA 5.22	E308HT0-1



Characteristics & Applications :

Maxfil-308H is stainless steel flux cored wire designed for optimum performance with 100%CO_2 gas shielding. The higher carbon content provides improved creep properties at temperature above 400°C. This wire is designed with fast freezing slag characteristics and good slag detachability. The wire welds satisfactorily when welding in the flat & horizontal position. The weld metal is of radiographic quality, resistant to cracking, and very good oxidation & scaling resistant at elevated temperature. Maxfil-308H is designed for welding of austenitic stainless steels such as 304H for elevated temperatures and their equivalents with excellent weldability.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.040-0.080	0.5-2.5	1.00	0.030	0.040	18.0-21.0	9.0-11.0	0.75	0.75
Typical	0.050	1.40	0.60	0.010	0.020	19.5	9.5	0.010	0.030

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Range	550 Min	30 Min
Typical	560	40

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat	
	Volt (V)	Current (A)
1.20	24-30	160-260
1.60	24-30	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene ag and then packed in a corrugated box.

MAXFIL-309L

Codification :

AWS SFA 5.22	E309LT0-1



Characteristics & Applications :

Maxfil-309L is an stainless steel flux cored wire to deposit good oxidation resistance up to 1100°C weld metal with radiographic quality. The wire has smooth and stable arc with good slag detachability. Maxfil-309L is suitable for joining of dissimilar steels like 304 type stainless steels to mild steel & low alloy steel, cladding & overlaying applications, joining of ferritic steels & difficult to weld steels, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.040	0.5-2.5	1.00	0.030	0.040	22.0-25.0	12.0-14.0	0.75	0.75
Typical	0.028	1.40	0.60	0.010	0.020	23.5	12.4	0.020	0.060

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Range	520 Min	30 Min
Typical	570	38

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-30	160-260	24-30	160-260
1.60	24-30	180-300	24-30	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-309L Mo

Codification :

AWS SFA 5.22	E309LMoT0-1



Characteristics & Applications :

Maxfil-309LMo is stainless steel flux cored wire with lower carbon content used to join stainless steel to carbon and low alloy steels for service below 600°C and for overlaying of carbon and low alloy steels. The presence of Molybdenum provides pitting resistance in a halide environment. The wire have smooth and stable arc with good slag detachability with excellent radiographic quality. Maxfil-309LMo is suitable for joining of dissimilar steels like 304 type stainless steels to mild steel & low alloy steel, cladding & overlaying applications, joining of ferritic steels & difficult to weld steels, etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.040	0.5-2.5	1.00	0.030	0.040	21.0-25.0	12.0-16.0	2.0-3.0	0.75
Typical	0.023	1.40	0.60	0.010	0.020	23.5	12.4	2.70	0.060

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Range	520 Min	25 Min
Typical	680	28

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal	
	Volt (V)	Current (A)
1.20	24-30	160-260
1.60	24-30	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-310

Codification :

AWS SFA 5.22	E310T0-1



Characteristics & Applications :

Maxfil-310 is stainless steel flux cored wire designed for optimum performance with 100%CO_2 gas shielding. This wire is designed with fast freezing slag characteristics and good slag detachability. The wire welds satisfactorily in out of position and performs equally well when welding in the flat & horizontal position. The weld metal is of radiographic quality, resistant to cracking, and very good oxidation & scaling resistant at elevated temperature. Maxfil-310 is designed for welding of AISI 310 steels or similar compositions such as ovens, boilers and thermal equipment for heat treatment, chemical and petrochemical installations.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.20	1.0-2.5	1.0	0.030	0.030	25.0-28.0	20.0-22.5	0.75	0.75
Typical	0.12	2.2	0.50	0.008	0.020	26.0	20.5	0.23	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Range	550 Min	30 Min
Typical	600	35

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Flat	
	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-30	160-260	24-30	160-260
1.60	24-30	180-300	24-30	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-316L

Codification :

AWS SFA 5.22	E316LT0-1



Characteristics & Applications :

Maxfil-316L is stainless steel flux cored wire designed for optimum performance with 100%CO_2 gas shielding. This wire is designed with fast freezing slag characteristics and good slag detachability. The wire welds satisfactorily in out of position and performs equally well when welding in the flat & horizontal position. The weld metal is of radiographic quality, and to obtain resistance to intergranular corrosion due to carbon precipitation without the use of stabilizers. Maxfil-316L is designed for welding of low carbon similar composition steels like 316L type and their equivalents with excellent weld ability.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.040	0.5-2.5	1.0	0.030	0.040	17.0-20.0	11.0-14.0	2.0-3.0	0.75
Typical	0.025	1.25	0.70	0.006	0.025	18.90	11.88	2.80	0.020

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	YS(MPa)
Range	485 Min	30 Min
Typical	555	35

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat	
	Volt (V)	Current (A)
1.20	24-30	160-260
1.60	24-30	180-300

Approvals : L&T

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm. Other diameters may be available on request.
Quantity : Supplied approximately 15Kgs in a plastic spool. Each spool is sealed in an air tight polythene bag and then packed in a corrugated box.

MAXFIL-347

Codification :

AWS SFA 5.22	E347T0-1



Characteristics & Applications :

Maxfil-347 is stainless steel flux cored wire designed for optimum performance with 100%CO_2 gas shielding. The weld metal is 19.5%Cr-10%Ni with Nb&Ta added as stabilizer. This wire is designed with fast freezing slag characteristics and good slag detachability. The wire welds satisfactory when welding in the flat & horizontal position. The weld metal is of radiographic quality, and to obtain resistance to intergranular corrosion due to carbon precipitation without the use of stabilizers. Maxfil-347 is designed for welding of similar composition steels like AISI 304, 304L, 321, 347 type and their equivalents with excellent weld ability.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Nb+Ta	Cu
Range	0.080	0.5 -2.5	1.0	0.030	0.040	18.0 -21.0	9.0 -11.0	0.75	1.0	0.75
Typical	0.045	1.3	0.60	0.015	0.030	18.5	10.5	0.035	0.45	0.060

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Range	520 Min	30 Min
Typical	570	44

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat	
	Volt (V)	Current (A)
1.20	24-30	160-260
1.60	24-30	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-410NiMo

Codification :

AWS SFA 5.22	E410NiMoT0-1



Characteristics & Applications :

Maxfil-410NiMo is stainless steel flux cored wire designed for optimum performance with 100%CO_2 gas shielding which deposit 11.5%Cr – 4.5%Ni – 0.55%Mo. This wire is designed with fast freezing slag characteristics and good slag detachability. The wire welds satisfactorily when welding in the flat & horizontal position. Maxfil-410NiMo is designed for welding CA6NM castings used in hydroelectric turbines or similar applications etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.060	1.0	1.0	0.030	0.040	11.0-12.5	4.0-5.0	0.40-0.70	0.75
Typical	0.020	0.400	0.40	0.010	0.015	12.5	4.10	0.51	0.015

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

Properties	UTS(MPa)	%El (L=4d)
Range	760 Min	15 Min
Typical	830	17

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat	
	Volt (V)	Current (A)
1.20	24-30	160-260
1.60	24-30	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-410

Codification :

AWS SFA 5.22	E410T0-1



Characteristics & Applications :

Maxfil-410 is stainless steel flux cored wire designed for optimum performance with 100%CO_2 gas shielding. This wire provides the excellent usability with stable arc, less spatter, good bead appearance. The wire welds satisfactorily when welding in the flat, horizontal & fillet position. Maxfil-410 is 13%Cr martensitic stainless steel flux cored wire. It is used for overlay welding on valve seat surface because of its martensite structure in as welded which shows high hardness and wear resisting properties. It will be showed good ductility and excellent corrosion resistance after post-weld heat treatment at 600~850°C and it is suitable for welding of AISI 410, 403, 420J1, and 420J2. Normally, pre-heat & post heat treatments is necessary at 205~400°C.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.12	1.2	1.0	0.03	0.04	11.0-13.5	0.60	0.75	0.75
Typical	0.050	0.76	0.53	0.007	0.027	12.8	0.20	0.20	0.20

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 730-760°C FOR 1 HR)

Properties	UTS(MPa)	%El (L=4d)
Range	520 Min	20 Min
Typical	560	28

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal/Flat	
	Volt (V)	Current (A)
1.20	24-30	160-260
1.60	24-30	180-300

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-2209

Codification :

AWS SFA 5.22	E2209T0-1



Characteristics & Applications :

Maxfil-2209 is an all position stainless steel flux cored wire designed for optimum performance with 100%CO_2 gas shielding which deposit 22%Cr – 8.5%Ni – 3.5%Mo and 0.10%N. The wire welds satisfactorily in out of position and performs equally well when welding in the flat & horizontal position. The wire Maxfil-2209 suitable for welding duplex stainless steels alloys like 2205 grades. (UNS 32205, UNS 31803) etc.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	N
Range	0.040	0.5-2.0	1.0	0.030	0.040	21.0-24.0	7.5-10.0	2.5-4.0	0.75	0.08-0.20
Typical	0.025	1.10	0.65	0.010	0.011	23.5	8.80	3.20	0.040	0.10

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Range	690 Min	20 Min
Typical	820	28

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-30	160-260	20-22	100-160	22-25	100-160
1.60	24-30	180-300	20-22	110-200	22-25	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

MAXFIL-2594

Codification :

AWS SFA 5.22	E2594T0-1



Characteristics & Applications :

Maxfil-2594 is an all position Super Duplex Stainless Steel flux cored wire designed for welding ferritic-austenitic super duplex steel and equivalent steel grades. It can be used for joints between super duplex grades and austenitic stainless steels or carbon steels. The properties of the weld metal match those of the parent metal, offering high tensile strength and toughness as well as an excellent resistance to stress corrosion cracking and localized corrosion. Inter pass temperature should be 150°C or lower. Maxfil-2594 is designed for the welding of super duplex stainless steels UNS S32550, UNS S32760, UNS J93370, and J93372 when not subject to sulfurous or sulfuric acids in service.

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	N	Cu	W
Range	0.04	0.5-2.5	1.0	0.03	0.04	24.0-27.0	8.0-10.5	2.5-4.5	0.20-0.30	1.5	1.0
Typical	0.030	1.00	0.63	0.007	0.015	24.5	10.2	3.50	0.23	0.10	0.015

Typical Mechanical Properties Of All Weld Metal :

Properties	UTS(MPa)	%El (L=4d)
Range	760 Min	15 Min
Typical	820	20

Welding Positions :



Welding Parameter : DC (+)

Diameter (mm)	Horizontal		Vertical Up		Overhead	
	Volt (V)	Current (A)	Volt (V)	Current (A)	Volt (V)	Current (A)
1.20	24-30	160-260	20-22	100-160	22-25	100-160
1.60	24-30	180-300	20-22	110-200	22-25	110-200

Shielding Gas : Carbon Dioxide CO_2 (100%) at flow rate 15-22 litres per minute.

Packing Data :

Standard Size : 1.20 & 1.60mm.

Quantity : Supplied approximately 12.5/15Kgs in a plastic spool. Each spool is vacuum sealed followed by polythene bag and then packed in a corrugated box.

SAW

Wire Combination



SAW WIRE NOMENCLATURE

Wire Brand Name	Wire AWS Standard	AWS Classification Electrode
AUTOTHERME GRADE-A	AWS SFA 5.17	EI8
AUTOTHERME GRADE-B		EM12K
AUTOTHERME GRADE-C		EH14
AUTOTHERME GRADE-E		EH10K
AUTOTHERME GRADE-E (MOD)		EH11K
AUTOTHERME GRADE-E (SPL)		EH12K
AUTOTHERME GRADE-F	AWS SFA 5.23	EA2
AUTOTHERME GRADE-G		EG
AUTOTHERME GRADE-H		ENi2
AUTOTHERME GRADE-J		EA4
AUTOTHERME GRADE-L		EB2
AUTOTHERME GRADE-LR		EB2R
AUTOTHERME GRADE-M		EB3
AUTOTHERME GRADE-MR		EB3R
AUTOTHERME GRADE-N		EB9
AUTOTHERME GRADE-P		EF3
AUTOTHERME GRADE-Q		EM4
AUTOTHERME GRADE-R		EB6
AUTOTHERME GRADE-S		ENi3
AUTOTHERME GRADE-T		ENi1
AUTOTHERME GRADE-T (MOD)		ENi6
AUTOTHERME GRADE-U		EA3
AUTOTHERME GRADE-U (MOD)		EA3K
AUTOTHERME GRADE-V		EB8
AUTOTHERME GRADE-W		EF2
AUTOTHERME GRADE-Y		ENi5
AUTOTHERME GRADE-308L	AWS SFA 5.9	ER308L
AUTOTHERME GRADE-308H		ER308H
AUTOTHERME GRADE-309L		ER309L
AUTOTHERME GRADE-316L		ER316L
AUTOTHERME GRADE-318		ER318
AUTOTHERME GRADE-347		ER347
AUTOTHERME GRADE-410		ER410
AUTOTHERME GRADE-430		ER430
AUTOTHERME GRADE-1223	AWS SFA 5.14	ERNiCrMo-3

AUTOTHERME GRADE-A

Codification :

AWS SFA 5.17	EL8
EN ISO 14171-B	SU11



Characteristics & Applications :

Copper coated Low – Manganese general purpose solid wire capable of making single pass or multiple pass submerged arc welding for structural steel overlaying and hard facing with suitable flux. Autotherme Grade–A wire is ideally suited for welding of structural steels, offshore platform, Ships, Pressure Vessel and suitable for overlaying and build up of idlers and rollers etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Range	0.10 Max	0.25-0.60	0.070 Max	0.030 Max	0.030 Max	0.350 Max
Typical	0.070	0.400	0.030	0.020	0.020	0.200

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cu
MAXFLUX SAF-2	0.050	1.100	0.350	0.027	0.028	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
					RT	0°C
MAXFLUX SAF-2	Typical	500	410	26	55	30

Approvals : CE, IBR

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-B

Codification :

AWS SFA 5.17	EM12K
EN ISO 14171-B	SU21



Characteristics & Applications :

Copper coated Medium - Manganese, Silicon killed wire to be used with neutral or semi basic flux for welding of general purpose fabrication, off-shore platform, medium and high tensile structural steels, ships, boiler and pressure vessels application etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Range	0.05-0.15	0.80-1.25	0.10-0.35	0.030 Max	0.030 Max	0.350 Max
Typical	0.090	0.90	0.20	0.027	0.026	0.200

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cu
MAXFLUX SAF-2	0.070	1.250	0.50	0.028	0.026	0.150
MAXFLUX SAF-4(SPL)	0.059	1.150	0.50	0.015	0.023	0.250

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					RT	0°C	-20°C
MAXFLUX SAF - 2	Typical	510	418	25	60	40	30
MAXFLUX SAF-4(SPL)	Typical	550	417	24	-	-	-

Approvals : CE, IBR, BHEL

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.,

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-C

Codification :

AWS SFA 5.17	EH14
EN ISO 14171-B	SU41



Characteristics & Applications :

Copper coated high medium-manganese, wire to be used in combination with basic type of flux for the welding of structural steel pressure vessel and boilers involving steels such as A-515 Gr.70.A -516 Gr.70, IS-8500 etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Range	0.10-0.20	1.70-2.20	0.10 Max	0.030 Max	0.030 Max	0.35 Max
Typical	0.12	1.80	0.05	0.027	0.028	0.200

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cu
MAXFLUX SAF-4	0.13	1.80	0.38	0.028	0.027	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-18°C	-29°C	-40°C
MAXFLUX SAF-4	Typical	530	418	26	90	75	45

Approvals : IBR, BHEL, CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.
Identification : Brand Name & Size is printed on label.
Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-E

Codification :

AWS SFA 5.17	EH10K
EN ISO 14171-B	SUN31



Characteristics & Applications :

Copper coated High manganese special wire to be used in combination with acidic as well as basic flux for the welding of structural steels and fine grained steels requiring, 480MPa tensile strength in the stress relieved conditions.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Range	0.07-0.15	1.30-1.70	0.05-0.25	0.025 Max	0.025 Max	0.350 Max
Typical	0.10	1.55	0.21	0.010	0.013	0.20

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cu
MAXFLUX SAF-8 (LS)	0.08	1.55	0.21	0.010	0.013	0.15

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-29°C	-40°C	-46°C
MAXFLUX SAF-8 (LS)	Typical	568	520	24	140	124	110

Approvals : CE, BV, L&T

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-E (SPL)

Codification :

AWS SFA 5.17	EH12K
EN ISO 14171-B	SU42



Characteristics & Applications :

Autotherme Grade-E (Spl) is a manganese-alloyed copper coated wire for the Submerged Arc Welding of medium and high strength structural steels. Autotherme Grade-E (Spl) should preferably be used together with non-alloying or slightly alloying fluxes, such as Maxflux SAF-8(PW) & Maxflux SAF-8 (LS).

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Range	0.06-0.15	1.50-2.00	0.25-0.65	0.025 Max	0.025 Max	0.35 Max
Typical	0.10	1.75	0.28	0.009	0.012	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cu
MAXFLUX SAF-8 (PW)	0.090	1.62	0.35	0.010	0.018	0.10
MAXFLUX SAF-8 (LS)	0.058	1.58	0.35	0.011	0.015	0.025

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-51°C
MAXFLUX SAF-8 (PW)	Typical	560	470	27	50
MAXFLUX SAF-8 (LS)	Typical	550	450	28	68

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-E (MOD)

Codification :

AWS SFA 5.17	EH11K
EN ISO 14171-B	SU31



Characteristics & Applications :

Copper Coated with high manganese contents solid wire for submerged arc welding. These are suitablefor welding of structural steels &fine grain steels. Autotherme Grade-E (Mod) solid wire is suitable for welding of low alloys structural steels. The weld metal possesses high tensile strength and meets the radiographic quality requirements. Especially suitable for welding of structural steels, pressure vessels and other fabrication steels. Suitable for welding of ASTM steels: Grade ASTM A285Gr.A, B, C & ASTM A516, 515Gr.70 etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Range	0.07-0.15	1.40-1.85	0.80-1.15	0.030 Max	0.030 Max	0.350 Max
Typical	0.10	1.55	0.85	0.010	0.013	0.20

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cu
MAXFLUX SAF-8 (LS)	0.08	1.65	0.86	0.010	0.014	0.17

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-40°C
MAXFLUX SAF-8 (LS)	Typical	580	520	23	62

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-F

Codification :

AWS SFA 5.23	EA2
EN ISO 14171-B	SU2M3



Characteristics & Applications :

Copper coated low alloy steel solid wires to be used with basic flux for welding of high tensile fine grain steel as well as steel which required high ductility. The weld metal has good elevated temperature properties and improved corrosion resistance features.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Range	0.05-0.17	0.95-1.35	0.20 Max	0.025 Max	0.025 Max	0.45-0.65	0.35 Max
Typical	0.12	1.10	0.16	0.020	0.021	0.50	0.20

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo	Cu
MAXFLUX SAF - 223	0.07	1.38	0.59	0.018	0.022	0.47	0.15

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
					-20°C	-29°C
MAXFLUX SAF - 223	Typical	620	530	27	105	85

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-G

Codification :

AWS SFA 5.23	EG
EN ISO 14171-B	SU11



Characteristics & Applications :

Autotherme Grade-G Copper Coated solid wire for submerged arc welding. These are suitablefor welding of similar composition steels. Copper coated solid wire used with Maxflux SAF-11 in single & multilayer welding of various weathering steels. Especially suitable for welding of Corten Steels used in chemical, Petrochemicals and railway industries to resist atmospheric corrosion.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cu
Range	0.10 Max	0.25-0.60	0.07 Max	0.030 Max	0.030 Max	0.350 Max

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cu
MAXFLUX SAF - 11	0.06	0.72	0.47	0.016	0.022	0.50

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-20°C
MAXFLUX SAF - 11	Typical	570	480	24	45

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-H

Codification :

AWS SFA 5.23	ENi2
EN ISO 14171-B	SUN5



Characteristics & Applications :

Copper Coated solid wire for submerged arc welding. These are suitable for welding of similar composition steels. Copper coated solid wire used in single & multilayer welding of various steels. Especially suitable for welding of Pressure Vessels, Petrochemicals, Off-shore, refineries and railway industries etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Ni	Cu
Range	0.12 Max	0.75-1.25	0.05-0.30	0.020 Max	0.020 Max	2.10-2.90	0.350 Max
Typical	0.072	0.95	0.20	0.010	0.010	2.50	0.20

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Cu
MAXFLUX SAF - 9	0.12	1.60	0.80	0.025	0.030	2.00-2.90	0.15

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
					-46°C	-51°C
MAXFLUX SAF - 9	Typical	695	620	19.7	80	60

Approvals : CE, Texmaco

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-J

Codification :

AWS SFA 5.23	EA4
EN ISO 14171-B	SUN2M31



Characteristics & Applications :

Autotherme Grade-J is a manganese-alloyed, copper coated wire for the submerged arc welding of medium and high strength structural steels. Autotherme Grade-J should preferably be used together with non alloying or slightly alloying fluxes.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Range	0.05-0.15	1.20-1.70	0.20 Max	0.025 Max	0.025 Max	0.45-0.65	0.35 Max
Typical	0.75	1.50	0.015	0.010	0.020	0.50	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo	Cu
MAXFLUX SAF-723	0.075	1.54	0.48	0.018	0.023	0.48	0.15

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 2 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
					-20°C	-30°C
MAXFLUX SAF-723	Typical	608	528	27.2	105	88

Approvals : CE, BHEL, IBR

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00 mm.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-L

Codification :

AWS SFA 5.23	EB2
EN ISO 24598-B	SU1CM



Characteristics & Applications :

Copper coated 1.25%Cr-0.5%Mo solid wire for submerged arc welding. These wires are suitable for welding of creep resistance and similar composition high strength steels. The weld metal possesses good high temperature properties and meets radiographic quality Especially suitable for welding of pipes and tubes of matching compositions in power plants, refineries, petrochemicals, fertilizers plants etc. Suitable for welding of ASTM steels Grade F2, F11, F12, class 1 & 2 of SA-182, Grade T11 of SA-199, Grade T2, T11 & T12 of SA-213, grade WC6 of SA-217, Grade P2, P11 & P12 of SA-335, Grade FP2, FP11 & FP12 of SA-369, Grade2, 11 & 12 of SA-387, Grade CP2,CP11 & CP12 of SA-426, and equivalent grade steels.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Range	0.07 -0.15	0.45 -1.00	0.05 -0.30	0.025 Max	0.025 Max	1.00 -1.75	0.45 -0.65	0.35 Max
Typical	0.080	0.65	0.20	0.010	0.015	1.20	0.50	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
MAXFLUX SAF-13	0.06	0.78	0.21	0.009	0.020	1.10	0.52	0.21

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-29°C
MAXFLUX SAF-13	Typical	637	559	24	60

Approvals : CE, IBR

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.
Identification : Brand Name & Size is printed on label.
Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-LR

Codification :

AWS SFA 5.23	EB2R
EN ISO 24598-A	SCrMo1



Characteristics & Applications :

Copper Coated Low Alloy Solid Wire for submerged arc welding specially designed for welding 1.25%Cr-0.5%Mo steels. These wires are suitable for welding of creep resistant & similar composition of high strength steels. R designator is applicable for ultra low residuals, which results low Brusca to factor (X- Factor). Autotherme Grade-LR low alloy solid wire is suitable for welding of various structural & Pressure vessel steels Main areas of application are associated with steam generating power plant, piping, turbine castings, steam chests, valve bodies and boiler super heaters like A387 Gr 11 & 12, A182 F11 & F12, A217 WC6 & WC11, A234WP11 &WP12 A199 T11.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Range	0.07 -0.15	0.45 -1.00	0.05 -0.30	0.025 Max	0.025 Max	1.00 -1.75	0.45 -0.65	0.35 Max
Typical	0.12	0.90	0.13	0.007	0.006	1.20	0.50	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
MAXFLUX SAF-12	0.070	0.71	0.32	0.009	0.009	1.21	0.52	0.13

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-29°C
MAXFLUX SAF-12	Typical	580	490	23	65

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.
Identification : Brand Name & Size is printed on label.
Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-M

Codification :

AWS SFA 5.23	EB3
EN ISO 24598-A	SCrMo2



Characteristics & Applications :

Copper coated 2.25%Cr-1.0%Mo solid wire for submerged arc welding. These wires are suitable for welding of Creep resistance and similar composition high strength steels. Autotherme grade-M filler wire suitable for welding of similar grade creep steels. The weld metal possesses good high temperature properties. It deposits notch free weld deposit with excellent mechanical properties especially suitable for welding of pipes and tubes of matching compositions in power plants, Refineries, Petrochemicals, Fertilizer etc. Suitable for welding of ASTM steels : Grade F22(class 1&3) of SA-182 & SA 336, Grade T4, T22 of SA-199, Grade T22 of SA213, grade WC9 of SA-217, Grade P22 of SA-335, Grade FP22 Of SA-369, Grade22, 22L of SA-387, Grade CP22 of SA-426, Grade 22 of SA-541, Class 1 of A,Btypes of SA-542, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Range	0.05 -0.15	0.40 -0.80	0.05 -0.30	0.025 Max	0.025 Max	2.25 -3.00	0.90 -1.10	0.35 Max
Typical	0.100	0.60	0.13	0.007	0.010	2.50	0.98	0.12

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
MAXFLUX SAF-13	0.07	0.71	0.32	0.010	0.022	2.21	1.10	0.13

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-29°C
MAXFLUX SAF-13	Typical	650	570	22	70

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-MR

Codification :

AWS SFA 5.23	EB3R
EN ISO 24598-A	SCrMo2



Characteristics & Applications :

Copper coated 2.25%Cr-1.0%Mo solid wire for submerged arc welding. These wires are suitable for welding of Creep resistance and similar composition high strength steels. Autotherme grade-MR filler wire suitable for welding of similar grade creep steels. The weld metal possesses good high t temperature properties. It deposits notch free weld deposit with excellent mechanical properties especially suitable for welding of pipes and tubes of matching compositions in power plants, Refineries, Petrochemicals, Fertilizer etc. Suitable for welding of ASTM steels : Grade F22(class 1&3) of SA-182 & SA 336, Grade T4, T22 of SA-199, Grade T22 of SA-213, grade WC9 of SA-217, Grade P22 of SA-335, Grade FP22 Of SA-369, Grade22, 22L of SA-387, Grade CP22 of SA 426, Grade 22 of SA-541, Class 1 of A, Btypes of SA-542, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Range	0.05 -0.15	0.40 -0.80	0.05 -0.30	0.025 Max	0.025 Max	2.25 -3.00	0.90 -1.10	0.35 Max
Typical	0.10	0.60	0.13	0.007	0.006	2.50	0.98	0.12

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
MAXFLUX SAF-12	0.065	1.06	0.56	0.010	0.010	2.41	1.01	0.10

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 690°C FOR 1 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-29°C
MAXFLUX SAF-12	Typical	630	550	27	65

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.
Identification : Brand Name & Size is printed on label.
Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-N

Codification :

AWS SFA 5.23	EB9



Characteristics & Applications :

Copper coated 9%Cr-1.0%Mo solid wire for submerged arc welding. These wires are suitable for welding of Creep resistance and similar composition high strength steels. Autotherme grade-N solid wire suitable for welding of similar grade creep steels. The weld metal possesses good high temperature properties. It deposits notch free weld deposit with excellent mechanical properties especially suitable for welding of pipes and tubes of matching compositions in power plants, Refineries, Petrochemicals, Fertilizer etc. Suitable for welding of ASTM steels: Grade A 213 T91, A 335 P91, A 387 Gr 91, A 182 / A336, A 217 C12A, A 234 WP91, A 369 FP91etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	V	Ni	Nb	N	Al	Cu
Range	0.07 -0.13	1.25 Max	0.5 Max	0.010 Max	0.010 Max	8.50 -10.50	0.85 -1.15	0.15 -0.25	1.00 Max	0.02 -0.10	0.03 -0.07	0.04 Max	0.10 Max

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo	V	Ni	Nb	N	Al	Cu
MAXFLUX SAF-12	0.10	0.90	0.25	0.009	0.009	9.5	1.0	0.20	0.40	0.04	0.04	0.02	0.010

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 760°C FOR 2 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					+20°C
MAXFLUX SAF-12	Typical	680	575	21.0	54

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.
Identification : Brand Name & Size is printed on label.
Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-P

Codification :

AWS SFA 5.23	EF3
EN ISO 26304-B	SUN2M33



Characteristics & Applications :

Copper Coated solid wire for submerged arc welding. These are suitable for welding of similar composition high strength & Quenched steels. Autotherme Grade-P low alloy solid wire is suitable for welding of similar grade steels. The weld metal possesses high tensile strength, and meets the radiographic quality requirements. Especially suitable for welding of tubes matching composition in power plants, Refineries, Petrochemicals and Fertilizer Plants. Suitable for welding of ASTM steels: Grade ASTM A302 Gr. C, D & A533type B, C or D etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Ni	Mo	Cu
Range	0.10 -0.18	1.50 -2.40	0.30 Max	0.025 Max	0.025 Max	0.70 -1.10	0.40 -0.65	0.35 Max
Typical	0.14	1.80	0.210	0.010	0.015	1.00	0.50	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo	Cu
MAXFLUX SAF-4(UV)	0.09	1.62	0.28	0.013	0.017	0.92	0.52	0.12

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 1 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-40°C
MAXFLUX SAF-4(UV)	Typical	640	565	19	52

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.
Identification : Brand Name & Size is printed on label.
Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-Q

Codification :

AWS SFA 5.23	EM4
EN ISO 26304-B	SUN5C1M3



Characteristics & Applications :

Copper coated with 2.5% Ni solid wire for submerged arc welding. These wires are suitable for welding of similar composition high strength & quenched steels. Autotherme Grade-Q low alloy solid wire is suitable for welding of similar grade steels. The weld metal possesses high tensile strength, and meets the radiographic quality requirements. Especially suitable for welding of tubes matching composition in power plants, Refineries, Petrochemicals and Fertilizer Plants. Suitable for welding of ASTM steels: Grade ASTM A514, A517, A543 type B or C etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.10 Max	1.40 -1.80	0.20 0.60	0.015 Max	0.010 Max	0.60 Max	2.00 -2.80	0.30 0.65	0.25 Max
Typical	0.120	1.60	0.25	0.010	0.008	0.50	2.50	0.47	0.13

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
MAXFLUX SAF-4 (UV)	0.07	1.68	0.36	0.010	0.012	0.40	2.48	0.50	0.13

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 590°C FOR 3 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
					-40°C	-46°C
MAXFLUX SAF-4 (UV)	Typical	795	665	27	78	58

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-R

Codification :

AWS SFA 5.23	EB6
EN ISO 24598-A	SCrMo5



Characteristics & Applications :

Copper coated solid wire for submerged arc welding. These wires are suitable for similar composition high strength & quenched steels.Autotherme Grade-R low alloy solid wire is suitable for welding of similar grade steels. The weld metal possesses high tensile strength, and meets the radiographic quality requirements. Especially suitable for welding of tubes matching composition in power plants, Refineries, Petrochemicals and Fertilizer Plants. Suitable for welding of ASTM steels: Grade ASTM A213Gr.T5 A335 Gr.P5, A217 Gr.C5 etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
Range	0.10 Max	0.35 -0.70	0.05 -0.50	0.025 Max	0.025 Max	4.50 -6.50	0.45 -0.70	0.35 Max
Typical	0.09	0.55	0.40	0.008	0.010	5.50	0.50	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Mo	Cu
MAXFLUX SAF-12	0.08	0.80	0.32	0.013	0.017	5.30	0.52	0.11

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 745°C FOR 1 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-20°C
MAXFLUX SAF-12	Typical	655	548	21	32

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.
Identification : Brand Name & Size is printed on label.
Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-S

Codification :

AWS SFA 5.23	ENi3
EN ISO 14171-B	SUN7



Characteristics & Applications :

Copper coated with 3.5% Ni solid wire for submerged arc welding. These wires are suitable for similar composition high strength & quenched steels. Autotherme Grade-S low alloy solid wire is suitable for welding of similar grade steels. The weld metal possesses high tensile strength, Excellent CVN toughness at-70°C and meets the radiographic quality requirements. Especially suitable for welding of tubes matching composition in power plants, Refineries, Petrochemicals and Fertilizer Plants. Suitable for welding of ASTM steels: Grade ASTM A203Gr.E, ASTM A203Gr.D, ASTM A352 LC3 & ASTM A352 LC4 etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu
Range	0.13 Max	0.60 -1.20	0.05 -0.30	0.020 Max	0.020 Max	0.15 Max	3.10 -3.80	0.35 Max
Typical	0.10	0.85	0.15	0.009	0.010	0.030	3.60	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu
MAXFLUX SAF-4 (UV)	0.060	1.00	0.20	0.015	0.020	0.030	3.30	0.12

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-70°C
MAXFLUX SAF-4 (UV) (AS WELDED)	Typical	570	490	24	90
MAXFLUX SAF-4(UV) (PWHT :620°C/1HR)	Typical	503	457	31	82

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-T

Codification :

AWS SFA 5.23	ENi1
EN ISO 14171-B	SUN2



Characteristics & Applications :

Copper coated solid wire for submerged arc welding. These wires are suitable for welding of similar composition where impact properties required at sub zero temperature down to -60°C. Autotherme Grade- T low alloy solid wire is suitable for welding of similar grade steels. The weld metal possesses high tensile strength, and meets the radiographic quality requirements. Especially suitable for welding of matching composition in power plants, Refineries, Petrochemicals and Fertilizer Plants. Suitable for welding of ASTM steels: Grade ASTM A516Gr.60,65,70 & A537 Class 1 or2 etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.12 Max	0.75 -1.25	0.05 -0.30	0.020 Max	0.020 Max	0.15 Max	0.75 -1.25	0.30 Max	0.35 Max
Typical	0.10	0.90	0.15	0.009	0.010	0.030	0.90	0.15	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
MAXFLUX SAF-4(UV)	0.08	1.20	0.34	0.013	0.016	0.090	0.96	0.20	0.13

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-60°C
MAXFLUX SAF-4(UV) (AS WELDED)	Typical	510	430	23	44
MAXFLUX SAF-4(UV) (PWHT :620°C/1HR)	Typical	494	424	24	50

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-T (MOD)

Codification :

AWS SFA 5.23	ENi6



Characteristics & Applications :

Copper coated solid wire for submerged arc welding. These wires are suitable for welding of similar composition materials welding mainly A537Cl1 & A203 Grade A&B. This can give toughness even -60 degree Celsius with good strength. Autotherme Grade- T(MOD) is a low alloy solid wire, suitable for welding of multi-Pass for high strength low alloy of micro alloyed steels . The weld metal possesses high tensile strength and meets the radiographic quality requirements with subzero toughness. Especially suitable for welding of matching composition in power plants, Refineries, Petrochemicals and Fertilizer Plants. Suitable for welding of ASTM steels: Grade ASTM A537 Cl1, A203 Grade A&B & other similar grades.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Ni	Mo	Cu
Range	0.07-0.15	1.20-1.60	0.05-0.30	0.020 Max	0.020 Max	0.75-1.25	0.10 Max	0.35 Max
Typical	0.10	0.90	0.15	0.009	0.010	0.90	0.15	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Ni	Mo	Cu
MAXFLUX SAF-4(UV)	0.08	1.35	0.34	0.013	0.016	0.96	0.20	0.13

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-60°C
MAXFLUX SAF-4(UV) (AS WELDED)	Typical	525	450	28	40
MAXFLUX SAF-4(UV) (PWHT :620°C/1HR)	Typical	494	424	24	50

Standard Size : Diameters 2.0mm, 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

AUTOTHERME GRADE-U

Codification :

AWS SFA 5.23	EA3
EN ISO 14171-B	SU4M3



Characteristics & Applications :

Copper coated solid wire for submerged arc welding. These wires are suitable for heat resistant steels. Autotherme Grade-U low alloy solid wire is suitable for welding of similar grade steels. The weld metal possesses high tensile strength, and meets the radiographic quality requirements. Especially suitable for welding of tubes matching composition in power plants, Petrochemicals and Suitable for welding of ASTM steels: A516 Gr. B, C & IS 2002type B, C API Gr. 5L X60-X80 etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Range	0.05 -0.17	1.65 -2.20	0.20 Max	0.025 Max	0.025 Max	0.45 -0.65	0.35 Max
Typical	0.10	1.95	0.12	0.006	0.010	0.48	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo	Cu
MAXFLUX SAF-723	0.070	1.65	0.36	0.014	0.017	0.56	0.17

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-40°C
MAXFLUX SAF-723 (AS WELDED)	Typical	620	550	22	27 Min
MAXFLUX SAF-723 (PWHT :620°C/1HR)	Typical	590	510	23	50

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-U (MOD)

Codification :

AWS SFA 5.23	EA3K
EN ISO 14171-B	SU4M31



Characteristics & Applications :

Copper Coated Low carbon, high manganese high Silicon, 0.5% Moly special purpose wire for submerged arc welding. The wire gives good radiographic quality deposits with excellent crack resistance and toughness.Autotherme Grade-U (Mod) is suitable for single, multi-pass welding especially suitable for two run technique, suitable for similar composition C-Mo steels, fine grained steels and equivalent grade steels like: Gr. F1 of SA-182 and SA-336 Gr. A of SA-204, Gr. P1 pipe of SA-335, class 1 of A grade of SA-533, etc suitable for fabrication of heavy machinery, steel plant equipments & structures, high strength fabricated structures etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu
Range	0.05 -0.15	1.60 -2.10	0.50 -0.80	0.025 Max	0.025 Max	0.40 -0.60	0.35 Max
Typical	0.12	1.95	0.65	0.006	0.010	0.48	0.15

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Mo	Cu
MAXFLUX SAF-723	0.070	1.65	0.36	0.014	0.017	0.56	0.17

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-62°C
MAXFLUX SAF-723 (AS WELDED)	Typical	630	556	22	27 Min
MAXFLUX SAF-723 (PWHT :620°C/1HR)	Typical	580	510	23	50

Approvals : CE, BHEL

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg & Drum packing also on request.

AUTOTHERME GRADE-V

Codification :

AWS SFA 5.23	EB8
EN ISO 24598-B	SU9C1M



Characteristics & Applications :

Autoherme Gr-V (9%Cr-1%Mo) is a copper coated solid wire for the submerged arc welding of medium and high strength structural steels. These wires are suitable for welding of creep resistance and similar composition high strength steels. The weld metal possesses good high temperature properties. It deposits sound weld with excellent mechanical properties especially suitable for welding of pipes and tubes of matching compositions in power plants, Refineries, Petrochemicals, Fertilizer etc. Suitable for welding of ASTM steels: A182-F9, A336-F9, A199-T9, A200-T9, A213-T9, A335-P9, A369-FP9, A217-C12, A387-Gr9.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Mo	Cu	Cr
Range	0.10	0.30-0.65	0.005-0.50	0.025 Max	0.025 Max	0.8-1.20	0.35 Max	8.0-10.5
Typical	0.08	0.50	0.015	0.010	0.020	1.05	0.15	9.0

Typical Mechanical Properties Of All Weld Metal :

(PWHT: 620°C FOR 2 HR)

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)
MAXFLUX SAF-12	Typical	608	528	27

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm & 5.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg& Drum packing also on request.

AUTOTHERME GRADE-W

Codification:

AWS SFA 5.23	EF2



Characteristics And Applications:

Copper Coated solid wire for submerged arc welding. These are suitable for welding of similar composition high strength & Quenched steels. Autotherme Grade-W low alloy solid wire is suitable for welding of similar grade steels. The weld metal possesses high tensile strength and meets the radiographic quality requirements. Especially suitable for welding of tubes matching composition in power plants, Refineries, Petrochemicals and Fertilizer Plants. Suitable for welding of ASTM steels: Grade ASTM A302 Gr. C, D & A533 type B,C or D etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Ni	Mo	Cu
Range	0.10-0.18	1.70-2.40	0.20Max	0.25Max	0.025Max	0.40-0.80	0.40-0.65	0.35Max
Typical	0.14	1.90	0.15	0.010	0.015	0.70	0.50	0.15

Typical Chemical Composition Of All Weld Metal (%) :

SAW Flux	C	Mn	Si	S	P	Ni	Mo	Cu
MAXFLUX SAF -4(UV)	0.09	1.80	0.15	0.013	0.017	0.65	0.52	0.12

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	UTS (MPa)	0.2%YS (Mpa)	%EI (L=4d)	CVN Impact Strength(J)
				-40°C
MAXFLUX SAF-4(UV) (PWHT : 620°C/1HR)	630	550	20	60

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg& Drum packing also on request

AUTOTHERME GRADE-Y

Codification :

AWS SFA 5.23	ENi5
EN ISO 14171-B	SUNM1



Characteristics & Applications :

Copper coated solid wire for submerged arc welding. These wires are suitable for welding of similar composition where impact properties required at subzero temperature downto -80°C. Autotherme Grade-Y low alloy solid wire is suitable for welding of high strength, low alloy or micro alloyed structural steels where a combination of strength and good notch toughness is required. The weld metal possesses high tensile strength and meets the radiographic quality requirements. Especially suitable for welding of matching composition inpower plants, Refineries, Petrochemicals and Fertilizer Plants. Suitable for welding of ASTM steels: Grade ASTMA516Gr.60,65,70 & A537 Class 1 or 2 etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Ni	Mo	Cu
Range	0.12 Max	1.20-1.60	0.05-0.30	0.020 Max	0.020 Max	0.75-1.25	0.10-0.30	0.35 Max

Typical Chemical Composition Of All Weld Metal (%) :

SAW Flux	C	Mn	Si	S	P	Ni	Mo	Cu
MAXFLUX SAF-4 (UV)	0.08	1.40	0.50	0.013	0.016	0.96	0.20	0.13

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-80°C
MAXFLUX SAF-4(UV) (AS WELDED)	Typical	510	430	23	44
MAXFLUX SAF-4(UV) (PWHT:620°C/1HR)	Typical	494	424	24	50

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : 100Kg, 250Kg, 500Kg, 750Kg& Drum packing also on request.

AUTOTHERME GRADE-308L

Codification :

AWS SFA 5.9	ER308L
EN ISO 14343-B	SS308L



Characteristics & Applications :

The nominal composition of this wire is 20%Cr – 10%Ni. For 'L" grade, the carbon content is <0.03%. The wire is suitable for welding of base metal of similar composition (AISI 301, 302, 304 and equivalent types). Low carbon grade reduces the propensity for carbide precipitation and offers increasing resistance to Intergranular corrosion. The arc & current carrying characteristics assure excellent performance of outstanding bead and surface finish. Autotherme Grade308L can be used in combination with Maxflux SS-4.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Range	0.030 Max	1.00-2.50	0.30-0.65	0.030 Max	0.030 Max	19.5-22.0	9.0-11.0	0.75 Max
Typical	0.027	1.55	0.37	0.012	0.025	20	9.2	0.25

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
MAXFLUX SS-4	0.030	1.40	0.47	0.008	0.020	19.60	9.14	0.090

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	%El (L=4d)
MAXFLUX SS-4	Typical	575	40.0

Approvals : CE, BHEL

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : Packed in corrugated cardboard box.

AUTOTHERME GRADE-308H

Codification :

AWS SFA 5.9	ER308H
EN ISO 14343-B	SS308H



Characteristics & Applications :

It is a high carbon wire having 20%Cr-10%Ni. The carbon content is 0.04-0.08% provides higher strength at elevated temperature also. The wire is suitable for welding of base metal of similar composition (AISI 301, 302, 304H and equivalent types). The arc & current carrying characteristics assure excellent performance of outstanding bead and surface finish. Autotherme Grade- 308H can be used in combination with Maxflux SS-4 & Maxflux SS-4(LT).

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
Range	0.04-0.08	1.00-2.50	0.30-0.65	0.030 Max	0.030 Max	19.5-22.0	9.0-11.0	0.50 Max	0.50 Max
Typical	0.035	1.55	0.37	0.012	0.025	20.16	9.16	0.25	0.15

Chemical Composition Of Typical All Weld Metal (%) :

SAW Flux	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
MAXFLUX SS-4 (LT)	0.035	1.40	0.47	0.008	0.020	19.6	9.1	0.090	0.08

Typical Mechanical Properties Of All Weld Metal :

SAW FLUX	Properties	UTS(MPa)	%El (L=4d)
MAXFLUX SS-4 (LT)	Typical	605	36.0

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring.
Identification : Brand Name & Size is printed on label.
Packing Types : Packed in corrugated cardboard box

AUTOTHERME GRADE-309L

Codification :

AWS SFA 5.9	ER309L
EN ISO 14343-B	SS309L



Characteristics & Applications :

Autotherme Grade 309L wire is suitable for welding of 24%Cr – 13%Ni. Stainless steel wire for SAW. Low carbon grade (0.03% max) of this wire is also available. The filler metals are used for both joining similar metals or joining of dissimilar metals like; mild steel/ low alloy steel with 302/304 grade stainless steel. Also suitable for cladding applications.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Range	0.030 Max	1.0-2.5	0.30-0.65	0.030 Max	0.030 Max	23.0-25.0	12.0-14.0	0.75 Max
Typical	0.028	1.70	0.38	0.011	0.025	24	12.15	0.065

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
MAXFLUX SS-4	0.050	1.50	0.35	0.012	0.025	24.0	12.5	0.30

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	%El (L=4d)
MAXFLUX SS-4	Typical	590	35.0

Approvals : CE, BHEL

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : Packed in corrugated cardboard box.

AUTOTHERME GRADE-316L

Codification :

AWS SFA 5.9	ER316L
EN ISO 14343-B	SS316L



Characteristics & Applications :

Autotherme Grade 316L wire is suitable for welding of 18%Cr, 12%Ni & 3%Mo Stainless steel wire for SAW. Low carbon grade (0.03 % max) of this wire is also available. The filler metals are used for joining AISI 316 grade stainless steels and similar alloys.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
Range	0.030 Max	1.0-2.5	0.30-0.65	0.030 Max	0.030 Max	18.0-20.0	11.0-14.0	2.0-3.0
Typical	0.025	1.75	0.40	0.015	0.015	19.0	12.0	2.7

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo
MAXFLUX SS-4(LT)	0.02	1.24	0.60	0.012	0.025	18.0	11.1	2.1

Typical Mechanical Properties Of All Weld Metal :

SAW Flux	Properties	UTS (MPa)	%El (L=4d)
MAXFLUX SS-4(LT)	Typical	560	38.0

Approvals : CE, BV, L & T

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : Packed in corrugated cardboard box.

AUTOTHERME GRADE-318

Codification :

AWS SFA 5.9	ER318
EN ISO 14343-B	SS318



Characteristics & Applications :

Autotherme Grade 318 is a low carbon, stainless steel wire for the SAW wire capable of making single pass or multiple pass welding for Intergranular corrosion resistant steels of the 18%Cr-12%Ni-3%Mo type, such as AISI 316 and 316L, or somewhat lower alloyed types. Autotherme Gr. 318 can be used in combination with Maxflux SS-4.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu	Mo	Nb
Range	0.08 Max	1.0-2.5	0.30-0.65	0.030 Max	0.030 Max	18.0-20.0	11.0-14.0	0.75 Max	2.0-3.0	8xC min 1.0 max
Typical	0.07	1.60	0.55	0.010	0.015	18.5	12.0	0.10	2.50	0.40

Typical Chemical Composition Of Undiluted Weld Metal. WT (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu	Mo	Nb
MAXFLUX SS-4(LT)	0.07	1.62	0.58	0.010	0.010	19.5	12.5	0.10	2.6	0.56

Typical Mechanical Properties Of All Weld Metal :

SAW FLUX	Properties	UTS (MPa)	%El (L=4d)
MAXFLUX SS-4(LT)	Typical	610	27.0

Approvals : CE

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : Packed in corrugated cardboard box.

AUTOTHERME GRADE-347

Codification :

AWS SFA 5.9	ER347
EN ISO 14343-B	SS347



Characteristics & Applications :

Autotherme Grade 347 continuous, solid corrosion-resistant, chromium nickel wire for welding austenitic chromium nickel alloys of the 18%Cr-8%Ni type. Autotherme Grade-347 has good general corrosion resistance. The alloy is stabilized with niobium to improve resistance to the Intergranular corrosion of the weld metal. Due to the niobium content, this alloy is recommended for use at higher temperatures. This wire can be used in combination with Maxflux SS-4.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu	Nb
Range	0.08 Max	1.0-2.5	0.30-0.65	0.03 Max	0.03 Max	19.0-21.5	9.0-11.0	0.75 Max	1.0 Max
Typical	0.07	1.50	0.52	0.010	0.012	19.5	9.5	0.10	0.45

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu	Nb
MAXFLUX SS-4(LT)	0.04	1.45	0.60	0.02	0.03	19.1	9.23	0.04	0.70

Typical Mechanical Properties Of All Weld Metal :

SAW FLUX	Properties	UTS (MPa)	%El (L=4d)
MAXFLUX SS-4(LT)	Typical	650	38.0

Approvals : CE Marking, BHEL, L & T

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : Packed in corrugated cardboard box.

AUTOTHERME GRADE-410

Codification :

AWS SFA 5.9	ER410



Characteristics & Applications :

Autotherme Grade 410 is a martensitic stainless steel solid wire available in bright finish, gives smooth flow stable arc & spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Weld metal possesses excellent resistance to corrosion pitting abrasion and impact. This wire can be used in combination with Maxflux SS-4 flux. Autotherme Grade-410 is desired for joining of similar alloy and overlay applications on unalloyed steel. Ideally suited for values and other components of turbine, Steam value made of 13% Cr steel, etc.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu	Mo
Range	0.12 Max	0.60 Max	0.50 Max	0.030 Max	0.030 Max	11.5-13.5	0.60 Max	0.75 Max	0.75 Max

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu	Mo
MAXFLUX SS-4	0.17	1.10	0.70	0.025	0.025	12.5	0.50	0.21	0.35

Typical Mechanical Properties Of All Weld Metal :

SAW FLUX	Properties	UTS (MPa)	%El (L=4d)
MAXFLUX SS-4	Typical	550	23.0

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : Packed in corrugated cardboard box.

AUTOTHERME GRADE-430

Codification:

AWS SFA 5.9	ER430



Characteristics & Applications :

Autotherme Grade 430 is a ferritic stainless steel solid wire available in bright finish, gives smooth flow stable arc & spatter free under optimum welding conditions. It gives radiographic quality weld deposit. Weld metal possesses excellent mechanical properties & resistance to corrosion only when the weldment is heat treated after welding. This wire can be used in combination with Maxflux SS-4 flux. Autotherme Grade-430 is Ideally suited for surfacing of straight chromium steels and similar materials.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Cu	Mo
Range	0.10 Max	0.60 Max	0.50 Max	0.030 Max	0.025 Max	15.5-17.0	0.60 Max	0.75 Max	0.75 Max

Typical Chemical Composition Of All Weld Metal (%) :

SAW FLUX	C	Mn	Si	S	P	Cr	Ni	Cu	Mo
MAXFLUX SS-4	0.045	0.50	0.50	0.025	0.025	16.5	0.50	0.21	0.35

Typical Mechanical Properties Of All Weld Metal :

SAW FLUX	UTS (MPa)	%El (L=4d)
MAXFLUX SS-4	590	31.0

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring

Identification : Brand Name & Size is printed on label.

Packing Types : Packed in corrugated cardboard box

AUTOTHERME GRADE-1223

Codification :

AWS SFA 5.14	ENiCrMo-3



Characteristics & Applications :

Autotherme Grade-1223 is a solid wire that gives smooth flow, stable arc and spatter free welding under optimum conditions. It gives radiographic quality welds. Ideal for welding Ni-Cr-Mo alloys to them selves and to steel and for surfacing steel. The wires are used in applications where the temperature ranges from cryogenic to 540°C. It also can be used for welding Ni base alloys to steel. Ideal for valves, valve seats, impellers, guide points, bushing, bearings, journals, hot working tools like hot shear blades, forging dies, trimming dies, piercing punches etc. Also used for weld repair of various iron base alloys and dissimilar joint of Nickel, Cobalt and iron base alloys.

Typical Chemical Composition Of Solid Wire (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Ti	Nb+Ta	Fe
Range	0.10 Max	0.50 Max	0.50 Max	0.015 Max	0.020 Max	20.0 -23.0	58.0 Min	8.0 -10.0	0.50 Max	0.40 Max	3.15 -4.15	5.0 Max

Typical Chemical Composition Of All Weld Metal (%) :

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Nb+Ta	Fe
MAXFLUX SAF-NA	0.016	0.015	0.35	0.01	0.010	21.5	65	8.5	0.15	3.15	1.8

Typical Mechanical Properties Of All Weld Metal :

SAW FLUX	Properties	UTS (MPa)
MAXFLUX SAF-NA	Typical	760

Approvals : CE, IBR, BHEL,

Standard Size : Diameters 2.50mm, 3.20mm, 4.00mm, Other diameters supplied on request.

Additional Information :

Packing Data : 25Kg wire in metallic ring.

Identification : Brand Name & Size is printed on label.

Packing Types : Spool supply / corrugated cardboard box packing on request.

SAW

Flux Combination



SAW FLUX NOMENCLATURE

FLUX BRAND NAME	BRAND NAME & AWS CLASSIFICATION	FLUX AWS CLASSIFICATION
MAXFLUX SAF-2	AUTOTHERME GRADE-A EL8	F7AZ
	AUTOTHERME GRADE-B EM12K	F7A0
MAXFLUX SAF-4	AUTOTHERME GRADE-A EL8	F6A2
	AUTOTHERME GRADE-B EM12K	F7A4
	AUTOTHERME GRADE-C EH14	F7A4
MAXFLUX SAF-4 (SPL)	AUTOTHERME GRADE-B EM12K	F7A4
	AUTOTHERME GRADE-C EH14	F7A4/F7P4
	AUTOTHERME GRADE-E EH10K	
MAXFLUX SAF-4 (PW)	AUTOTHERME GRADE-B EM12K	F7A4/F7P4
	AUTOTHERME GRADE-C EH14	F8A4/F7P5
MAXFLUX SAF-4 (UV)	AUTOTHERME GRADE-C EH14	F7A4/F7P4
	AUTOTHERME GRADE-E EH10K	F7A5/F7P5
	AUTOTHERME GRADE-F EA2	F8A4/F8P4
	AUTOTHERME GRADE-U EA3	
	AUTOTHERME GRADE-P EF3	F9A4/F9P2
	AUTOTHERME GRADE-Q EM4	F11A4/F10P5
MAXFLUX SAF-5	AUTOTHERME GRADE-B EM12K	F7A4
	AUTOTHERME GRADE-C EH14	F7A5
	AUTOTHERME GRADE-E EH10K	

MAXFLUX SAF-7S	AUTOTHERME GRADE-A EL8	F7AZ
	AUTOTHERME GRADE-B EM12K	F7A0
MAXFLUX SAF-8 (LS)	AUTOTHERME GRADE-B EM12K	F7A2/P2
	AUTOTHERME GRADE-E EH10K	F7A6/F7P6/F7P8
MAXFLUX SAF-8 (PW)	AUTOTHERME GRADE-E EH10K	F7P5/F7P6
	AUTOTHERME GRADE-E (SPL) EH12K	F7P6/F7P8
	AUTOTHERME GRADE-C EH14	F7P5/F7P6
MAXFLUX SAF-9	AUTOTHERME GRADE-H ENi2	F8A5/F8A6
MAXFLUX SAF-11	AUTOTHERME GRADE-G EG	F8A2
MAXFLUX SAF-12	AUTOTHERME GRADE-R EB6	F8P2
	AUTOTHERME GRADE-LR EB2R	F8P2
	AUTOTHERME GRADE-MR EB3R	F9P2
	AUTOTHERME GRADE-N EB9	F9PZ
MAXFLUX SAF-13	AUTOTHERME GRADE-L EB2	F8P2
	AUTOTHERME GRADE-M EB3	F9P2
MAXFLUX SAF-223	AUTOTHERME GRADE-B EM12K	F7A4
	AUTOTHERME GRADE-C EH14	
	AUTOTHERME GRADE-F EA2	F8A2
MAXFLUX SAF-223 (SPL)	AUTOTHERME GRADE-A EL8	F6A2
	AUTOTHERME GRADE-B EM12K	F7A4/A5

SAW FLUX NOMENCLATURE

MAXFLUX SAF-223 (SPL)	AUTOTHERME GRADE-F EA2	F8A2
	AUTOTHERME GRADE-C EH14	F7A4/P4
MAXFLUX SAF-704	HARD FACING	
MAXFLUX SAF-723	AUTOTHERME GRADE-J EA4	F8P2
	AUTOTHERME GRADE-U EA3	F8A4/F7P4
MAXFLUX SS 4	AUTOTHERME GRADE-308L ER308L	F520AZ
	AUTOTHERME GRADE-410 ER410	F520PZ
	AUTOTHERME GRADE-430 ER430	F450PZ
MAXFLUX SS-4 (LT)	AUTOTHERME GRADE-308L ER308L	F520AZ/A20
	AUTOTHERME GRADE-309L ER309L	F520AZ
	AUTOTHERME GRADE-316L ER316L	F490AZ/A20
	AUTOTHERME GRADE-318 ER318	F550AZ
	AUTOTHERME GRADE-347 ER347	F520AZ
MAXFLUX HF- 250	AUTOTHERME GRADE-A EL8	250 BHN (HARDFACING)
MERGEARC SAF- 723	AUTOTHERME GRADE-J EA4	F8P2
MAXFLUX SAF-NA	AUTOTHERME GRADE-1223 ENiCrMo-3	F110A32

NOTE: The above combination is generalized for a wider range of SAW flux and wire combinations, If you have specific requirements, please write to us at tsd@dnhsecheron.net

MAXFLUX SAF - 2

Codification :

AWS SFA 5.17	F7AZ-EL8, F7A0-EM12K
EN ISO 14174	SA AR 1 87 DC



Characteristics & Applications :

Maxflux SAF-2 is an agglomerated Alumina-Rutile type acidic flux to weld medium tensile structural steels. The slag is easily removable and bead finish is smooth & shiny.Weld deposit is ofradiographic quality. Maxflux SAF-2 is suitable for single and multi layer welding of various structural & pressure vessel steels like; IS:2062, ASTM 516 Grode 60&70, ASTM A285 Gr. C, ASTM A-36, BS:1501-151 Gr.400, machine building and fabrication of earthmoving equipment, crane girders, ships, locomotives, etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
AUTOTHERME GRADE-A	Typical	0.050	1.100	0.350	0.027	0.028	0.150
AUTOTHERME GRADE-B	Typical	0.070	1.250	0.500	0.028	0.026	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					RT	0°C	-20°C
AUTOTHERME GRADE-A	Typical	500	410	26	55	30	-
AUTOTHERME GRADE-B	Typical	510	418	25	60	40	30

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
25%	5%	45%	25%

Approvals : CE, IBR, RDSO

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~0.70
Grain Size : 0.35 – 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 4

Codification :

AWS SFA 5.17	F6A2-EL8, F7A4-EM12K, F7A4-EH14
EN ISO 14174	SA FB 1 67 DC



Characteristics & Applications :

Maxflux SAF-4 is an agglomerated basic type flux having very good performance with good sub-zero impact properties & extreme resistance to cracking. It is neutral in terms of silicon and manganese pick-up. Slag is easily removable and bead finish is smooth & shiny. The diffusible hydrogen content of the weld metal is low. Maxflux SAF-4 is suitable for single & multi-layer welding of structural steels, pressure vessels, boilers and other fabrications involving medium tensile & low alloy steel.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
Autotherme Grade-A	Typical	0.050	0.600	0.300	0.028	0.027	0.150
Autotherme Grade-B	Typical	0.060	1.000	0.350	0.028	0.026	0.150
Autotherme Grade-C	Typical	0.060	1.500	0.380	0.028	0.027	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-18°C	-29°C	-40°C
Autotherme Grade-A	Typical	460	380	26	40	30	-
Autotherme Grade-B	Typical	510	415	25	70	60	34
Autotherme Grade-C	Typical	530	418	26	90	75	45

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
25%	25%	20%	30%

Approvals : CE, IBR

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~1.60
Grain Size : 0.35 – 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 4 (SPL)

Codification :

AWS SFA 5.17	F7A4-EM12K, F7A4/P4-EH14, F7A4/P4-EH10K
EN ISO 14174	SA FB 1 67 DC



Characteristics & Applications :

Maxflux SAF-4 (Spl) is a basic type flux giving good sub-zero impact properties and resistance to cracking. Slag detachability is very good with smooth & shiny bead finish. The diffusible hydrogen content of weld metal is low & satisfies radiographic quality requirements. Maxflux SAF-4 (Spl) is suitable for single & multi-layer welding of structural steels, pressure vessels, boilers and other fabrications involving medium tensile & low alloy steel.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
AUTOTHERME GRADE-B	Typical	0.060	1.320	0.600	0.022	0.028	0.150
AUTOTHERME GRADE-C	Typical	0.070	1.580	0.220	0.028	0.027	0.150
AUTOTHERME GRADE-E	Typical	0.060	1.460	0.280	0.012	0.015	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-18°C	-29°C	-40°C
AUTOTHERME GRADE-B	Typical	528	475	25	80	70	40
AUTOTHERME GRADE-C (As Welded)	Typical	545	488	26	100	80	50
AUTOTHERME GRADE-C SR:620°C/1 Hr	Typical	517	464	29	106	78	60
AUTOTHERME GRADE-E SR:620°C/1 Hr	Typical	508	474	28	120	86	62

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
20%	25%	20%	35%

Approvals : CE, RDSO.

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~1.70

Grain Size : 0.35 – 1.60 mm

Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 4 (PW)

Codification :

AWS SFA 5.17	F7A4/P4-EM12K, F8A4/F7P5-EH14



Characteristics & Applications :

Maxflux SAF-4 (PW) is an agglomerated basic type flux having very good performance with good sub-zero impact properties & extreme resistance to cracking. The flux is especially designed to meet the tensile & Impact requirements after post weld heat treatment condition at 620°C. slag is easily removable & bead finish is smooth & shiny. The diffusible hydrogen content ofthe weld metal is low. Maxflux SAF-4 (PW) is suitablefor single & multi-layer welding of structural steels, pressure vessels, boilers and other fabrications involving medium tensile & low alloy steel.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
AUTOTHERME GRADE-B	Typical	0.060	1.240	0.510	0.021	0.023	0.150
AUTOTHERME GRADE-C	Typical	0.070	1.600	0.420	0.023	0.025	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-29°C	-40°C	-46°C
AUTOTHERME GRADE-B (As Welded)	Typical	537	486	28	106	78	-
AUTOTHERME GRADE-C (As Welded)	Typical	568	506	28	94	68	48
AUTOTHERME GRADE-B SR:620°C/ 2 HR	Typical	512	450	30	103	66	-
AUTOTHERME GRADE-C SR:620°C/ 2 HR	Typical	523	462	31	135	96	56

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
22%	23%	21%	34%

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~1.60
Grain Size : 0.35 – 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 4 (UV)

Codification :

AWS SFA A5.17	F7A4/ P4-EH14, F7A5/ P5-EH10K
EN ISO 14174	SA FB 1 76 DC



Characteristics & Applications :

Maxflux SAF-4 (UV) is an agglomerated fluoride basic flux suitable to weld medium to high strength steels & low alloy steels. The weld made with this flux gives very low diffusible hydrogen content, good crack resistance and high sub-zero toughness properties. The flux provides uniform fusion in fillet welds & butt welds with excellent slag detachability. The flux can be used for multi-pass welding. The wdeposits are of radiographic quality and have less than 4ml diffusible hydrogen/ 100gms of weld metal. Maxflux SAF-4 (UV) is suitablefor single & multilayer welding of various structural, Boiler, Pressure vessel steels, Petrochemical industries, Refineries, Shipping, Quenched & tempered steel, heat resistant steels, Nuclear sector fabrications & otherfabrication industries.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
AUTOTHERME GRADE-C	Typical	0.070	1.40-1.60	0.60	0.025	0.030	0.150
AUTOTHERME GRADE-E	Typical	0.060	1.40-1.50	0.40	0.010	0.025	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
					-40°C	-46°C
AUTOTHERME GRADE-C (As Welded)	Typical	582	494	23	120	-
AUTOTHERME GRADE-C (SR: 620°C/1 HR)	Typical	536	453	32	132-	-
AUTOTHERME GRADE-E (As Welded)	Typical	570	484	30	110	72
AUTOTHERME GRADE-E (SR: 620°C/1 HR)	Typical	537	463	31	148	68

Approvals : CE

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~3.00
Grain Size : 0.15 – 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 4 (UV)

Codification :

AWS SFA 5.23	F8A4/P4-EA2-A2&EA3-A3, F9A4/P2-EF3-F3,F11A4/F10P5-EM4-M4
EN ISO 14174	SA FB 1 76 DC



Characteristics & Applications :

Maxflux SAF-4 (UV) is an agglomerated fluoride basic flux suitable to weld medium to high strength steels & low alloy steels. The weld made with this flux gives very low diffusible hydrogen content, good crack resistance and high sub-zero toughness properties. The flux provides uniform fusion in fillet welds & butt welds with excellent slag detachability. The flux can be used for multi-pass welding. The weld deposits are of radiographic quality and have less than 4ml diffusible hydrogen/ 100gms of weld metal. Maxflux SAF-4 (UV) is suitablefor single & multilayer welding of various structural, Boiler, Pressure vessel steels, Petrochemical industries, Refineries, Shipping, Quenched & tempered steel, heat resistant steels, Nuclear sector fabrications & otherfabrication industries.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
AUTOTHERME GRADE-F	Range	0.12	1.40	0.80	0.03	0.03	-	-	0.40-0.65	0.35
AUTOTHERME GRADE-U	Range	0.15	2.10	0.80	0.030	0.03	-	-	0.40-0.65	0.35
AUTOTHERME GRADE-P	Range	0.17	1.25-2.25	0.80	0.03	0.03	-	0.7-1.1	0.40-0.65	0.35
AUTOTHERME GRADE-Q	Range	0.10	1.30-2.25	0.80	0.02	0.02	0.8	2.0-2.8	0.3-0.8	0.30

MAXFLUX SAF - 4 (UV)

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-29°C	-40°C	-46°C
AUTOTHERME GRADE-F (As Welded)	Typical	612	535	30	-	105	-
AUTOTHERME GRADE-F (SR:620°C/1HR)	Typical	594	482	31	-	126	-
AUTOTHERME GRADE-U (As Welded)	Typical	612	510	27	-	134	-
AUTOTHERME GRADE-U (SR:620°C/1HR)	Typical	597	477	37	-	142	-
AUTOTHERME GRADE-P (As Welded)	Typical	675	535	28	-	120	-
AUTOTHERME GRADE-P (SR:620°C/1HR)	Typical	660	554	28	46	-	-
AUTOTHERME GRADE-Q (As Welded)	Typical	793	665	20	-	62	-
AUTOTHERME GRADE-Q (SR:590°C/1HR)	Typical	777	675	20	-	78	58

Approvals : CE

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~3

Grain Size : 0.15 – 1.60 mm

Packaging Data : 25 Kg Poly-lined Paper Bag

MAXFLUX SAF - 5

Codification :

AWS SFA 5.17	F7A4-EM12K, F7A5-EH14 F7A5-EH10K



Characteristics & Applications :

Maxflux SAF-5 is an agglomerated basic type flux for welding general structural steels, pressure vessel steels, pipe steels, micro-alloyed (BIS: 8500) & fine grained steels. Recommended to use with high Mn wires (like EM12K and EH14) for better impact properties. Slag detachability is good. Weld is of radiographic quality with very low diffusible hydrogen content. Maxflux SAF-5 is suitable for single & multi-layer welding of structural welding, pressure vessels, boilers and other fabrications involving medium tensile & low alloy steel.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
AUTOTHERME GRADE-B	Typical	0.070	1.000	0.250	0.020	0.025	0.150
AUTOTHERME GRADE-C	Typical	0.080	1.500	0.200	0.021	0.026	0.150
AUTOTHERME GRADE-E	Typical	0.070	1.200	0.250	0.018	0.022	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-29°C	-40°C	-46°C
AUTOTHERME GRADE-B	Typical	492	412	32	80	50	-
AUTOTHERME GRADE-C	Typical	530	428	29	90	65	45
AUTOTHERME GRADE-E	Typical	520	415	30	90	75	50

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
10%	40%	30%	20%

Approvals : Godrej Boyce Ltd.

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~1.60
Grain Size : 0.35–1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF -7S

Codification :

AWS SFA 5.17	F7AZ-EL8 F7A0-EM12K



Characteristics & Applications :

Maxflux SAF-7S is a high speed welding acidic agglomerated flux for spiral pipe welding. The flux is suitable for single & multi-pass welding with single wire & multi-wire applications in both AC & DC polarity. Slag detachability is good anddeposited weld metal is ofradiographic quality. Maxflux SAF-7S is suited for fabrication and welding of spiral pipes, smaller diameter pipes (internal and external), penstock pipelines, wind mill towers, pressure vessels, girder, earthmoving equipment, structures of off-shore platforms, etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
AUTOTHERME GRADE-A	Typical	0.050	1.300	0.600	0.025	0.024	0.150
AUTOTHERME GRADE-B	Typical	0.060	1.550	0.750	0.027	0.020	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-18°C
AUTOTHERME GRADE-A	Typical	550	480	23	40
AUTOTHERME GRADE-B	Typical	580	535	23	50

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
20%	5%	55%	15%

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~0.50
Grain Size : 0.20 – 1.50 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 8 (LS)

Codification :

AWS SFA 5.17	F7A2/P2-EM12K F7A6/P6/P8-EH10K
EN ISO 14174	SA FB 1 67 DC



Characteristics & Applications :

Maxflux SAF-8 (LS) is an agglomerated fluoride-basic type flux suitable to weld medium to high strength steels. The weld metal made with this flux gives very low diffusible hydrogen content, good crack resistance and higher sub-zero toughness properties. The flux is neutral in Mn & Si pick up and meets mechanical requirements after post-weld heat treatment at 620°C upto six hours of holding. The weld deposit is of radiographic quality. The weld metal passes the corrosion tests as per NACE standard TM-01-77 & TM-02-84. Maxflux SAF-8 (LS) is suitable for single & multi-layer welding of high tensile quenched & tempered steel, fine grained steels, heat resistant structural steels, nuclear sector fabrication, etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
AUTOTHERME GRADE-B	Typical	0.010	1.200	0.470	0.010	0.030	0.080
AUTOTHERME GRADE-E	Typical	0.086	1.580	0.360	0.012	0.013	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)			
					-29°C	-40°C	-51°C	-62°C
AUTOTHERME GRADE-B (As Welded)	Typical	570	450	26	74	-	-	-
AUTOTHERME GRADE-B (SR:620°C/7HR)	Typical	545	438	29	90	-	-	-
AUTOTHERME GRADE-E (SR:620°C/2HR)	Typical	535	438	30	-	105	86	72
AUTOTHERME GRADE-E (SR:620°C/6HR)	Typical	511	427	32	-	128	115	106

MAXFLUX SAF - 8 (LS)

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
10%	48%	17%	25%

Approvals : CE, BV, L&T, Tema India, ISGEC Hitachi, Anup Engg.

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~3.40
Grain Size : 0.35 – 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 8 (PW)

Codification :

AWS SFA 5.17	F7P5/P6-EH10K, F7P5/P6-EH14, F7P6/P8-EH12K
EN ISO 14174	SA FB 1 67 DC



Characteristics & Applications :

Maxflux SAF-8 (PW) is an agglomerated fluoride-basic type flux suitable to weld medium to high strength steels where very low diffusible hydrogen content, good crack resistance and higher sub-zero toughness properties are desired from the weld metal. The flux is neutral in Mn & Si pick up and especially designed to meet the tensile & impact requirements after post-weld heat treatment condition up to 7 hours of holding at 620°C. The weld deposit is of radiographic quality.Maxflux SAF-8 (PW) is suitable for single & multi-layer welding of high tensile quenched & tempered steel, fine grained steels, heat resistant structural steels, nuclear sector fabrication, etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cu
AUTOTHERME GRADE-E	Typical	0.097	1.60	0.38	0.011	0.013	0.15
AUTOTHERME GRADE-C	Typical	0.092	1.72	0.28	0.021	0.026	0.15
AUTOTHERME GRADE-E SPL	Typical	0.090	1.62	0.35	0.010	0.018	0.10

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-46°C	-51°C	-62°C
AUTOTHERME GRADE-E (SR:620°C/6HR)	Typical	520	450	33	126	50	-
AUTOTHERME GRADE-C (SR:620°C/2HR)	Typical	538	445	30	102	68	-
AUTOTHERME GRADE-E SPL (SR:620°C/7HR)	Typical	525	430	32	-	55	30

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
10%	48%	17%	25%

Approvals : CE

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~3.40
Grain Size : 0.35 – 1.60 mm (BS 10 to 44)
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 9

Codification :

AWS SFA 5.23	F8A5/A6-ENi2-Ni2, F8A5/A6-ECNi2-Ni2



Characteristics & Applications :

Maxflux SAF-9 is an agglomerated fluoride-basic type flux suitable to weld with Autotherme Grade-H (ENi-2) & Autotherme Grade H(C) (ECNi2) wires for medium to high tensile strength steel, fine grained structural steels where very low diffusible hydrogen content, good crack resistance and higher sub zero toughness properties are desired from the weld metal. The weld deposit with these wires & flux is of radiographic quality.Maxflux SAF-9 is suitable for single and multi-layer welding of high strength quench & tempered steel, ASTM 516 Gr.70 or Equivalent grade of steels, fine grained & heat resistance structural steels, nuclear sector fabrication etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Ni	Cu
AUTOTHERME GRADE-H IRSM:39-2001 CLASS W3	Typical	0.12	1.60	0.80	0.025	0.030	2.00-2.90	0.35
AUTOTHERME GRADE-HC	Range	0.05-0.10	1.00-1.80	0.30-0.70	0.028	0.028	2.00-2.90	0.10-0.30

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
					-46°C	-51°C
AUTOTHERME GRADE-H/HC IRSM:39-2001 CLASS W3	Range	550-700	470-600	24.0-27.0	50-80	40-70

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
10%	42%	18%	30%

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~1.80-3.40
Grain Size : 0.35 – 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 11

Codification :

AWS SFA 5.23	F8A2-EG-G



Characteristics & Applications :

Maxflux SAF-11 is an agglomerated special flux to weld 0.5%Cr-0.7%Ni-0.5%Cu Weathering steels. The weld metal produces smooth beads and good slag detachability. The weld metal gives very less diffusible hydrogen (<5 ml/100gms. ofW.M.).Maxflux SAF-11 is suitable for single & multilayer welding of various weathering steels. Especially suitable for welding of Corten steels used in chemical, Petrochemicals and railway industries to resist atmospheric corrosion like ASTM steels: Grade ASTM A588Gr.A, B or C & A709 Gr.50W etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cr	Ni	Cu
AUTOTHERME GRADE-G	Typical	0.060	0.720	0.470	0.016	0.022	0.56	0.72	0.50

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)
					-20°C
AUTOTHERME GRADE-G	Typical	570	480	24	45

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
10%	42%	18%	30%

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~1.80
Grain Size : 0.35 – 1.60 mm
Packaging Data : 25 Kg POLY-LINED PAPER BAG

MAXFLUX SAF - 12

Codification :

AWS SFA 5.23	F8P2-EB6-B6, F8P2-EB2R-B2, F9P2-EB3R-B3, F9PZ-EB9-B9



Characteristics & Applications :

Maxflux SAF-12 is an agglomerated specialflux usedto weld creepresistant steels. The weld metal possesses good CVN toughness combined with good strength. The weld metal produces smooth beads, good wetting, and excellent slag detachability. The weld metal gives very less diffusible hydrogen (<5ml/100gms of Weld Metal). Maxflux SAF-12 is suitable for single & multilayer welding of various structural, Boiler, Pressure vessel steels, Petrochemical industries, Refineries & other fabrication steels. It is suitable for welding of ASTM steels: Grade ASTM A213Gr.T5 A335 Gr.P5, A217 Gr.C5, A387 Gr11 & 12, A182 F11 & F12, A217 WC6 & WC11, A234 WP11 & WP12 A199 T11, A387 Gr 21 & 22 A234 WP22 A199 T21, T22 A200 T21, T22 A213 T22A335 P22, A 213 T91, A 335 P91, A 387 Gr 91, A 182 / A336, A 217 C12A, A 234WP91, A 369 FP91 etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other Elements
AUTOTHERME GRADE-R	Typical	0.08	0.80	0.32	0.013	0.017	5.30	-	0.52	0.11	-
AUTOTHERME GRADE-LR	Typical	0.07	0.71	0.32	0.009	0.009	1.21	-	0.52	0.13	-
AUTOTHERME GRADE-MR	Typical	0.07	0.73	0.31	0.009	0.009	2.21	-	1.10	0.11	-
AUTOTHERME GRADE-N	Typical	0.10	0.90	0.25	0.009	0.009	9.50	0.4	1.0	0.01	V:0.20 NB:0.040 N:0.040 AL:0.020

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					+20°C	-20°C	-29°C
AUTOTHERME GRADE-R (SR:745°C/1HR)	Typical	655	548	21	-	32	27
AUTOTHERME GRADE-LR (SR:690°C/1HR)	Typical	580	490	23	-	-	65
AUTOTHERME GRADE-MR (SR:690°C/1HR)	Typical	640	570	22	-	-	70
AUTOTHERME GRADE-N (SR:760°C/2HR)	Typical	680	575	21	54	-	-

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~3.10
Grain Size : 0.35 – 1.60 mm
Packaging Data : 25 Kg POLY-LINED PAPER BAG

MAXFLUX SAF - 13

Codification :

AWS SFA 5.23	F8P2-EB2-B2, F9P2-EB3-B3



Characteristics & Applications :

Maxflux SAF-13 is a specialflux used to weld structural steels. The Flux is specially designed to meet the tensile strength & Impact requirements. The weld metal produces smooth beads, good wetting, and excellent slag detachability. The weld metal gives very less diffusible hydrogen (<5 ml/100 gms of Weld Metal) Maxflux SAF-13 is suitable for single & multilayer welding of various structural, Boiler, Pressure vessel steels & other fabrication steels. It is suitable for welding of ASTM steels: A387 Gr 11, 12, A182 F11, F12, A217 WC6, WC11, A234 WP11, WP12, A199 T11 ASTM A387 Gr 21, 22 A234 WP22 A199 T21, T22 A200 T21, T22 & A213 T22 A335 P22. etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Cr	Mo	Cu
AUTOTHERME GRADE-L	Typical	0.06	0.78	0.21	0.009	0.020	1.10	0.52	0.21
AUTOTHERME GRADE-M	Typical	0.07	0.71	0.32	0.010	0.022	2.21	1.10	0.13

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	Hardness (VPN)
					-29°C	
AUTOTHERME GRADE-L (SR:690°C/1HR)	Typical	637	559	24	60	180
AUTOTHERME GRADE-M (SR:690°C/1HR)	Typical	650	570	22	70	190

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~3.10
Grain Size : 0.35 – 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF-223

Codification :

AWS SFA 5.17/5.23	F7A4-EH14, F7A4-EM12K, F8A2-EA2-A2



Characteristics & Applications :

Maxflux SAF-223 is an agglomerated basic type flux for high-speed longitudinal welding giving smooth & shiny weld bead along with easy slag removal characteristics. The flux is also suitable for multi-wire submerged arc welding applications and supports to achieve higher throat thickness in welding of fillet joints dueto higher current carrying capacity. Maxflux SAF-223 is suitable for single & multi-layer welding of pressure vessel grade steels (EN 10028-2), X-42 to X-70 grade pipes conforming to API-5L specification, etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Mo	Cu
AUTOTHERME GRADE-B	Typical	0.070	1.00	0.25	0.022	0.025	-	0.15
AUTOTHERME GRADE-C	Typical	0.100	1.40	0.38	0.020	0.023	-	0.15
AUTOTHERME GRADE-F	Typical	0.070	1.38	0.59	0.018	0.022	0.47	0.15

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)			
					-20°C	-29°C	-40°C	-46°C
AUTOTHERME GRADE-B	Typical	510	440	30	-	78	45	-
AUTOTHERME GRADE-C	Typical	580	505	28	-	80	50	-
AUTOTHERME GRADE-F	Typical	620	530	27	60	85	-	-

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
10%	40%	30%	20%

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~1.60
Grain Size : 0.20 - 1.50 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF-223 (SPL)

Codification :

AWS SFA 5.17/5.23	F6A2-EL8, F7A4/A5-EM12K, F7A4/P4-EH14, F8A2-EA2-A2
EN ISO 14174	SA FB 1 67 DC
IRSM:36-2020	Class F4



Characteristics & Applications :

Maxflux SAF-223 (SPL) is an agglomerated basic type flux for high-speed longitudinal welding giving smooth bead and easy slagremoval characteristics. The flux is also suitable for Tandem, multi-wire submerged arc welding applications and supports to achieve higher throat thickness in welding of fillet joints due to higher current carrying capacity. Maxflux SAF-223 (SPL) is suitable for Tandem single & multi-layer welding of pressure vessel grade steels (EN 10028-2), pipes conforming to X-42 to X-70 grade of API 5L, Grade 1/2/3 of ASTM A252, SA 516 Grade 70, Grade A/B of A53 & A523 specification, etc. Suitable for AC and DC welding.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Mo	Cu
AUTOTHERME GRADE-A	Typical	0.060	0.90	0.22	0.025	0.025	-	0.15
AUTOTHERME GRADE-B	Typical	0.065	1.10	0.28	0.024	0.025	-	0.15
AUTOTHERME GRADE-C	Typical	0.059	1.82	0.30	0.010	0.030	-	0.16
AUTOTHERME GRADE-F	Typical	0.070	1.38	0.60	0.020	0.022	0.48	0.15

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)			
					-20°C	-29°C	-40°C	-46°C
AUTOTHERME GRADE-A	Typical	520	435	31	-	64	-	-
AUTOTHERME GRADE-B	Typical	540	445	30	-	85	65	52
AUTOTHERME GRADE-C	Typical	536	435	29	-	-	62	-
AUTOTHERME GRADE-F	Typical	620	536	26	60	75	-	-

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
14%	38%	26%	22%

Approvals : CE, Railway.

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~0.70 **Grain Size** : 0.35 – 1.60 mm

Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 704



Characteristics & Applications :

Maxflux SAF-704 is a fluoride-basic type flux suitable to weld with composite SAW wires. The flux is neutral in nature and is also suitable with all HF (Hard Facing) class wires. The deposited weld metal has low diffusible hydrogen content and crack resistant during hard surfacing. Maxflux SAF-704 flux suited with composite SAW wires. With ECNi2 wire the weld metal gives excellent mechanical and charpy V notch impact properties (40-70J at - 51°C). For hard surfacing application on steel mill rolls, the flux is suitable with Maxfil HF-20,Maxfil HF-30, Maxfil HF-45 & Maxfil HF-55 wires depending up on the composition & hardness requirement. Recommended welding procedure shall be followed as in our product literature.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	Cr	Ni	Mo	N
Autotherme Grade-HC	Range	0.05-0.10	1.0-1.6	0.30-0.70	-	2.0-2.9	-	-
MAXFIL HF-20	Range	0.08 Max	0.50-1.20	0.60 Max	1.2-2.0	2.0-3.0	0.40-0.80	0.06-0.15
MAXFIL HF-30	Range	0.20 Max	0.50-1.20	0.60 Max	4.0-8.0	2.0-4.0	0.40-0.80	0.06-0.15
MAXFIL HF-45	Range	0.10-0.30	0.80-1.60	0.80 Max	11.0-14.0	3.0-4.5	0.40-0.80	0.06-0.15
MAXFIL HF-55	Range	0.30-0.60	1.0-2.0	0.80 Max	4.0-6.0	0.50-1.00	0.50-1.00	0.06-0.15

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	Hardness 3 Layer (HRC)
Autotherme Grade-HC	Range	550-700	470-600	24.0-27.0	-
MAXFIL HF-20	Range	-	-	-	23-28
MAXFIL HF-30	Range	-	-	-	30-40
MAXFIL HF-45	Range	-	-	-	42-48
MAXFIL HF-55	Range	-	-	-	52-54

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~1.80-3.40
De Tap Density : 1.10 - 1.40 g.m./c.c.
Grain Size : (+5BSS): 0%,(-10,+44 BSS):90-95%,(-100 BSS): 0-2%
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF - 723

Codification :

AWS SFA 5.23	F8P2-EA4-A4, F8A4/F7P4-EA3-A3



Characteristics & Applications :

Maxflux SAF- 723 is an agglomerated flux to weld structural steels. The weld metal possesses good CVN toughness & produces smooth beads and excellent slag detachability. The weld metal gives very less diffusible hydrogen (<5 ml/100gms of Weld Metal) Maxflux SAF-723 is suitable for single & multilayer welding of various structural, pressure vessels & other fabrication steels. Especially suitable for welding of ASTM steels: A204 Grade A, A516 Gr. B, C & IS 2002 type B, API Gr. 5L X60-X 80 etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Mo	Cu
AUTOTHERME GRADE-J	Typical	0.075	1.540	0.180	0.018	0.023	0.480	0.150
AUTOTHERME GRADE-U	Typical	0.070	1.650	0.360	0.014	0.017	0.560	0.170

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)		
					-20°C	-30°C	-40°C
AUTOTHERME GRADE-J (SR:620°C/1HR)	Typical	608	528	27	105	88	-
AUTOTHERME GRADE-U (AS WELDED)	Typical	620	550	22	-	-	27 Min
AUTOTHERME GRADE-U (SR:620°C/1HR)	Typical	590	510	23	-	-	50

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~2.30
Grain Size : 0.35 - 1.20 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MERGEARC SAF - 723

Codification :

AWS SFA 5.23	F8P2-EA4-A4



Characteristics & Applications :

Mergearc SAF- 723 is an agglomerated flux to weld both medium & high tensile strength structural steels. The flux works at reasonably higher welding speed giving smooth bead and easy slag removal characteristics. The flux is also suitable for multi-wire SAW applications with good CVN toughness. The weld metal gives very less diffusible hydrogen (<5 ml/100gms of weld metal) and radiographic quality deposits. Mergearc SAF-723 flux is suitable for single & multilayer welding of various structural, pressure vessels & other medium to high tensile strength steels. Especially suitablefor welding of ASTM class steels: A204 Grade A, A516 Gr. B, C & IS 2002type B, API Gr. 5L X60-X 80 etc.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Mo	Cu
MERGEARC GRADE-J	Typical	0.075	1.540	0.480	0.018	0.023	0.48	0.150

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	0.2% YS(MPa)	%El (L=4d)	CVN Impact Strength (J)	
					-20°C	-30°C
MERGEARC GRADE-J SR:620°C/2 HR	Typical	608	528	27	105	88

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
11%	42%	22%	25%

Approvals : BHEL

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~2.30
Grain Size : 0.35 - 1.20 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SS - 4

Codification :

AWS SFA 5.39	F520AZ-ER308L/308L F520PZ-ER410/410 F450PZ-ER430/430
EN ISO 14174	SA FB 1 65 DC



Characteristics & Applications :

Maxflux SS-4 is a fluoride basic agglomerated type flux suitable for welding of austenitic stainless steel and heat resistant steels. The flux behavior to carbon content of the weld metal is neutral. So, using suitable wire, low carbon stainless steels can easily be welded. The flux offers good slag detachability, smooth weld finish and lessthan 5ml diffusible hydrogen per 100 gm of weld metal. Maxflux SS-4 flux can be used with various stainless steel wires for joining & for overlay applications. The flux is also suitable with various Cr- Mo steels & stabilized grade stainless steel. With AISI 430 wire the weld metal result 30-40 HRC.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Ni	Cu
AUTOTHERME GRADE-308L	Typical	0.050	1.20	0.35	0.012	0.025	9.80	0.30
AUTOTHERME GRADE-410	Typical	0.17	1.10	0.70	0.025	0.025	0.50	0.21
AUTOTHERME GRADE-430	Typical	0.05	0.33	0.50	0.02	0.04	0.18	0.01

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
20%	25%	20%	25%

Approvals : CE, BHEL

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~2.00
Grain Size : 0.35 - 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SS - 4 (LT)

Codification :

AWS SFA 5.39	F520AZ/A20-ER308L/308L F520AZ-ER309L/309L F490AZ/A20-ER316L/316L F550AZ-ER318/318 F520AZ-ER347/347



Characteristics & Applications :

Maxflux SS-4 (LT) is a fluoride basic agglomerated type flux suitable for welding of austenitic stainless steel and heat resistant steels. The flux behavior to carbon content of the weld metal is neutral. So, using suitable wire, low carbon stainless steels can easily be welded. The flux offers good slag detachability, smooth weld finish and lessthan 5ml diffusible hydrogen per 100 gm of weld metal. Maxflux SS-4 flux (LT) can be used with various low carbon stainless steel wires for joining & for overlay applications. Weld metal meet impact toughness at -196°C requirements. The flux is also suitable to weld with various Cr-Mo steels & stabilized grade stainless steels.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	S	P	Ni	Mo	Cu
AUTOTHERME GRADE-308L	Typical	0.01	1.22	0.57	0.02	0.02	9.20	0.01	0.04
AUTOTHERME GRADE-309L	Typical	0.03	1.38	0.64	0.01	0.03	12.1	0.10	0.04
AUTOTHERME GRADE-316L	Typical	0.02	1.24	0.58	0.012	0.025	11.1	2.1	0.04
AUTOTHERME GRADE-318	Typical	0.07	1.62	0.58	0.01	0.010	12.5	2.60	0.10
AUTOTHERME GRADE-347	Typical	0.04	1.45	0.60	0.02	0.03	9.2	0.10	0.04

MAXFLUX SS - 4 (LT)

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	Properties	UTS (MPa)	%El (L=4d)
AUTOTHERME GRADE-308L	Typical	590	38
AUTOTHERME GRADE-309L	Typical	650	34
AUTOTHERME GRADE-316L	Typical	560	38
AUTOTHERME GRADE-318	Typical	610	27
AUTOTHERME GRADE-347	Typical	590	39

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
20%	30%	20%	25%

Approvals : L&T

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~2.00
Grain Size : 0.35 - 1.60 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX HF -250



Characteristics & Applications :

Maxflux HF-250 is an agglomerated hard surfacing type flux suitable for moderate abrasion resistance applications in combination with EL-8 grade (Autotherme Grade A) wire. Slag removal is easy and weld bead is smooth & shiny. The deposited weld metal is ofradiographic quality. Maxflux HF-250 is suitable for surfacing of tractor rollers, excavator parts, tracks lines, crane wheels, etc.

Typical Chemical Composition Of All Weld Metal (%) :

AUTOTHERME GRADE-A	C	Mn	Si	Cr	Mo	Cu
Typical	0.12	0.90	0.65	2.10	0.15	0.15

Typical Metal Hardness of All Weld Metal :

SAW Wire Autotherme Grade-A	Hardness On MS Plate 1st Layer	Hardness On MS Plate 2nd Layer	Hardness On MS Plate 3rd Layer
	-	240 – 260 BHN	240 – 270 BHN

Major Constitutents :

$SiO_2 + TiO_2$	CaO+MgO	Al_2O_3+MnO	CaF_2
25%	5%	45%	25%

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : ~0.70
Grain Size : 0.40 – 2.00 mm
Packaging Data : 25 Kg Poly-Lined Paper Bag

MAXFLUX SAF-NA

Codification :

AWS SFA 5.39	F110A32-ENiCrMo-3/NiCrMo-3



Characteristics & Applications :

Maxflux SAF-NA is an agglomerated basic type flux for welding of Nickel alloys (Inconel 600, Inconel 625, Inconel 800, Hastelloy C276), 9% Nickel steels & also for surfacing of Nickel alloys on stainless steels when used with a suitable wire combination. This flux have applications in petrochemical industry, power generation & furnace equipment fabrication.

Typical Chemical Composition Of All Weld Metal (%) :

SAW Wire	Element	C	Mn	Si	Cr	Mo	Fe	S	P	Ni
AUTOTHERME GRADE-1223	Typical	0.007	0.6	0.36	21.5	9.1	5.2	0.01	0.004	Bal.

Typical Mechanical Properties Of All Weld Metal :

SAW Wire	UTS (MPa)	%El	CVN Impact Strength (J)
			-196°C
AUTOTHERME GRADE-1223	760	35	30

Major Constitutents :

CaF_2,MgO	Al_2O_3+MnO	SiO_2+TiO_2	CaO
25%	35%	30%	10%

Precautions : Re-dry the flux at 300-350°C for 2 hours before use.

Additional Information :

Basicity Index : 1.4-1.5
Grain Size : 0.25 – 1.60 mm
Packaging Data : 25 Kg Poly-lined Paper Bag

Technical Data



Welding Positions according to EN and AWS Standards

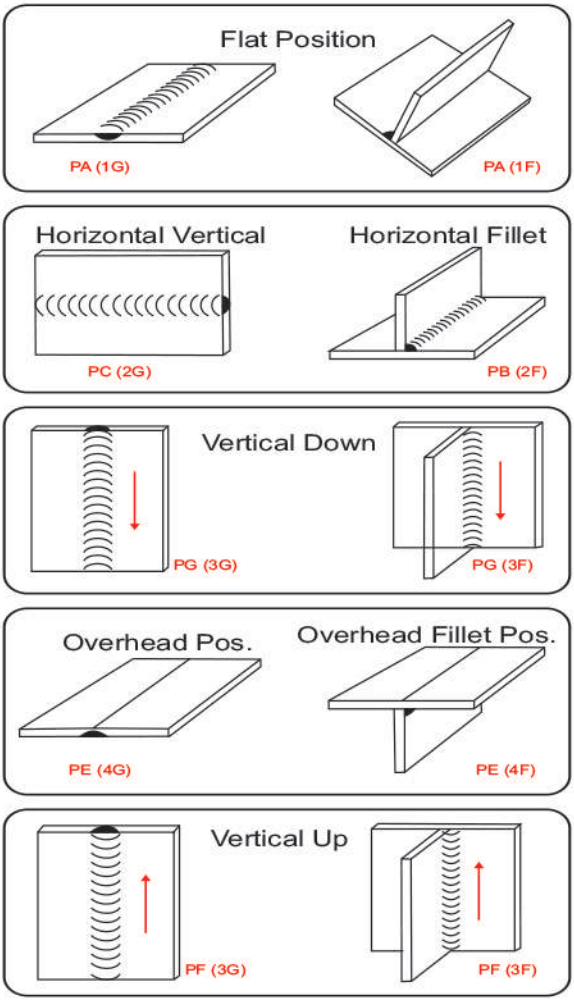
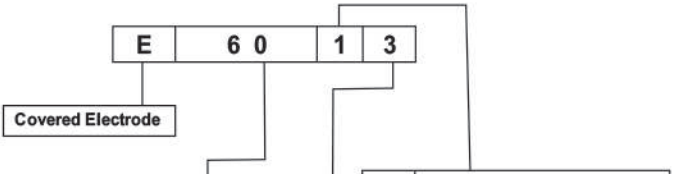


Table of the Electrodes tor Welding of Non-alloy Steels according to AWS A5.1



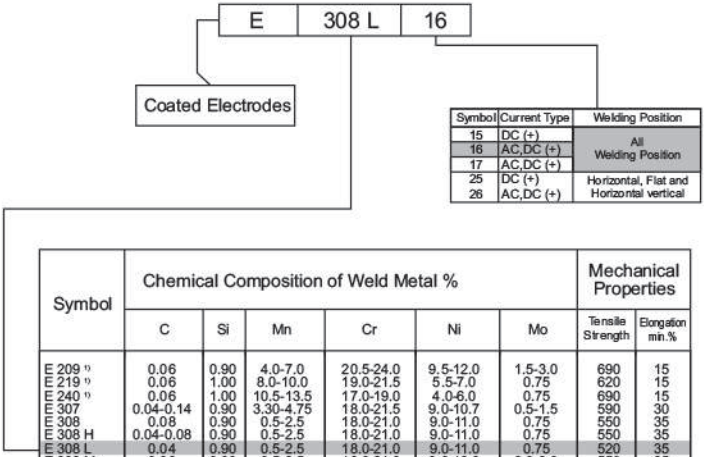
Symbol	Tensilie Strength min		Yield Strength min	
	A5.1 (ksi)	A5.1 M (N/mm^2)	A5.1 (ksi)	A5.1 M (N/mm^2)
60	60	430	48	330
70	70	490	58	400

Symbol	Welding Positions
1	All welding positions
2	Horizontal and flat welding positions
4	All welding positions including vertical down position

Symbol	Type of Cover	Welding Position	Current Type	Elongation %min.
10	Cellulosic-Sodium Silicate	F,V, OH, H-Fillet	DC (+)	22
11	Cellulosic-Potassium Silicate	F,V, OH, H-Fillet	AC - DC (+)	22
12	Rutile-Sodium ssilicate	F,V, OH, H-Fillet	AC - DC (-)	17
13	Rutile-Potassium silicate	F,V, OH, H-Fillet	AC - DC (-) (+)	17
14	Rutile-Iron Powder	F,V, OH, H-Fillet	AC - DC (-) (+)	17
15	Basic-Sodium silicate	F,V, OH, H-Fillet	DC (+)	22
16	Basic-Potassium Silicate	F,V, OH, H-Fillet	AC - DC (+9)	22
18	Basic, Iron Powder-Potassium silicate	F,V, OH, H-Fillet	AC - DC (+)	22
19	Rutile, Iron oxide-Potassium	F,V, OH, H-Fillet	AC - DC (-) (+)	22
20	Iron oxide	F, H-fillet	AC - DC (-) (+)	22
22	Iron oxide	only for one-run welding	AC - DC (-)	–
24	Rutile-Iron Powder	F, H-fillet	AC - DC (-) (+)	17
27	Iron oxide - Iron powder	F, H-fillet	AC - DC (-) (+)	22
28	Basic, Iron Powder - Potassium Silicate	F, H-fillet	AC - DC (+)	22
48	Basic, Iron Powder - Potassium Silicate	F, OH, H, V-Down	AC - DC (+)	22

F=Flat V=Vertical OH=Overhead H=Horizontal
H-Fillets= Horizontal fillets V-Down= Vertical with downward progression

Table of Stainless Steel Electrodes According to AWS A5.4



Symbol	Chemical Composition of Weld Metal %						Mechanical Properties	
	C	Si	Mn	Cr	Ni	Mo	Tensile Strength	Elongation min.%
E 209 [1]	0.06	0.90	4.0-7.0	20.5-24.0	9.5-12.0	1.5-3.0	690	15
E 219 [1]	0.06	1.00	8.0-10.0	19.0-21.5	5.5-7.0	0.75	620	15
E 240 [1]	0.06	1.00	10.5-13.5	17.0-19.0	4.0-6.0	0.75	690	15
E 307	0.04-0.14	0.90	3.30-4.75	18.0-21.5	9.0-10.7	0.5-1.5	590	30
E 308	0.08	0.90	0.5-2.5	18.0-21.0	9.0-11.0	0.75	550	35
E 308 H	0.04-0.08	0.90	0.5-2.5	18.0-21.0	9.0-11.0	0.75	550	35
E 308 L	0.04	0.90	0.5-2.5	18.0-21.0	9.0-11.0	0.75	520	35
E 308 Mo	0.08	0.90	0.5-2.5	18.0-21.0	9.0-12.0	2.0-3.0	550	35
E 308 MoL	0.04	0.90	0.5-2.5	18.0-21.0	9.0-12.0	2.0-3.0	520	35
E 309	0.15	0.90	0.5-2.5	22.0-25.0	12.0-14.0	0.75	550	30
E 309 L	0.04	0.90	0.5-2.5	22.0-25.0	12.0-14.0	0.75	520	30
E 309 Cb [3]	0.12	0.90	0.5-2.5	22.0-25.0	12.0-14.0	0.75	550	30
E 309 Mo	0.12	0.90	0.5-2.5	22.0-25.0	12.0-14.0	2.0-3.0	550	30
E 309 MoL	0.04	0.90	0.5-2.5	22.0-25.0	12.0-14.0	2.0-3.0	520	30
E 310	0.08-0.20	0.75		25.0-28.0	20.0-22.5	0.75	550	30
E 310 H	0.35-0.45	0.75	1.0-2.5	25.0-28.0	20.0-22.5	0.75	620	10
E 310 Cb [3]	0.12	0.75	1.0-2.5	25.0-28.0	20.0-22.0	0.75	550	25
E 310 Mo	0.12	0.75	1.0-2.5	25.0-28.0	20.0-22.0	2.0-3.0	550	30
E 312	0.15	0.90	0.5-2.5	28.0-32.0	8.0-10.5	0.75	660	22
E 316	0.08	0.90	0.5-2.5	17.0-20.0	11.0-14.0	2.0-3.0	520	30
E 316 H	0.04-0.08	0.90	0.5-2.5	17.0-20.0	11.0-14.0	2.0-3.0	520	30
E 316 L	0.04	0.90	0.5-2.5	17.0-20.	11.0-14.0	2.0-3.0	490	30
E 317	0.08	0.90	0.5-2.5	18.0-21.0	12.0-14.0	3.0-4.0	550	30
E 317 L	0.04	0.90	0.5-2.5	18.0-21.0	12.0-14.0	3.0-4.0	520	30
E 318 [3]	0.08	0.90	0.5-2.5	17.0-20.0	11.0-14.0	2.0-3.0	550	25
E 320 [2] [3]	0.07	0.60	0.5-2.5	19.0-21.0	32.0-36.0	2.0-3.0	550	30
E 320 LR [2] [3]	0.03	0.30	1.50-2.5	19.0-21.0	32.0-36.0	2.0-3.0	520	30
E 330	0.18-0.25	0.90	1.0-2.5	14.0-17.0	33.0-37.0	0.75	520	25
E 330 H	0.35-0.45	0.90	1.0-2.5	14.0-17.0	33.0-37.0	0.75	620	10
E 347	0.08	0.90	0.5-2.5	18.0-21.0	9.0-11.0	0.75	520	30
E 349	0.13	0.90	0.5-2.5	18.0-21.0	8.0-10.0	0.35-0.65	690	25
E 383	0.03	0.90	0.5-2.5	26.5-29.0	30.0-33.0	3.2-4.2	520	30
E 385	0.03	0.75	1.0-2.5	19.5-21.5	24.0-26.0	4.2-5.2	520	30
E 410	0.12	0.90	1.0	11.0-13.5	0.7	0.75	450	20
E 410 NiMo	0.06	0.90	1.0	11.0-12.5	4.0-5.0	0.40-0.70	760	15
E 430	0.10	0.90	1.0	15.0-18.0	0.6	0.75	450	20
E 502	0.10	0.90	1.0	4.0-6.0	0.4	0.45.0.65	420	20
E 505	0.10	0.90	1.0	8.0-10.5	0.4	0.85-1.20	420	20
E 60 [2] [3]	0.05	0.75	0.25-0.75	16.00-1675	4.5-5.0	0.75	930	7
E 16-8-2	0.10	0.60	0.5-2.5	14.5-16.5	7.5-9.5	1.0-2.0	550	35
E 7 Cr	0.10	0.90	1.0	6.0-8.0	0.4	0.45-0.65	420	20
E 2209 [1]	0.04	0.90	0.5-2.0	21.5-23.5	8.5-10.5	2.5-3.5	690	20
E 2553 [1] [2]	0.06	1.0	0.5-1.5	24.0-27.0	6.5-8.5	2.9-3.9	760	15

1) Weld metal includes No.
2) Weld metal includes cu.
3) Weld metal includes Cb (Nb)+ Ta.

Table of the Low-Alloy Electrodes According to AWS A5.5

E 80 1 8 – B2

Covered Electrode

Symbol	Tensile Strength (ksi)	Tensile Strength (N/mm²)	Yield Strength (Ksi)	Yield Strength (N/mm²)
70	70	480	60	415
80	80	550	67	460
90	90	620	77	530
100	100	690	87	600
110	110	760	97	670
120	120	830	107	8

Symbol	Type of Cover	Welding Position	Type of Current
10	Cellulosic Sodium Silicate	F. V. OH. H-fillet	DC(+)
11	Cellulosic Potassium Silicate	F. V. OH. H-fillet	AC DC(+)
13	Rutile Potassium Silicate	F. V. OH. H-fillet	AC DC(-)(+)
15	Basic Sodium Silicate	F. V. OH. H-fillet	DC(+)
16	Basic Potassium Silicate	F. V. OH. H-fillet	AC DC(+)
18	Basic Iron Powder Potassium Silicate	F. V. OH. H-fillet	AC DC(-)(+)
20	Iron Oxide	F. H-fillet	AC DC(-)(+)
27	Iron Oxide Iron Powder	F. H-fillet	AC DC(-)(+)

F=Flat V=Vertical OH=Overhead
H=Horizontal H-Fillets= Horizontal Fillets
V-Down=Vertical with downward progression

1	All Welding Positions
2	Horizontal and flat welding positions

Symbol		Elongation % min.
E 7010	P 1/A1/G	22/22/22
E 7011	A1/g	22/22
E 7015	X/B2L/G	25/19/25
E 7016	X/B2L/G	25/19/25
E 7018	X/B2L/C3L/ W1/G	25/19/25/25/25
E 7020	A1/G	25/25
E 7027	A1/G	22/25
E 8010	P1/G	19/19
E 8011	G	19
E 8013	G	16
E 8015	X/B3L/G	19/17/19
E 8016	X/C3/C4/G	19/24/19/19
E 8018	X/B3L/C3/C4/ NM1/W2/G	19/17/24/19/ 19/19/19
E 9010	G	17
E 9011	G	17
E 9013	G	14
E 9015	X/G	17/17
E 9016	X/G	17/17
E 9018	M/X/G	24/17/17
E 10010	G	16
E 10011	G	16
E 10013	G	13
E 10015	X/G	16/16
E 10016	X/G	16/16
E 10018	M/X/G	20/16/16
E 11010	G	15
E 11011	G	15
E 11013	G	13
E 11015	G	15
E 11016	G	15
E 11018	M	20
E 12010	G	14
E 12011	G	14
E 12013	G	11
E 12015	G	14
E 12016	G	14
E 12018	G/M/M1	14/18/18

'X' : B1. B2. B3. B4L. B5. B6. B6L B7. B7L. B8. B8L. B9. C1. C1L.C2. C2L. C5L. D1. D2. D3. P1

Symbol	Types of Electrodes	Chemical Composition of the Weld Metals % C	Mn	Ni	Cr	Mo
EXXXX-A1	Carbon Molybdenum alloyed	0.12	0.60	-	-	0.40-0.65
EXXXX-B1	Chromium molybdenum alloyed	0.05-0.12	0.90	-	0.40-0.65	0.40-0.65
EXXXX-B2		0.05-0.12	0.90	-	1.00-1.50	0.40-0.65
EXXXX-B3		0.05-0.12	0.90	-	2.00-2.50	0.90-1.20
EXXXX-B4L		0.05	0.90	-	1.75-2.25	0.40-0.65
EXXXX-B5		0.07-0.15	0.40-0.70	-	0.40-0.60	1.00-1.25
EXXXX-B6		0.05-0.10	1.00	0.40	4.00-6.00	0.45-0.65
EXXXX-B7		0.05-0.10	1.00	0.40	6.00-8.00	0.45-0.65
EXXXX-B8		0.05.0-10	1.00	0.40	8.00-10.5	0.85-1.20
EXXXX-B9		0.08-0.13	1.25	1.00	8.00-10.5	0.85-1.20
EXXXX-C1	Nickel alloyed	0.12	1.25	2.00-2.75	-	-
EXXXX-C2		0.12	1.25	3.00-3.75	-	-
EXXXX-C3		0.12	0.40-0.25	0.80-1.10	0.15	0.35
EXXXX-C4		0.10	1.25	1.10-2.00	-	-
EXXXX-C5		0.25	0.4.0-1.00	6.00-7.25	-	-
EXXXX-NM1	Nickel molybdenum alloyed	0.10	0.80-0.25	0.80-1.10	0.10	0.40-0.65
EXXXX-D1	Manganese molybdenum alloyed	0.12	1.00-0.75	0.90	-	0.25-0.45
EXXXX-D2		0.15	1.65-2.00	0.90	-	0.25-0.45
EXXXX-D3		0.12	1.00-1.80	0.90	-	0.25-0.45
XXXX-G	Low alloy electrode	Mn: 1.00 - Si: 0.80 - Ni: 0.50 - Cr: 0.30 Mo: 0.20 V: 0.10 When at least one of these elements exceeds the limit, designated with "G".				
EXXXX-M	Military similar electrode	0.10	0.60-1.25	1.40-1.80	0.15	0.35
EXXXX-P1	Pipeline Electrodes	0.20	1.20	1.00	0.30	0.50
EXXXX-W1	Weathering steel electrodes	0.12	0.40-0.70	0.20-0.40	0.15-0.30	Cu: 0.3-0.6
EXXXX-W2		0.12	0.50-1.30	0.40-0.80	0.45-0.70	Cu:0.3-0.75

The symbol L is added to the low-carbon electrodes.

Specitication tor Wires and Fluxes for Submerged Arc Welding According to AWS A5.17

Tensile Test

Wire-Flux Combination	Tensile Strength psi	Yield Strength psi	Elongation %
F6XX-EXXX	60000-80000	84000	22
F7XX-EXXX	70000-95000	58000	22

Impect Test

Symbol	Max. Test Temperature °F	Min. Average Energy
0	0	20 ft ibf
2	-20	
4	-40	
5	-50	
6	-60	
8	-80	
z	Not Required	

F: Submerged Arc Wilding Flux

A: Without Heat Treatment
P: PWHT

F	7	A	2	-	EM12

Tensile Test

Wire-Flux Combination	Tensile Strength psi	Yield Strength psi	Elongation %
F43XX-EXXX	430-560	330	22
F48XX-EXXX	480-660	400	22

Impect Test

Symbol	Max. Test Temperature °F	Min. Average Energy
0	0	27 Joule
2	-20	
3	-30	
4	-40	
5	-50	
6	-60	
z	Not Required	

F: Submerged Arc Wilding Flux

A: Without Heat Treatment
P: PWHT

F	43	A	3	-	EM12

Chemical Composition for Submerged Arc Welding Wires (%)

Symbol	UNS Number	C	Mn	Si	S	P	Cu	Ti
Low-Manganese Electrodes								
EL 8	K01008	0.10	0.25/0.60	0.07	0.03	0.03	0.35	-
EL 8K	K01009	0.10	0.25/0.60	0.10/0.25	0.03	0.03	0.35	-
EL 12	K01012	0.04/0.14	0.25/0.60	0.10	0.03	0.03	0.35	-
Medium-Manganese Electrodes								
EM 11K	K01111	0.07/0.15	1.00/1.50	0.65/0.85	0.03	0.025	0.35	-
EM 12	K01112	0.06/0.15	0.80/1.25	0.10	0.03	0.03	0.35	-
EM 12K	K01113	0.05/0.15	0.80/1.25	0.10/035	0.03	0.03	0.35	-
EM 13K	K01313	0.06./0.16	0.90/1.40	0.35/0.75	0.03	0.03	0.35	-
EM 14K	K01314	0.06/0.19	0.90/1.40	0.35/0.75	0.025	0.025	0.35	0.03/0.17
EM 15K	K01515	0.10/0.20	0.80/1.25	0.10/0.35	0.03	0.03	0.35	-
High-Manganese Electrodes								
EH 10K	K01210	0.07/0.15	1.30/1.70	0.05/0.25	0.025	0.025	0.35	-
EH 11K	K11140	0.07/0.15	1.40/1.85	0.80/1.15	0.03	0.03	0.35	-
EH 12K	K01213	0.06/0.15	1.50/2.00	0.25/0.65	0.025	0.025	0.35	-
EH 14	K11585	0.10/0.20	1.70/2.20	0.10	0.03	0.03	0.35	-
EG			Not Specified					

Table of Carbon Steel Electrodes and Rods tor Gas Shielded Arc Welding (TIG, MIG) of Non-Alloy Steels according to AWS A5.18

Chemical Compositions for Solid and Stick Electrodes (%) (a)

	A5.18M	UNS Number	C	Mn	Si	P	S	Ni		Mo		Cu	Ti	Zr	Al
ER 70S-2	ER 48S-2	K10726	0.07	0.90-1.40	0.40-0.70	0.025	0.035	0.15	0.15	0.15	0.03	0.50	0.05-0.15	0.02-0.12	0.05-0.15
ER 70S-3	ER 48S-3	K11022	0.06.-0.15	0.90-1.40	0.45-0.75	0.025	0.035	0.15	0.15	0.15	0.03	0.50	-	-	-
ER 70S-4	ER 48S-4	K11132	0.06-0.15	1.00-1.50	0.65-0.85	0.025	0.035	0.15	0.15	0.15	0.03	0.50	-	-	-
ER 70S-6	ER 48S-6	K11140	0.06-0.15	1.40-1.85	0.80-1.15			0.15	0.15	0.15	0.03	0.50	-	-	-
ER 70S-7	ER 48S-7	K11125	0.07-0.15	1.50-2.00	0.50-0.80	0.025	0.035	0.15	0.15	0.15	0.03	0.50	-	-	-
ER 70S-G	ER 48S-G					Not Specified									

a) Single values shown in the table mean maximum values.

Min. Tensile Strength of all-weld metal

ER | 70 | S | - | 2 | H8

Symbols for hydrogen content of the all-weld metal

Symbols	mL/100g
H16	16
H8	8
H4	4

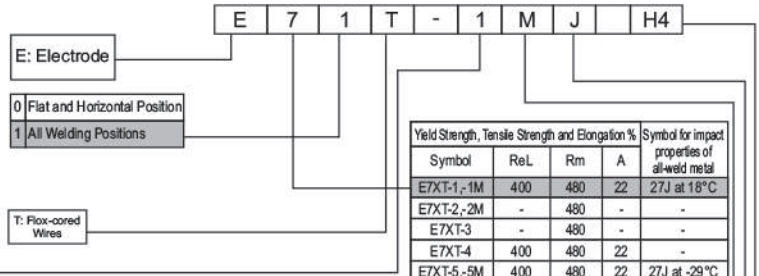
ER: Wire electrodes
E: Stick electrodes

S: Solid wires
C: Composite wires

Symbol A5.18	Symbol A5.18M	Shielding Gas	Tensile Strength (Mpa)	Yield Strength (Mpa)	Elongation (%)	Impact Test: Average Impact Strength (Min.) A5.18M
ER70S-2	ER48S-2					27J at -30°C
ER70S-3	ER48S-3					27J at -20°C
ER70S-4	ER48S-4					Not required
ER70S-6	ER48S-6	CO_2	480	400	22	27J at -30°C
ER70S-7	ER48S-7					27J at -30°C
ER48S-G	ER48S-G		480	400	22	a
E70C-3X	ER48C-3X	75-80 %Ar/Rem. CO_2 or CO_2	480	400	22	27J at -20°C
E70C-6X	E70C-6X					27J at -30°C
E70C-G(X)	E48C-G(X)		480	400	22	a
E70C-GS (X)	E48C-GS (X)		480	Not Specified		Not Required

a) Specified according to the agreement between the producer and the customer.

Table of Flux-Cored Wires according to AWS A5.20



Alloy Symbol		Chemical Composition %										
Symbol	UNS Number	C	Mn	Si	S	P	Cr	Ni	Mo	V	Al	Cu
E7XT-1 E7XT-1M	W07601											
E7XT5 E7XT-5M	W07605	0.18	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	-	0.35
E7XT-9 E7XT-9M	W07609											
E7XT-4	W07604											
E7XT-6	W07606											
E7XT-7	W07607	(f)	1.75	0.60	0.03	0.03	0.20	0.50	0.30	0.08	1.8	0.35
E7XT-8	W07608											
E7XT-11	W07611											
EXXT-G	-	(f)	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	1.8	0.35
E7XT-12 E7XT-12M	W07312	0.15	1.75	0.90	0.03	0.03	0.20	0.50	0.30	0.08	-	0.35
E6XT-13	W06613											
E7XT-2 E7XT-2M	W07602											
E6XT-13	W07613	Not Specified										
E7XT-10	W07610											
EX7T-13	W07613											
EX7T-14	W07314											
EXXTGS	-											

f) Limits of this element was not specified. Look at AWS A6.5 for it.

Yield Strength, Tensile Strength and Elongation %				Symbol for impact properties of all-weld metal
Symbol	ReL	Rm	A	
E7XT-1,-1M	400	480	22	27J at 18°C
E7XT-2,-2M	-	480	-	-
E7XT-3	-	480	-	-
E7XT-4	400	480	22	-
E7XT-5,-5M	400	480	22	27J at -29°C
E7XT-6	400	480	22	27J at 29°C
E7XT-7	400	480	22	-
E7XT-8	400	480	22	27J at 29°C
E7XT-9-9M	400	480	22	27J at 29°C
E7XT-10	-	480	-	-
E7XT-11	400	480	20	-
EXXT-12,12M	400	480-620	22	27J at 29°C
E6XT-13	-	415	-	-
E7XT-13	-	480	-	-
E6XT-14	-	480	-	-
E6XT-G	330	415	22	-
E7XT-G	400	480	22	-
E6XT-GS	-	415	-	-
E7XT-GS	-	480	-	-

a) Single values are minimum values.

M: 75-80 % Argon - CO_2

If no M Symbol, products E70T-3, E70T-4, E70T-6, E70T-7,E70T-8,E70T-10,E70T-11,E71T-11,E61T-13 E71T-13, E71T-14 are used without gas, the rest is used with CO_2.

"J" is used if 27J is provided at -40°C.

Symbols for hydrogen content of the all-weld metal	
Symbol	ml/100g
H4	16.0
H8	8.0

Table of the Electrodes tor Arc Welding Arc Welding of Non-alloy and Fine Grain Steels according to EN ISO 2560-A

E	46	3	1Ni	B	6	4	H5

Production / Product	
G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Alloy Symbol	Chemical Composition % 1) 2) 3)		
	Mn	Mo	Ni
	2.00	-	-
Mo	1.40	0.3 - 0.6	-
MnMo	> 1.4-2.0	0.3 - 0.6	-
1 Ni	-	-	0.6 - 1.2
2 Ni	1.40	-	1.8 - 2.6
3 Ni	1.40	-	> 2.6 -3.8
Mn 1Ni	> 1.4-2.0	-	0.6 - 1.2
1 NiMo	1.40	0.3 - 0.6	0.6 - 1.2
Z	Any other agreed composition		

1)If not specified Mo<0.3: Ni<0.3: Cr<0.2; V<0.05; Nb<0.05; Cu<0.3
2)Single values shown in the table mean maximum values
3)The results shall be rounded to the same number of significant figures as in the specified value using the rules according to ISO 31-0, annex B rule A

Yield Strength, Tensile Strength and Elongation			
Symbol	ReL (N/mm²)	Rm (N/mm²)	A (%)
35	355	440-570	22
38	380	470-600	20
42	420	500-640	20
46	460	530-680	20
50	500	560-720	18

Symbol for Impact Properties of all-weld metal (Min. 47J)	
Symbol	Temperature °C
Z	No Requirements
A	(+20)
0	0
2	-20
3	-30
4	-40
5	-50
6	-60

Electrode covering	
A	Acid covering
C	Cellulosic covering
R	Rutils covering
RR	Thick Rutile covering
RC	Rutile-Cellulosic covering
RA	Rutile-Acid cov.
RB	Rutile-Basic cov.
B	Basic covering

Symbol for weld metal recovery and type of current (%)		
1	< 105	=/=
2	< 105	=
3	> 105 < 125	=/=
4	> 105 < 125	=
5	> 125 < 160	=/=
6	> 125 < 160	
7	> 160	=/=
8	> 160	=

Symbols for welding positions	
1	PA; PB; PC; PD; PE; PF; PG
2	PA; PB; PC; PD; PE; PF;
3	PA; PB
4	PA
5	PA; PB; PG

Symbols for hydrogen content of th all-weld metal	
Symbol	ml/100g
H 5	5
H 10	10
H 15	15

+91 9833550505

495

www.dnhsecheron.com

Table of High Strenght Electrodes According to EN ISO 18275-A

E	69	6	Mn2NiCrMo	B	3	4	H5

Production / Product

G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Yield Strength, Tensile Strength&Elongation

Symbol	ReL (N/mm²)	Rm (N/mm²)	A(%)
55	550	810-780	18
62	620	690-890	18
69	690	760-960	17
79	790	880-1080	16
89	890	980-1180	15

Alloy Symbol — Chemical Composition % 1)2)3) %Mass

Alloy Symbol	Mn	Ni	Cr	Mo
MnMo	1.4-2.0	–	–	0.3-0.6
Mn1Ni1	1.4-2.0	0.6-1.2	–	–
1NiMo	1.4	0.6-1.20	–	0.3-0.6
1.5 NiMo	1.4	1.2-1.8	–	0.3-0.6
2 NiMo	1.4	1.8-2.6	–	0.3-0.6
Mn1NiMo	1.4-2.0	0.6-1.2	–	0.3-0.6
Mn2NiMo	1.4-2.0	1.8-2.6	–	0.3-0.6
Mn2NiCrMo	1.4-2.0	1.8-2.6	0.3-0.6	0.0-0.6
Mn2Ni1CrMo	1.4-2.0	1.8-2.6	0.6-1.0	0.3-0.6
Z	Any other agreed composition			

1) If not specified C 0.30%-0.10%, Ni <0.3%, Cr <0.2%, Mo <0.2%, V <0.05%, Nb <0.05%, CU <0.3%, P <0.025% S <0,020%

2) Single Values Shown in the table mean maximum values

3) The results Shall be rounded to the same number of significant figures as in the specified value using the rules according to ISO 31-0, annex B ruleA

Electrode covering

A	Acid covering
C	Cellulosic Covering
R	Rutile covering
RR	Thick Rutile covering
RC	Rutile-Cellulosic covering
RA	Rutile-Acid cov.
RB	Rutile-Basic cov.
B	Basic covering

Symbols for Welding Positions

1	PA; PB; PC; PD; PE; PF; PG
2	PA; PB; PC; PD; PE; PF;
3	PA; PB; PC
4	PA; PB
5	PA; PB; PG

Symbol for impact properties of all-weld metal min. 47J

Symbol	Temperature °C
Z	No Requirements
A	(+20)
0	0
2	-20
3	-30
4	-40
5	-50
6	-66
7	-70
8	-80

Symbol for weld metal recovery and type of current (%)

1	105	=/=
2	105	=
3	>105<125	=/=
4	>105<125	=
5	>125<160	=/=
6	>125<160	=
7	> 160	=/=
8	> 160	=

Symbols for gydrogen content of the all-weld metal

Symbol	ml/100g
H 5	5
H 10	10

Complete Welding Support

+91 9833550505

www.dnhsecheron.com

Table for Creep - Resisting (Heat - Resisting) Electrodes According to EN ISO 3580-A

E	CrMo1	B	4	3	H5

Alloy Symbol	Chemical Composition % 1) 2) 3) % Mass									Yield Strength	Tensile Strength	Elongation	Impact Strength	Post Weld Heat Treatment	
	C	Si	Mn	P	S	Cr	Mo	V	other	ReL (N/mm²)	Rm (N/mm²)	A(%)	J	C	Time/min.
Mo	0.10	0.80	0.40-0.504)	0.03	0.025	-	0.40-0.70	-	–	355	510	22	47	570-620	60
MoV	0.03-0.12	0.80	0.40-1.50	0.03	0.025	0.30-060	0.80-1.20	0.25-0.60	–	355	510	18	47	690-730	60
CrMo0.0	0.05-0.12	0.80	0.40-1.50	0.03	0.025	0.40-0.65	0.40-0.65	-	–	355	510	22	47	600-650	60
CrNo1	0.05-0.12	0.80	0.40-0.504)	0.03	0.025	0.90-1.40	0.45-0.70	-	–	355	510	20	47	660-700	60
CrMo1L	0.05	0.80	0.40-0.504)	0.03	0.025	0.90-1.40	0.40-0.70	-	–	355	510	20	47	660-700	60
CrMoV1	0.05-0.15	0.80	0.40-1.50	0.03	0.025	0.90-1.30	0.90-1.30	0.10-0.35	–	335	590	15	47	680-730	60
CrMo2	0.05-0.12	0.80	0.40-1.30	0.03	0.025	2.0.2.6	0.90-1.30	-	–	400	500	18	47	690-750	60
CrMo2L	0.05	0.80	0.40-1.30	0.025	0.025	2.0-2.6	0.90-1.30	-	–	400	500	18	47	690-750	60
CrMo5	0.03-0.12	0.80	0.40-1.50	0.025	0.025	4.0-6.0	0.40-0.70	-	–	400	590	17	47	730-760	60
CrMo9	0.03-0.12	0.80	0.40-1.30	0.025	0.025	8.0-10.0	0.90-1.2	0.15	Ni 1.0	435	590	18	34	740-780	60
CrMo91	0.06-0.12	0.60	0.40-1.50	0.025	0.025	8.0-10.5	0.80-1.20	0.15-0.30	Ni 0.40-1.00 Nb 0.03-0.10 N 0.02-0.07	415	585	17	47	750-770	120-180
CrMoWV12	0.15-0.22	0.80	0.40-1.30	0.025	0.025	10.0-12.0	0.80-1.20	0.20-0.40	Ni 0.8 W 0.40-0.60	550	690	15	34	740-780	64
Z	Any other agreed composition														

1) If not Specified Ni <%0.3, Cu <% 0.3, V <%0.03, Nb <% 0.01, Cr <%0.2.
2) Single values shown in the table mean maximum values
3) The results shall be rounded to the same number of significant figures as in the specified value using the rules according to ISO 31-0, annex B Rule A

Production / Product	
G	Wire Electrodes
O	Oxy-ecetylene
E	Electric arc welding
S	Subhmerged arc welding wires
T	Fluc-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Symbol for weld metal recovery and type of current (%)	
1	105
2	105
3	> 105 < 125
4	> 105 < 125

In Order to demonstrate operability on a.c., tests shall be carried out with no. voltage no higher than 65V.

Symbols for hydrogen content of the all-weld metal	
Symbol	ml/100g
H 5	5
H 10	10

Electrode covering	
A	Acid covering
C	Cellulosic covering
R	Rutile covering
RR	Thick Rutile covering
RC	Rutile-Cellulosic covering
RA	Rutile-Acid cov.
RB	Rutile-Basic cov.
B	Basic covering

Symbols for welding positions	
1	PA: PB: PC: PD: PE: PF: PG
2	PA: PB: PC: PD: PE: PF:
3	PA: PB, PC
4	PA, PB
5	PA: PB: PG

Estd. 1896
séchéron
Complete Welding Support

+91 9833550505

www.dnhsecheron.com

Table of Covered Electrodes for manual Arc Welding of Heat-Resisting and Stainless Steels According To EN ISO 3581 - A

E	19 12 3 Nb	R	5	4

Symbol of alloy	Chemical Composition % 1) 2)									Mechanical Properties			
	C	Si	Mn	P	S	Cr	Ni	Mo	Other Elcments	Yield Strength	Tensile Strength	Elongation %	Post weld Heat Treatment
Martensitic / Ferritic													
13	0.12	1.00	1.50	0.03	0.025	11.0-14.0	<0.60	<0.75	-	250	420	15	840-870°C/2 h/600°C/air
13 4	1.06	1.00	1.50	0.03	0.025	11.0-14.5	3.0-5.0	0.4-1.0	-	500	750	15	580-620°C/2h/air
17	0.12	1.00	1.50	0.03	0.025	16.0-18.0	< 0.60	<0.75	-	300	450	15	760-790°C/2 h/600°C/air
Austenitic													
19 9	0.08	1.20	2.00	0.03	0.025	18.0-21.0	9.0 - 11.0	<0.75	-	350	550	30	none
19 9 L	0.04	1.20	2.00	0.03	0.025	18.0-21.0	9.0 - 11.0	<0.75	-	320	510	30	none
19 9 Nb	0.08	1.20	2.00	0.03	0.025	18.0-21.0	9.0 - 11.0	<0.75	Nb min. 8 x % max. % 1.1	350	550	25	none
19 12 2	0.08	1.20	2.00	0.03	0.025	17.0-20.0	10.0-13.0	2.0-3.0	-	350	550	25	none
19 12 3 L	0.04	1.20	2.00	0.03	0.025	17.0-20.0	10.0-13.0	2.5-3.0	-	320	510	25	none
19 12 3 Nb	0.08	1.20	2.00	0.03	0.025	17.0-20.0	10.0-13.0	2.5-3.0	Nb min. 8 x % max % 1.1	350	550	25	none
19 13 4 N L	0.04	1.20	1.0-5.0	0.03	0.025	17.0-20.0	12.0-15.0	3.0-4.5	N 0.20	350	550	25	none
Austenitic- Ferritic High corrosion resistance													
22 9 3 N L	0.04	1.20	2.50	0.03	0.025	21.0-24.0	7.5 - 10.5	2.5-4.0	N 0.08-0.20	450	450	20	none
25 7 2 N L	0.04	1.20	2.00	0.035	0.025	24.0-28.0	6.0 - 8.0	1.0-3.0	N 0.20	500	500	15	none
25 9 3 Cu N L	0.04	1.20	2.50	0.03	0.025	24.0-27.0	7.5 - 10.5	2.5-4.0	N 0.100-.25. Cu 1.5-3.5	550	550	18	none
25 9 4 N L	0.04	1.20	2.50	0.03	0.025	24.0-27.0	8.0 - 10.5	2.5-4.5	N 0.20-0.30. Cu 1.5..W 1.0	550	550	18	none
Austenitic- Ferritic High corrosion resistance													
18 15 3 L	0.04	1.20	1.0-4.0	0.03	0.025	16.5-19.5	14.0-17.0	2.5-3.5	-	300	480	25	none
18 16 5 N L	0.04	1.20	1.0-4.0	0.035	0.025	17.0-20.0	15.5-19.0	3.5-5.0	N 0.20	300	480	25	none
20 25 5 Cu N L	0.04	1.20	1.0-4.0	0.03	0.025	19.0-22.0	24.0-27.0	4.0-7.0	Cu 1.0 - 2.0 N 0.25	320	510	25	none
20 16 3 Mn N L	0.04	1.20	5.0-8.0	0.035	0.025	18.0-21.0	15.0-18.0	2.5-3.5	N 0.20	320	510	25	none
25 22 2 N L	0.04	1.20	1.0-5.0	0.03	0.025	24.0-27.0	20.0-23.0	2.0-3.0	N 0.20	320	510	25	none
27 31 4 Cu L	0.04	1.20	2.50	0.03	0.025	26.0-29.0	30.0-33.0	3.0-4.5	Cu 0.6-1.5	240	500	25	none
Special Types													none
18 8 Mn	0.30	1.20	4.5-7.5	0.035	0.025	17.0-20.0	7.0-10.0	-	-	350	500	25	
18 9 Mn Mo	0.04-0.14	1.20	3.05.0	0.035	0.025	18.0-21.5	9.0-11.0	0.5-1.5	-	350	500	25	none
20 10 3	0.10	1.20	2.50	0.03	0.025	18.0-21.0	9.0-12.0	1.5-3.5	-	400	620	20	none
23 12 L	0.04	1.20	2.50	0.03	0.025	22.0-25.0	11.0-14.0	<0.75	-	320	510	25	none
23 12 Nb	0.10	1.20	2.50	0.03	0.025	22.0-25.0	11.0-14.0	<0.75	Nb min. 8 x % C. max % 1.1	350	550	25	none
23 12 2 L	0.04	1.20	2.50	0.03	0.025	22.0-25.0	11.0-14.0	2.0-3.0	-	350	550	25	none
29 9	0.15	1.20	2.50	0.035	0.025	27.0-31.0	8.0-12.0	<0.75	-	450	650	15	none
Heat Resisting Types													
16 8 2	0.08	1.00	2.50	0.03	0.025	14.5-16.5	7.5-9.5	1.5-2.5	-	320	320	25	none
19 9 H	0.04-0.08	1.20	2.00	0.03	0.025	18.0-21.0	9.5-11.0	<0.75	-	350	350	30	none
25 4	0.15	1.20	2.50	0.03	0.025	24.0-27.0	4.0-6.0	<0.75	-	400	400	15	none
22 12	0.15	1.20	2.50	0.03	0.025	20.0-23.0	10.0-13.0	<0.75	-	350	350	25	none
25 20	0.06-0.20	1.20	1.0-5.0	0.03	0.025	23.0-27.0	18.0-22.0	<0.75	-	350	350	20	none
25 20 H	0.35-0.45	1.20	2.50	0.03	0.025	23.0-27.0	18.0-22.0	<0.75	-	350	350	10	none
18 36	0.25	1.20	2.50	0.03	0.025	14.0-14.0	33.0-37.0	<0.75	-	350	350	10	none

Symbol for welding position	
1	PA, PB, PC, PD, PE, PF, PG
2	PA, PB, PC, PD, PE, PF, PG
3	PA, PB
4	PA
5	PA, PB, PG

Symbol for weld metal recovery and type of current (%)		
1	≤ 105	+/-
2	≤ 105	-
3	> 105 <125	+/-
4	> 105 <125	-
5	> 125 <150	+/-
6	> 125 <125	-
7	> 160	+/-
8	> 160	-

Electrode Covering
R - Rutile Cov.
B - Basic Cov.

Production / Product	
G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

57 YEARS
DNH sécheron
Complete Welding Support
Estd. 1966

Table of Wire Electrodes and Deposits for Gas-shielded Arc Welding of Non-alloy and Fine-grain Steels according to EN ISO 14341-A

G	42	3	M	G3Si1

Alloy Symbol	Chemical Composition %[1) 2) 3)]								
	C	Si	Mn	P	S	Ni	Mo	Al	Ti+Zr
GO	0.06-0.14								
G2Si	0.06-0.14	0.50-0.80	0.90-1.30	0.025	0.025	0.15	0.15	0.02	0.15
G3Si1	0.06-0.14	0.70-1.00	1.30-1.60	0.025	0.025	0.15	0.15	0.02	0.15
G4Si2	0.06-0.14	0.80-1.20	1.60-1.90	0.025	0.025	0.15	0.15	0.02	0.15
G3Si2	0.06-0.14	1.00-1.30	1.30-1.60	0.025	0.025	0.15	0.15	0.02	0.15
G2Ti	0.04-0.14	0.40-0.80	0.90-1.40	0.025	0.025	0.15	0.15	0.05-0.20	0.05-0.25
G3Ni1	0.06-0.14	0.50-0.90	1.00-1.60	0.025	0.025	0.80-0.15	0.15	0.02	0.15
G2Ni2	0.06-0.14	0.40-0.80	0.80-1.40	0.025	0.025	2.10-2.70	0.15	0.02	0.15
G2Mo	0.08-0.14	0.30-0.70	0.90-1.30	0.025	0.025	0.15	0.40-0.60	0.02	0.15
G4Mo	0.08-0.14	0.50-0.80	1.70-2.10	0.025	0.025	0.15	0.40-0.60	0.02	0.15
G2A1	0.08-0.14	0.30-0.50	0.90-1.30	0.025	0.025	0.15	0.15	0.35-0.75	0.15

1)Single values shown in the table mean maximum values.
2)If not specified, Cr<%0.15, Cu%0,35 and V%0.03.

Production / Product	
G	Wire Electrodes
O	Oxy-acetylene
E	Electric arc welding
S	Submerged arc welding wires
T	Flux-cored wires
W	TIG Rods
F	Submerged arc welding fluxes

Symbol for impact properties of all-weld metal	
Symbol	Temperature °C
Z	No Requirements
A	(+20)
0	0
2	-20
3	-30
4	-40
5	-50
6	-60
7	-70
8	-80

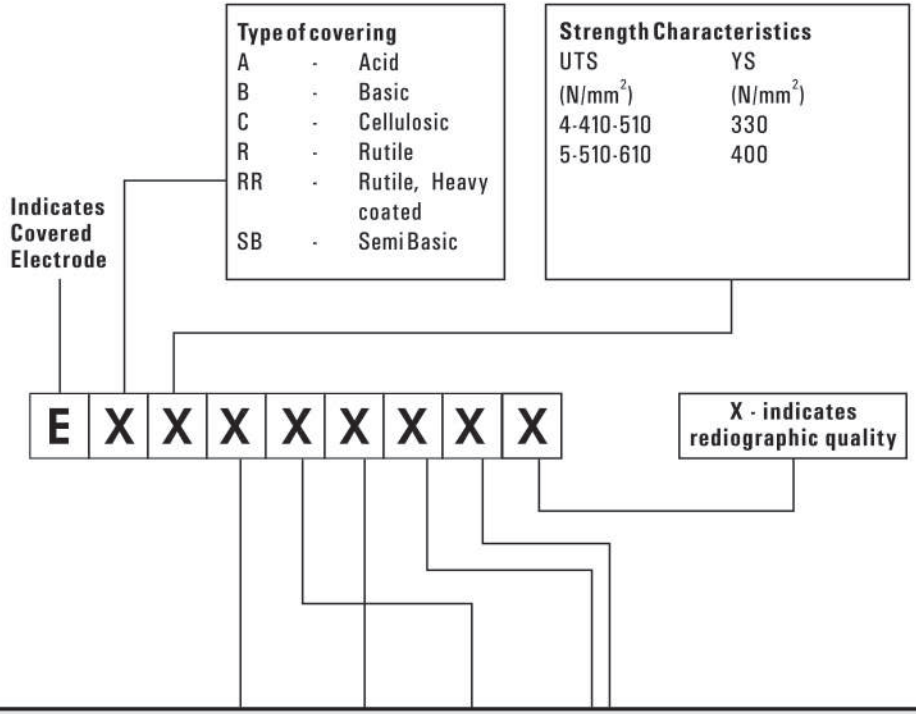
Yield Strength, Tensile Strength and Elongation			
Symbol	ReL (N/mm²)	Rm (N/mm²)	A (%)
35	355	440-570	22
38	380	470-600	20
42	420	500-640	20
46	460	530-680	20
50	500	560-720	18
55	550	610-780	18
62	620	690-890	18
69	690	760-960	17
79	790	880-1080	16
89	890	980-1180	15

Shielding Gas EN 439	
M	Composition
C	CO_2
N	No Gas

+91 9833550505

www.dnhsecheron.com

THE IS -CLASSIFICATION (IS 814-2004)



Complete Welding Support

% Elongation & Impact Strength

Digit	% Elongation Min	Impact Strength Joules at °C, Min
For Tensile 410-510 N/mm²		
0	16	Not Required
1	20	47 at + 27
2	22	47 at + 0
3	24	47 at - 20
4	24	27 at - 30
For Tensile 510-610 N/mm²		
0	16	Not Required
1	18	47 at + 27
2	18	47 at + 0
3	20	47 at - 20
4	20	27 at - 30
5	20	27 at - 40
6	20	27 at - 46

Welding Position

1. All positions.
2. All positions except vertical down.
3. Flat butt weld, flat fillet & horizontal/ vertical fillet.
4. Flat butt & fillet.
5. Vertical down, flat fillet, butt, horizontal & vertical fillet.
6. Any others.

Current conditions

Digit	DC	AC
0	(+)	Not recomm.
1	+/-	50
2	-	50
3	+	50
4	+/-	70
5	-	70
6	+	70
7	+/-	90
8	-	90
9	+	90

Metal Recovery Indicated by J,K,L

Diffusible Hydrogen
H1 = up to 15 ml
H2 = up to 10 ml
H3 = up to 5 ml

SOME COMMON ASME MATERIAL SPECIFICATIONS

STEEL SPEC.	TYPE	TYPICAL CHEMICAL ANALYSIS				
		C	Mn	Si	Mo	Ni
SA 36	Structural steel	-	-	-	-	-
SA 202 Gr-A	Cr-Mn-Si alloy plates	0.17	0.97-1.52	0.54-0.96	-	-
B	for pressure vessels	0.25	0.97-1.52	0.54-0.96	-	-
SA 203 Gr-A	Ni-alloy steel plates	0.17*	0.78*	0.13-0.45	-	2.03-2.57
B	for pressure vessels	0.21*	0.78*	0.13-0.45	-	2.03-2.57
D		0.17*	0.78*	0.13-0.45	-	3.18-3.82
E		0.20*	0.78*	0.13-0.45	-	3.18-3.82
SA 204 Gr-A	C-Mo alloy steel	0.18*	0.98	0.13-0.45	0.41-0.64	-
B	plates for pressure	0.20*	0.98	0.13-0.45	0.41-0.64	-
C	vessels	0.23*	0.98	0.13-0.45	0.41-0.64	-
SA285 Gr-A	Low and intermediate	0.17	0.98	-	-	-
B	tensile strength	0.22	0.98	-	-	-
C	C-steel plates for pressure vessels	0.28	0.98	-	-	-
SA 299	C-Mn-Si steel plates for pressure vessels	0.28*	0.84-1.52*	0.13-0.45	-	-
SA 302 Gr-A	Mn-Mo-and	0.20*	0.87-1.41	0.13-0.45	0.41-0.64	-
B	Mn- Mo-Ni alloy	0.20*	1.07-1.62	0.13-0.45	0.41-0.64	-
C	steel plates for	0.20*	1.07-1.62	0.13-0.45	0.41-0.64	0.37-0.73
D	pressure vessels	0.20*	1.07-1.62	0.13-0.45	0.41-0.64	0.67-1.03
SA 353	9% Ni steel double normalized and tempered for pressure vessel	0.13	0.98	0.13-0.45	-	8.4-9.6
SA 387 Gr-2	Pressure vessels	0.21	0.50-0.88	0.13-0.45	0.40-0.65	-
12	plates, alloy steel,	0.17	0.35-0.73	0.13-0.45	0.40-0.65	-
11	Cr-Mo	0.17	0.35-0.73	0.44-0.86	0.40-0.70	-
22		0.15*	0.25-0.66	0.50	0.85-1.15	-
21		0.15*	0.25-0.66	0.50	0.85-1.15	-
5		0.15	0.25-0.66	0.55	0.40-0.70	-
9		0.15	0.25-0.66	1.05	0.85-1.15	-
91		0.15	0.25-0.66	0.18-0.56	0.80-1.10	0.43

Cr	OTHERS	UTS (ksi)	RECOMMENDED ELECTRODE
-	-	-	Medio / Supratherme
0.31-0.64	-	75-95	Tensal
0.31-0.64	-	85-110	Tensal
-	-	65-85	Nitherme 2.5
-	-	70-90	Nitherme 2.5
-	-	65-85	Nitherme 3.5
-	-	70-90	Nitherme 3.5
-	-	65-85	Molytherme
-	-	70-90	Molytherme
-	-	75-95	Molytherme
-	-	45-65	Medio / Exobel (for T $\leq$ 16 mm)
-	-	50-70	Supratherme (for T $\geq$ 16 mm)
-	-	55-75	
-	-	75-95	Tensal
-	-	75-95	Nimotherme-1/Molytherme- Extra
-	-	80-100	Do
-	-	80-100	Nimotherme-1
-	-	80-100	Nimotherme-1
-	CVN Impact strength at -195°C and Lateral expansion specified	100-120	D&H 1212 (NS)
		Cl.1 / Cl.2	
0.46-0.85	-	55-80 / 70-90	Cromotherme
0.74-1.21	-	55-80 / 65-85	Cromotherme-1
0.94-1.56	-	60-85 / 75-100	Cromotherme-1
1.88-2.62	-	60-85 / 75-100	Cromotherme-2
2.63-3.37	-	60-85 / 75-100	Cromotherme-2
3.90-6.10	-	60-85 / 75-100	Cromotherme-5
7.90-10.10	-	60-85 / 75-100	Cromotherme-9
7.90-9.60	V: 0.16-0.27, Nb: 0.05-0.11 N: 0.025-0.080	- / 85-110	Cromotherme-91

STEEL SPEC.	TYPE	TYPICAL CHEMICAL ANALYSIS				
		C	Mn	Si	Mo	Ni
SA 515 Gr 55	C-steel plates for	0.20*	0.98	0.13-0.45	-	-
60	pressure vessels for	0.24*	0.98	0.13-0.45	-	-
65	intermediate and higher	0.28*	0.98	0.13-0.45	-	-
70	temperature service	0.31*	1.30	0.13-0.45	-	-
SA 516 Gr 55	C-steel plates for	0.18*	0.54-0.98*	0.13-0.45	-	-
60	pressure vessels for	0.21*	0.54-0.98*	0.13-0.45	-	-
65	moderate and lower	0.24*	0.79-1.30*	0.13-0.45	-	-
70	temperature service	0.27*	0.79-1.30*	0.13-0.45	-	-
SA 517 Gr A	High strength alloy	0.13-0.23	0.74-1.20	0.34-0.86	0.15-0.31	-
B	steel plates,	0.13-0.23	0.64-1.10	0.13-0.37	0.12-0.28	-
D	quenched and	0.11-0.22	0.35-0.78	0.08-0.45	0.12-0.28	-
E	tempered for pressure	0.10-0.22	0.35-0.78	0.08-0.45	0.36-0.64	-
F	vessels	0.08-0.22	0.55-1.10	0.13-0.37	0.36-0.64	0.67-1.03
J		0.10-0.23	0.40-0.78	0.18-0.37	0.46-0.69	-
P		0.10-0.23	0.40-0.78	0.18-0.37	0.41-0.64	1.15-1.55
SA 533 Gr A	Mn-Mo and	0.25	1.07-1.62	0.13-0.45	0.41-0.64	-
B	Mn-Mo-Ni alloy steel	0.25	1.07-1.62	0.13-0.45	0.41-0.64	0.37- 0.73
C	plates Q&T for	0.25	1.07-1.62	0.13-0.45	0.41-0.64	0.67-1.03
D	pressure vessels	0.25	1.07-1.62	0.13-0.45	0.41-0.64	0.17-0.43
SA 537 Cl 1	C-Mn-Si steel plates,	0.24	0.61-1.46*	0.13-0.55	-	-
2	heat treated for	0.24	0.61-1.46*	0.13-0.55	-	-
	pressure vessels					
SA 553 Gr I	8 &9% Ni alloy steel	0.13	0.98	0.13-0.45	-	8.4-9.6
II	plates Q&T for pressure	0.13	0.98	0.13-0.45	-	7.4-8.6
	vessels					
SA 612	Pressure vessels plates C- steel, high strength, for moderate and lower temperature service	0.29*	0.92-1.46*	0.13-0.45*	-	-
SA 645	5% Ni alloy steel plate specially heat treated for pressure vessels	0.15	0.25-0.66	0.18-0.45	0.17-0.38	4.65-5.35

Cr	OTHERS	UTS ksi	RECOMMENDED ELECTRODE
-	-	55-75	
-	-	60-80	
-	-	65-85	Supratherme
-	-	70-90	
-	-	55-75	
-	-	60-80	
-	-	65-85	Supratherme(Spl)
-	-	70-90	
0.46-0.84	Zr: 0.04-0.16		
0.36-0.69	V: 0.02-0.09;Ti:0.01-0.04		
0.79-1.26	Ti:0.03-0.11		
1.34-2.06	Ti:0.03-0.11	115-135*	Ultratensal-MH
0.36-0.69	V: 0.02-0.09,Cu:0.12-0.53		
-	-		
0.79-1.26	-		
-	-	C1 C2 C3	
-	-	80 90 100	Class 1: Nimotherme-1
-	-	to to to	Class 2 : Tensal
-	-	100 115 125	Class 3 : Ultratherme-H
-	-	70-90	Supratherme(Spl)
-	-	80-100	Supratherme-Ni(Spl)
-	CVN Impact strength		
-	at -195°C for type I		
	and- 170°C for type II and lateral expn. specified	100-120	D&H 1212 (NS)
-	-	83-105*	Tensal / Ultratherme-H
-	CVN Impact strength	95-115	D&H 1212 (NS)
-	at -170°C and lateral expn. Specified		

*Indicates variation with thickness

SOME COMMON AISI STAINLESS STEELS

AISI Type No.	CHEMICAL ANALYSIS (%)						Recommended Electrode
	C	Mn	Si	Cr	Ni	Other Elements	
201	0.15	5.5/7.5	1.0	16/18	3.5/5.5	N:0.25 Max.	Rutox-A
202	0.15	7.5/10.0	1.0	17/19	4/6	N:0.25 Max.	Rutox-A
301	0.15	2.0	1.0	16/18	8/10	-	Rutox-A
302	0.15	2.0	1.0	17/19	8/10	-	Rutox-A
302B	0.15	2.0	2/3	17/19	8/10	-	Rutox-A
304	0.08	2.0	1.0	18/20	8/12	-	Rutox-A
304L	0.03	2.0	1.0	18/20	8/12	-	Rutox-B
305	0.12	2.0	1.0	17/19	10/13	-	Rutox-A
308	0.08	2.0	1.0	19/21	10/12	-	Rutox-A
310	0.25	2.0	1.5	24/26	19/22	-	D&H 310-16
310S	0.08	2.0	1.5	24/26	19/22	-	D&H 310-16
316	0.08	2.0	1.0	16/18	10/14	Mo:2.0/3.0	Rutox-Mo
316L	0.03	2.0	1.0	16/18	10/14	Mo:2.0/3.0	Rutox-D
317	0.08	2.0	1.0	18/20	11/15	Mo:3/4	Rutox-Mo(Extra)

57 YEARS
DNH sécheron
Complete Welding Support
Estd. 1960

AISI Type No.	CHEMICAL ANALYSIS (%)						Recommended Electrode
	C	Mn	Si	Cr	Ni	Other Elements	
317L	0.03	2.0	1.0	18/20	11/15	Mo: 3/4	Rutox-E
321	0.08	2.0	1.0	17/19	9/12	Ti: 5xC Min	Rutox-A (St)
347	0.08	2.0	1.0	17/19	9/13	(Cb + Ta): 10XC Min	Rutox-A (St)
348	0.08	2.0	1.0	17/19	9/13	(Cb + Ta): 10xC Min	Rutox-A(St)
403	0.15	1.0	0.5	11.5/13	-	-	D&H-410/ D&H-13Cr
405	0.08	1.0	1.0	11.5/14.5	-	Al: 0.10/0.30	D&H-410/ D&H-13Cr
410	0.15	1.0	1.0	11.5/13.5	-	-	D&H-410/ D&H-13Cr
414	0.15	1.0	1.0	11.5/13.5	1.25/2.50	-	D&H-410/ D&H-13Cr
420	0.15	1.0	1.0	12/14	-	-	D&H-410/ D&H-13Cr
431	0.20	1.0	1.0	15/17	1.25/2.50	-	D&H-430/ D&H-17 Cr
501	0.10	1.0	1.0	4/6	-	Mo: 0.40/0.65	Cromotherme-5
502	0.10	1.0	1.0	4/6	-	Mo: 0.40/0.65	Cromotherme-5
430	0.12	1.0	1.0	14/18	-	-	D&H-430/ D&H-17Cr

Note: Depending on application, the electrodes recommended can vary.

+91 9833550505
506
www.dnhsecheron.com
57
Estd. 1960
sécheron
Complete Welding Support

+91 9833550505

www.dnhsecheron.com

STANDARD CASTING SPECIFICATIONS

DESIGNATION	GRADE	CHEMICAL COMPOSITION(%)							ELECTRODE
		C	Mn	Si	Ni	Cr	Mo	Others	
A217	WC1	0.25	05-0.8	0.6	-	-	0.45-0.65	-	Molytherme
Martensitic	WC4	0.20	05-0.8	0.6	0.7-1.1	0.5-0.8	0.45-0.65	-	CNM
stainless steel	WC5	0.20	0.4-0.7	0.6	0.6-1.0	0.5-0.9	0.9-1.2	-	CNM
& alloy casting	WC6	0.20	0.5-0.8	0.6	-	1.0-1.5	0.45-0.65	-	Cromotherme-1
for pressure	WC9	0.18	0.4-0.7	0.6	-	2.0-2.75	0.90-1.20	-	Cromotherme-2
containing	C5	0.20	0.4-0.7	0.75	-	4.0-6.5	0.45-0.65	-	Cromotherme-5
parts suitable	C12	0.20	0.35-0.65	1.0	-	8.0-10.0	0.9-1.20	-	Cromotherme-9
for HT service	C15	0.15	1.0	1.50	-	11.5-14.0	0.5	-	D&H 13Cr/D&H410
A743	CF 8	0.08	1.5	2.0	8.0-11.0	18.0-21.0	-	-	Rutox-A
Corrosion	CG-12	0.12	1.5	2.0	10.0-13.0	20.0-23.0	-	-	Cronith-25/12
resistant	CF-20	0.20	1.5	2.0	8.0-11.0	18.0-21.0	-	-	Rutox-A
Fe-Cr,Fe-Cr-Ni	CF-8M	0.08	1.5	2.0	9.0-12.0	18.0-21.0	2.0-3.0	-	Rutox-Mo
& Ni base alloy	CF-8C	0.08	1.5	2.0	9.0-12.0	18.0-21.0	-	Cb stabilised	Rutox-A(St)
Casting for	CH-20	0.20	1.5	2.0	12.0-15.0	22.0-26.0	-	-	Cronith-25/12
general	CK-20	0.20	2.0	2.0	19.0-22.0	23.0-27.0	-	-	D&H310-16
application	CE30	0.03	1.5	2.0	8.0-11.0	26.0-30.0	-	-	D&H312
	CA 15M	0.15	1.0	0.65	1.0	11.5-14.0	0.15-1.0	-	D&H13Cr
	CF-3	0.03	1.5	2.0	8.0-12.0	17.0-21.0	-	-	Rutox-B

Complete Welding Support

DESIGNATION	GRADE	CHEMICAL COMPOSITION(%)							ELECTRODE
		C	Mn	Si	Ni	Cr	Mo	Others	
	CF-3M	0.03	1.5	1.5	9.0-13.0	17.0-21.0	2.0-3.0	-	Rutox-D
	CG-8M	0.08	1.5	1.5	9.0-13.0	18.0-21.0	3.0-4.0	-	Rutox-E
	CN-7M	0.07	1.5	1.5	29.5-30.5	19.0-22.0	2.0-3.0	Cu:3.0-4.0	D&H 385
	CA6NM	0.06	1.0	1.0	3.5-4.5	11.5-14.0	0.4-1.0	-	D&H 444L
A297	HF	0.20-0.40	2.0	2.0	8.0-12.0	18.0-23.0	0.5	-	Rutox-A
Heat resistant	HH	0.20-0.50	2.0	2.0	11.0-14.0	24.0-28.0	0.5	-	Cromitherme25/12
Fe-Cr&Fe-Cr-	HK	0.20-0.60	2.0	2.0	18.0-22.0	24.0-28.0	0.5	-	D&H310HC
Ni alloy	HE	0.20-0.50	2.0	2.0	8.0-11.0	26.0-30.0	0.5	-	D&H312
castings for	HT	0.35-0.75	2.0	2.5	33.0-37.0	13.0-17.0	0.5	-	D&H330C
general	HX	0.35-0.75	2.0	2.5	64.0-68.0	15.0-19.0	0.5	-	D&H1212 (NS)
applications									
A 352									
Ferric steel	LCA	0.25	0.7	0.6	-	-	-	-	Supratherme(Spl)
castings for	LCB	0.30	1.0	0.6	-	-	-	-	-do-
pressure	LCC	0.25	1.2	0.6	-	-	-	-	-do-
containing	LC2	0.25	0.5-0.8	0.6	2.0-3.0	-	-	-	Nitherme-2.5
Parts	LC3	0.15	0.5-0.8	0.6	3.0-4.0	-	-	-	Nitherme-3.5

Note: Depending on application, the electrodes recommended can vary.

+91 9833550505

www.dnhsecheron.com

A- NUMBER CLASSIFICATION OF FERROUS WELD METAL ANALYSIS FOR PROCEDURE QUALIFICATION

A No.	Type of weld Deposit	Weight % *					
		C	Cr	Mo	Ni	Mn	Si
1.	Mild steel	0.15	-	-	-	1.60	1.00
2.	C-Mo	0.15	0.50	0.40/0.65	-	1.60	1.00
3.	Cr (0.4-2%)-Mo	0.15	0.40/2.00	0.40/0.65	-	1.60	1.00
4.	Cr(2%-6%)-Mo	0.15	2.00/6.00	0.40/1.5	-	1.6	2.00
5.	Cr(6%-10.5%)-Mo	0.15	6/10.50	0.40/1.5	-	1.20	2.00
6.	Chrome-Martensitic	0.15	11.00/15.00	0.70	-	2.00	1.00
7.	Chrome-Ferritic	0.15	11.00/30.00	1.00	-	1.00	3.00
8.	Cr-Ni	0.15	14.5/30.00	4.00	7.5/15.00	2.5	1.00
9.	Cr-Ni	0.30	25.00/30.00	4.00	15/37.00	2.5	1.00
10.	Nickel (0.8 to 4%)	0.15	-	0.55	0.8/4.00	1.7	1.00
11.	Mn-Mo	0.17	-	0.25/0.75	0.85	1.25/2.25	1.00
12.	Ni-Cr-Mo	0.15	1.5	0.25/0.8	1.25/2.8	1.75/2.25	1.00

* : Single values shown above are maximum.

57 YEARS

DNH sécheron Estd. 1966 Complete Welding Support

F- NUMBERS (STEEL AND STEEL ALLOYS)

F.No.	ASME SPC./No.	AWS CLASSIFICATION No.
1	SFA-5.1 & 5.5	EXX 20, EXX 24, EXX 27, EXX 28
2	SFA-5.1 & 5.5	EXX 12, EXX 13, EXX 14,
3	SFA-5.1 & 5.5	EXX 10, EXX 11
4	SFA-5.1 & 5.5	EXX 15, EXX 16, EXX 18, EXX 48
4	SFA-5.4 (Other than Austenitic)	EXXX 15, EXXX 16
5	SFA-5.4 (Aust.)	EXXX 15, EXXX 16
6	SFA-5.2	RX
6	SFA-5.17	FXX-EXX
6	SFA-5.9	ERXX
6	SFA-5.18	ERXXS-X
6	SFA-5.20	EXXT-X
6	SFA-5.22	EXXT-X
6	SFA-5.23	FXX-EXXX-X FXX-ECXXX-X FXX-EXXX-XN& FXX-ECXXX-XN
6	SFA-5.28	ER-XXX-X&EXXX-X
6	SFA-5.29	EXXTX-X

SUGGESTED CONSUMABLES FOR VARIOUS BASE METAL COMBINATIONS

BASE METALS	C. S.	C-Mo	1.25 Cr-Mo	2 & 2.25 Cr-Mo	3 & 5 Cr-Mo	7 Cr-Mo	9 Cr-Mo	9 Cr-Mo-V	3XX-SS
C. Steel	A	A	A	A	A	A	A	A	I
C-Mo	A	B	B	B	B	B	B	B	I
1.25 Cr-Mo	A	B	C	C	C	C	C	C	I
2 & 2.25 Cr-Mo	A	B	C	D	D	D	D	D	I
3 & 5 Cr-Mo	A	B	C	D	E	E	E	E	I
7 Cr-Mo	A	B	C	D	E	F	F	F	I
9 Cr-Mo	A	B	C	D	E	F	G	G	I
9 Cr-Mo-V	A	B	C	D	E	F	G	H	I
3XX-SS	I	I	I	I	I	I	I	I	-

NOTE : Please see the A, B, C, D, E, F, G, H, & I details are as above.

57 YEARS
DNH sécheron
Complete Welding Support
Estd. 1966

Common Gas Metal ARC Welding Defects

The process variables, materials or welding procedures can affect the weld quality. Some of the commonly observed defects in GMA welding and their possible remedies are tabulated below.

	POSSIBLE CAUSES	CORRECTIVE ACTIONS
	WELD METAL CRACKS	
1.	Too high a weld depth-to-width ratio	• Increase the arc voltage or decrease the welding current
2.	Too small a weld bead	Decrease the travel speed
3.	Rapid cooling of the crater at the end of the weld	• Fill craters adequately • Use a back step welding technique at the end to complete the weld bead
	INCLUSIONS	
1.	Use of multiple pass, short circuiting type welding (slag)	• Clean the previous bead before making subsequent passes.
2.	High travel speeds (film type inclusions)	• Reduce the travel speed • Increase the arc voltage

	POSSIBLE CAUSES	CORRECTIVE ACTIONS
	POROSITY	
1.	Inadequate shielding of arc and weld pool	• Increase the shielding gas flow • Remove the spatter from the interior part of the nozzle • Eliminate drafts (from fans, open doors etc.) blowing into the welding arc • Reduce the travel speed • Reduce the arc gap • Hold the gun till the molten crater solidifies

Common Gas Metal Arc Welding Defects

	POSSIBLE CAUSES	CORRECTIVE ACTIONS
2.	Electrode contamination	• Use clean and dry electrodes • Eliminate contamination of electrode wire with any lubricant
3.	Work-piece contamination	• Remove oil, grease, rust, paints and dusts from the work surface prior to welding.
4.	Arc voltage too high	• Reduce the operating voltage
5.	Excess nozzle-to-work distance	• Reduce electrode extension
	INCOMPLETE FUSION	
1.	Work-piece surface not clean	• Clean all groove surfaces and weld zones
2.	Insufficient heat input	• Increase the electrode feed rate and the arc voltage • Decrease the travel speed
3.	Too large a weld puddle	• Reduce arc weaving
	INCOMPLETE FUSION	
4.	Improper welding technique	• Direct the electrode at the leading edge of the weld pool • During weaving hold momentarily on the groove face
5.	Improper joint design	• Select proper groove design • Maintain a proper groove angle to provide an easy access to electrode extension

Common Gas Metal Arc Welding Defects

	POSSIBLE CAUSES	CORRECTIVE ACTIONS
	LACK OF PENETRATION	
1.	Improper joint preparation	• Provide/Increase root openings in butt-joint • Decrease the height of root face • Adequate access to maintain proper nozzle-to-work distance
2.	Improper welding technique	• Maintain the arc on the leading edge of the weld pool • Select proper travel angle to achieve maximum penetration
3.	Improper welding technique	• Increase electrode feed rate Maintain proper nozzle-to-work • distance
	EXCESSIVE MELT THROUGH	
1.	Excessive heat input	• Reduce the electrode feed rate & volt • Increase the travel speed
2.	Improper joint preparation	• Reduce excessive root opening • Increase the height of the root face

CAUSES AND REMEDIES FOR FUSION WELD DISCONTINUITIES

	CAUSES	CORRECTIVE ACTION
A.	**POROSITY**	
1.	Contamination of work piece	- Clean joint area
2.	Excessive moisture pickup in electrode covering	- Store electrodes properly - Follow manufactures recommended rebaking procedure
3.	Moisture on work surfaces	- Use preheating/warm up work piece.
4.	High Sulphur content	- Use basic coated electrodes
5.	a) Long arc length b) Excessive current c) Higher travel speed	- Change welding parameters and technique
6.	High solidification rate	- Use preheat - Increase heat input
B	**INCLUSIONS**	
1.	Improper cleaning procedure	- Clean work surfaces and each weld run thoroughly. Wherever necessary use power wire brush, grinders, chisels to ensure a thorough removal of slag
2.	Improper welding technique	
	a) Excessive weaving	- Improve welding technique
	b) High travel speed	- Reposition work to prevent loss of slag control wherever possible
	c) Slag flooding ahead of welding arc	- Restrict weaving to a minimum
3.	Narrow, inaccessible joints	- Increase groove angle

CAUSES AND REMEDIES FOR FUSION WELD DISCONTINUITIES

	CAUSES	CORRECTIVE ACTION
C	**INCOMPLETE FUSION**	
1.	Improper joint design	- Increase included angle of groove joint - Change the groove design to a 'J' or a 'U' type
2.	Presence of slag or oxide film	- Clean weld surfaces prior to welding
3.	Incorrect electrode position and operating current	- Maintain proper electrode position and current
4.	Improper manipulation of arc	- Use correct manipulation techniques to melt the joint faces properly
D	**INADEQUATE PENETRATION**	
1.	Improper joint preparation	
	a) Excessively thick root face	Use proper joint geometry
	b) Insufficient root opening	Reduce root face height
	c) Bridging of root opening	Use wider root opening
2.	Electrode diameter too large	- Use smaller electrode in root - Increase root opening
3.	Inadequate current	- Follow correct welding current and technique

CAUSES AND REMEDIES FOR FUSION WELD DISCONTIUITIES

	CAUSES	CORRECTIVE ACTION
E.	**CRACKS**	
1.	High rigidity of joint	- Use preheating - Relieve residual stresses - Minimise shrinkage stresses, using back step or block welding sequences
2.	Poor joint fit up	- Adjust root opening all alignment
3.	Higher carbon content of weld metal and/or hardenable - base material	- Use proper electrode Use buttering layers wherever necessary
4.	Too small a weld bead	- Decrease travel speed to increase cross section of bead - Increase electrode size
5.	High sulphur content in base or weld metal	- Use filler with high level of sulphur fixing element like Mn
6.	Hot cracking	- Reduce the heat input. - Minimum joint restraints
7.	Cracking at the crater	- Filling up the crater before withdrawing the electrode - use taper power control device - use back step welding technique
8.	Higher hardenability	- preheat the job - Post weld heat treatment without cooling to room temperature

CAUSES AND REMEDIES FOR FUSION WELD DISCONTINUITIES

	CAUSES	CORRECTIVE ACTION
9.	Hydrogen Induced cracking/Delayed cracking	- Use low hydrogen welding electrode - Use suitable preheat and post weld heat treatment.
10.	Presence of brittle phases in the micro structure of the base material	- Soften the material before welding
11.	Low ductility of the base material	- Use preheat - Anneal the base metal - Use ductile weld metal
12.	High residual stresses	- Redesign the weld metal and reduce restraints. - Change welding sequence - Use intermediate stress- relief heat treatment
13.	Excessive dilution	- Change welding current - Use buttering technique wherever possible

Repair Welding Of Cast Irons

1. Grind the area to be welded so that the casting skin is removed.
2. Clean the area free of all contaminates by de-greasing, burning, brushing, grinding, etc.
3. If a crack has to be repaired drill crack arrester holes at the end of the cracks. Remove the crack completely by gouging, grinding, etc. and ensure complete removal by a dye penetrant test.
4. Deposit the welds in small lengths of 50 mm at a time.
5. Peen the welds.
6. After welding allow the casting to cool slowly.
7. These are the general steps in cast iron welding. However, the procedures may have to be modified depending on the job. For complete welding procedure details contact our technical service personnel.

Recommendations for the storage, re-drying and handling of D&H Secheron covered electrodes

General Information

All covered electrodes are sensitive to moisture re-absorption to a greater or lesser degree. Care must be taken during storage and handling to prevent moisture being re-absorbed.

Storage

Covered electrodes of any type will pick up moisture only very slowly if they are stored in the following climatic conditions.

Temperature	Relative Humidity
5-15°C	< 60%
15-25°C	< 50%
above 25°C	< 40%

During the winter, it is possible to have low relative humidity by keeping the temperature in the storeroom at least 10°C above the outdoor temperature. During certain periods in the summer and in a tropical climate, sufficiently low relative humidity can be maintained by air dehumidification. If the electrodes have been stored in a cold place, allow them to reach ambient temperature before breaking the package.

VacPac

Electrodes in VacPac will not pick up any moisture during storage. They require no re-drying before use, provided the package is undamaged. This is indicated by the vacuum in the package.

Re-drying

Low-hydrogen basic electrodes should be re-dried before use whenever there are application requirements relating to weld metal hydrogen content and radiographic soundness (not needed for VacPac). Acid rutile stainless electrodes and all types of basic electrode may produce pores in the weld if they have not been stored in sufficiently dry conditions. Re-drying the electrodes will restore their usability. Mild steel rutile and acid electrodes normally require no re-drying. Cellulose electrodes must not be re-dried. Electrodes which are seriously damaged by moisture can normally not be re-dried with first-class results. These electrodes should be scrapped.

Re-Drying Conditions

Re-drying temperatures and holding times are specified on the label and in the product specification.The re-drying temperature is the temperature in the bulk of the electrodes. The re-drying time is measured from the point at which the re-drying temperature has been reached. Do not stack more than one layers of electrodes in the re-drying oven. It is recommended not to re-dry covered electrodes more than five times.

Holding Oven

The holding oven is used for intermediate storage to avoid moisture pick-up in the coating of low-hydrogen electrodes and acid rutile stainless ectrodes. The electrodes which should be stored in the holding oven are:
1. Electrodes that have been re-dried
2. Electrodes that have been removed from their container
Holding oven temperature: 120°C-150°C.

Handling VacPac Electrodes

Protect VacPac from damage at all times. The outer board packaging offers extra protection from damage to the Protective layer. Handle the single inner, Protective layer, VacPac with special care. Do not use a knife or any other sharp object to open the outer board packaging.

Before Using VacPac Electrodes

Check if the protective layer still contains a vacuum. If the vacuum has been lost, re-dry the electrodes before use. Cut open the protective layer at one end

Approval

Approval given in this catalogue, many D&H Secheron electrodes are approved by various authorities, railway boards, private companies and so on. Information about the different types of approval can be available on request.

Welding Current

Maximum and minimum values are given in product label. The most suitable welding current depends largely on the size of the workpiece, the welding position, and the type of joint.

Marking

The electrode brand name type is clearly marked on the coating of each electrode near the grip end.

General Recommendations for Submerged Arc Welding (SAW)

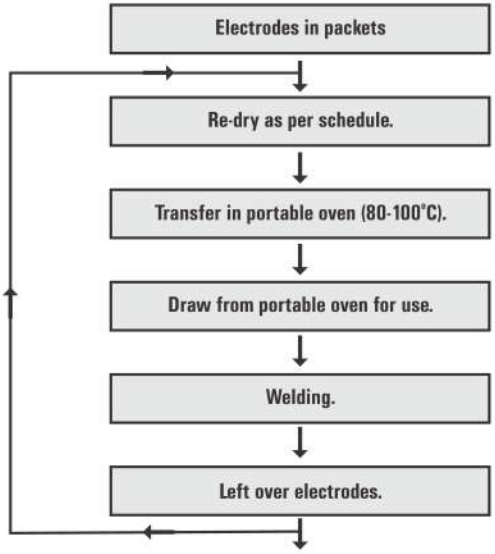
1. The flux must be dry. Agglomerated fluxes must be protected from moisture pick-up. re-drying agglomerated fluxes at specified in product label before use is recommended. The remaining flux in the welding machine container should be removed and stored in a dry cabinet and should therefore not be left in the open container.

2. The fusion faces and the plate in the vicinity of the joint should be clean and dry. The cleaner the joint, the better the chances of obtaining a satisfactory weld. Rust, mill scale, paint, oil and residue from arc-air gouging or grinding can adversely affect the quality of the weld metal. The more impurities on the fusion faces, the greater the risk of weld metal defects.

3. The arc voltage must be kept constant. Increased arc voltage results in higher flux consumption. If the flux contains alloying elements, the amount transferred to theweld metal will increase as the arc voltage increases.

The mechanical properties are obtained according to the welding conditions given in applicable standards such as EN ISO & AWS.

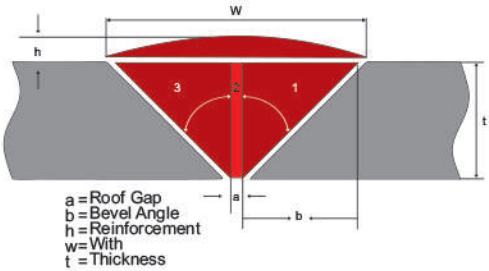
Re-dry Procedure



Note :

1. Re-drying temperature and time depends up on type of electrode and its intended applications.
2. Vacuum pack electrodes may be used directly without re-drying. However please check the label on packing and do as directed for better results.
3. Plan the activity for one shift (8 hours) and keep that much quantity only for baking.

Weld Metal Calculation:



a = Roof Gap
b = Bevel Angle
h = Reinforcement
w = With
t = Thickness

If "t" is thickness of plate or pipe to be joint, Θ is the groove angle. The calculation of weld metal by SMAW process is as under. Also consider length (L) is 1 meter.

We know.

Density= Mass/Volume
Mass= Density x Volume

To calculate volume: Volume= Area x Length (In figure there are 3 area)

= ½ x b x t x L
= 2(1/2 x b x t) + (a x t) x L
(2 Triangles + Rectangle)----(A)
b = t x tanΘ
Consider t= 12mm & Θ = 30°
b = 12 x tan 30°
= 12 x 0.577
= 6.92mm (tan 30° = 0.577)

Now Volume from Eq. (A)

= 2 [(½ x 6.92 x 12) + (2 x 12)] x 1000 mm3
= (83.04 + 24) x 1000 mm3 (consider a = 2mm)
= 107043 mm3
= 107.43 cm3

Now

Mass = 7.85 gm/ cm3 x 107.04 cm3 (Density of carbon steel = 7.85 gm/cm3)
=840 gm

We know the deposition efficiency of SMAW is 65% (multiple factor will be 1.54)

So,

840 x 1.54 = 1294 gm

For Reinforcement consider 20% Extra

= 1294 + 20%
= 1294 x 1.2
= 1553 gm
= 1.5 Kg (Approximately)

FORMULAE

1. Carbon Equivalent:

$$C_E : C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$$

2. Heat Input:

$$H\,(KJ/mm) : \frac{V \times I \times 60}{V_s \times 1000}$$

Where V = Voltage

I = Current

V_s = Welding speed in mm/min.

3. Preheating

$$C_C = C + \frac{Mn}{6} + \frac{Ni + Cu}{15} + \frac{Cr + Mo + V}{5}$$

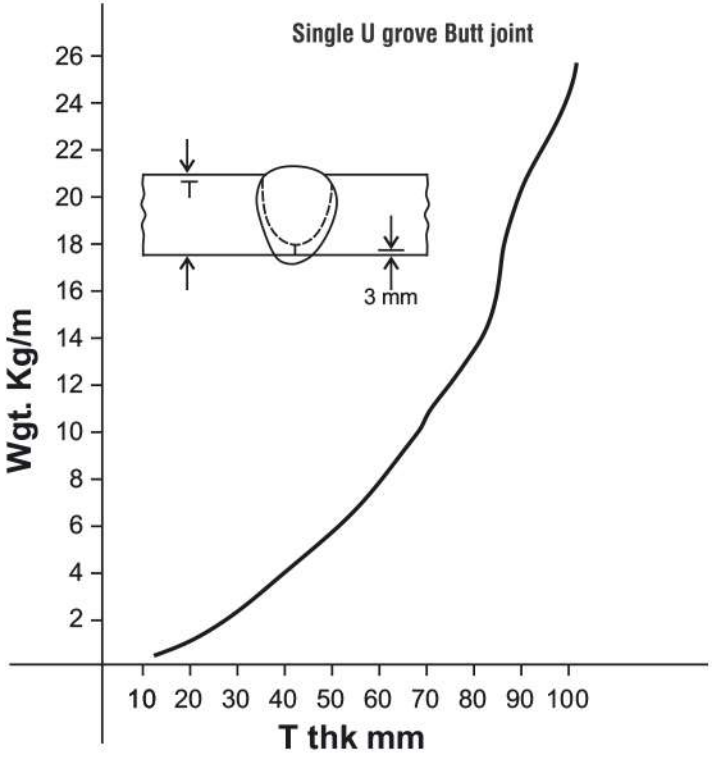
$$C_t = C_C \times 0.005 \times t_{mm}$$

$$C_E = C_C + C_t$$

Preheat temperature $^0C : 350\sqrt{C_E - 0.25}$

WEIGHT OF WELDMETAL (STEEL) IN VARIOUS JOINTS

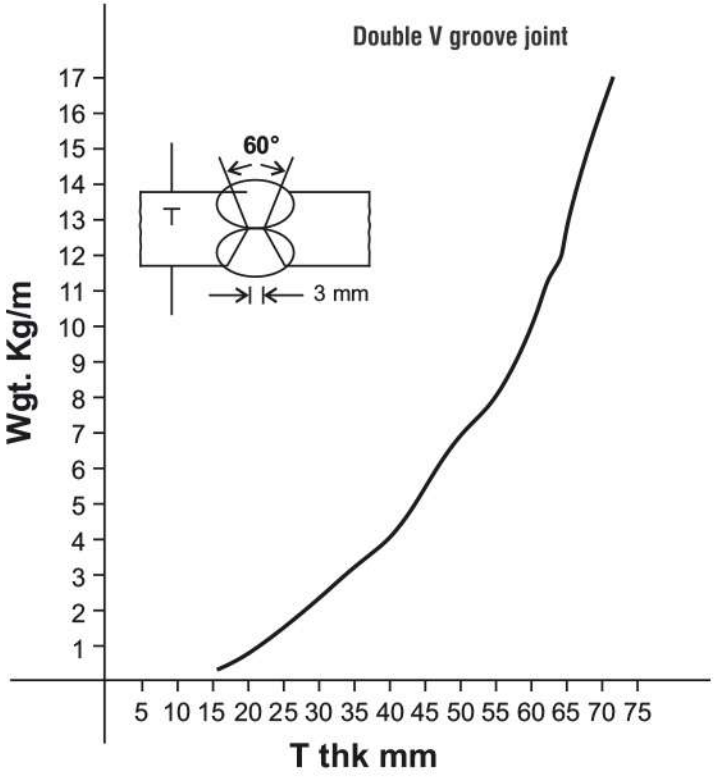
(BASED ON DATA FROM AWS WELDING HANDBOOK)



(Excel software available on request for accurate calculation)

WEIGHT OF WELDMETAL (STEEL) IN VARIOUS JOINTS

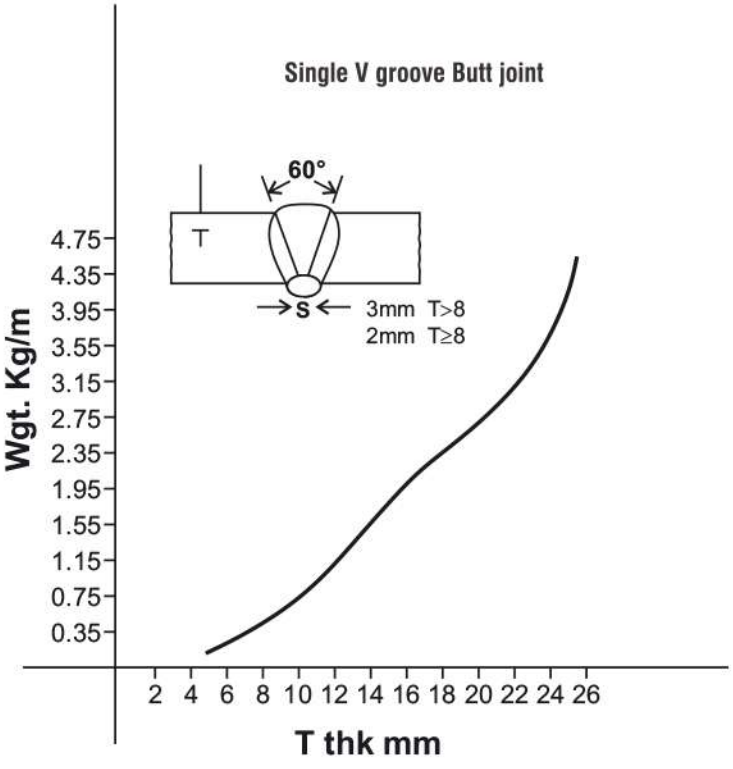
(BASED ON DATA FROM AWS WELDING HANDBOOK)



(Excel software available on request for accurate calculation)

WEIGHT OF WELDMETAL (STEEL) IN VARIOUS JOINTS

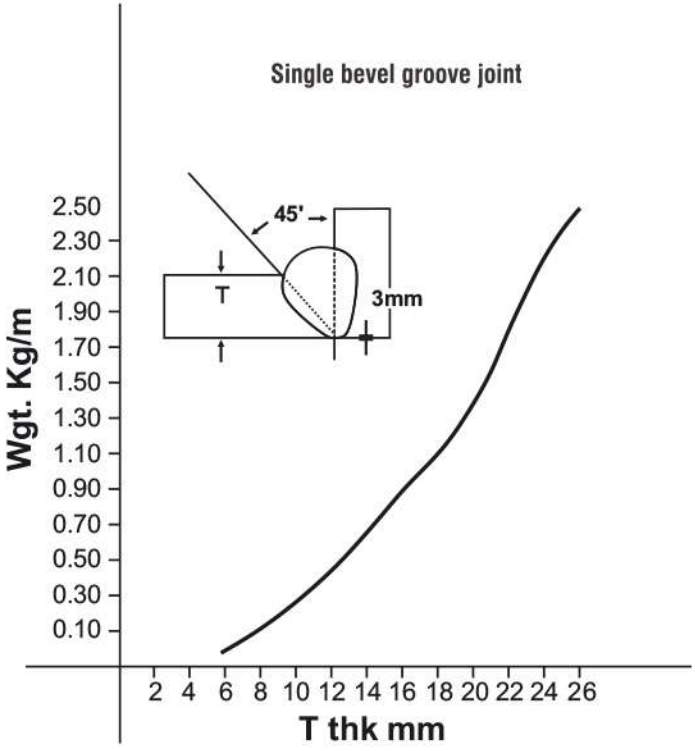
(BASED ON DATA FROM AWS WELDING HANDBOOK)



(Excel software available on request for accurate calculation)

WEIGHT OF WELDMETAL (STEEL) IN VARIOUS JOINTS

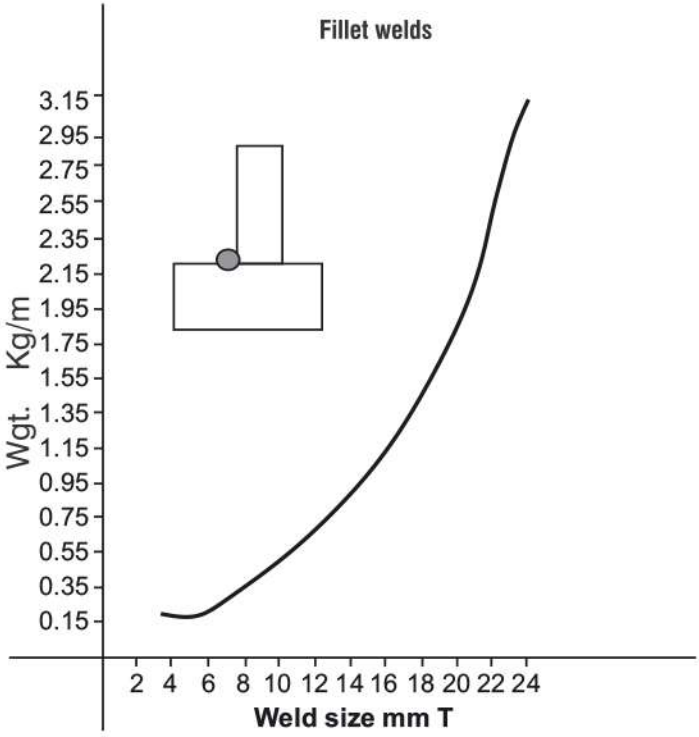
(BASED ON DATA FROM AWS WELDING HANDBOOK)



(Excel software available on request for accurate calculation)

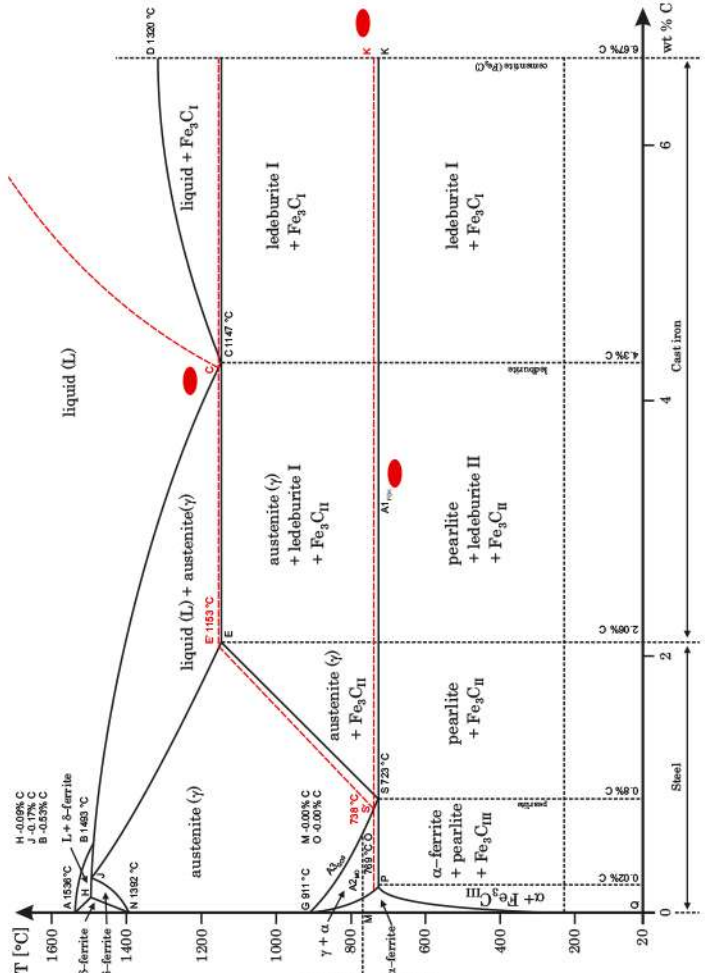
WEIGHT OF WELDMETAL (STEEL) IN VARIOUS JOINTS

(BASED ON DATA FROM AWS WELDING HANDBOOK)



(Excel software available on request for accurate calculation)

IRON - IRON CARBIDE PHASE DIAGRAM



SCHAEFFLER DIAGRAM

WRC - 1992 DIAGRAM

CONVERSION TABLE

PROPERTY	TO CONVERT FROM	TO	MULTIPLY BY
Area dimension	in^2	mm^2	$6.451\ 600 \times 10^{2}$
	mm^2	in^2	$1.550\ 033 \times 10^{-3}$
Current density	A/in^2	A/mm^2	$1.550\ 033 \times 10^{-3}$
	A/mm^2	A/in^2	$6.451\ 600 \times 10^{2}$
Deposition rate	lb/h	kg/h	0.45*
	kg/h	lb/h	2.2*
Flow rate	ft^3/h	Litre/minute	$4.719\ 475 \times 10^{-1}$
	gallon/hour	litre/minute	$6.309\ 020 \times 10^{-2}$
	gallon/minute	litre/minute	3.785 412
	cm^3/min	litre/minute	$1.000\ 000 \times 10^{-3}$
	litre/minute	ft^3/h	2.118 880
	cm^3/min	ft^3/h	$2.118\ 880 \times 10^{-3}$
Heat input	J/in	J/m	$3.937\ 008 \times 10$
	J/m	J/in	$2.540\ 000 \times 10^{-2}$
Linear measurement	in	mm	$2.540\ 000 \times 10$
	Ft	mm	$3.048\ 000 \times 10^{2}$
	mm	in	$3.937\ 008 \times 10^{-2}$
	mm	ft	$3.280\ 840 \times 10^{-3}$
Tensile strength	psi	Pa	$6.894\ 757 \times 10^{3}$
	lb/ft^2	Pa	$4.788\ 026 \times 10$
	N/mm^2	Pa	$1.000\ 000 \times 10^{8}$
	Pa	psi	$1.450\ 377 \times 10^{-4}$
	Pa	lb/ft^2	$2.088\ 543 \times 10^{-2}$
	Pa	N/mm^2	$1.000\ 000 \times 10^{-6}$
Travel speed,	in/min	mm/s	$4.233\ 333 \times 10^{-1}$
Wire feed speed	mm/s	in/min	2.362 205
Energy	J	lbf.ft	0.737
	J	kgf.m	0.102

* Approximate conversion

Hardness Conversion Table

Rockwell		Vickers	Brinell		Rockwell		Vickers	Brinell	
C-150 kg. Load Diamond	B-100 kg. Load 1/16" Ball	Diamond Pyramid	Tungsten Carbide Ball	Steel Ball	C-150 kg. load Diamond	B-100 kg. Load 1/16" Ball	Diamond Pyramid	Tungsten Carbide Ball	Steel Ball
65	-	852	774	-	19	98.1	235	226	220
63	-	793	732	-	17	96.9	227	218	210
61	-	740	693	-	15	95.5	219	210	201
59	-	694	657	-	13	94.1	211	202	193
57	-	650	621	-	11	92.6	203	195	186
55	-	611	588	-	9	91.2	196	187	180
53	-	573	554	-	7	89.7	189	180	174
51	-	539	523	500	5	88.3	183	174	168
49	-	508	494	476	3	87.0	177	169	162
47	-	479	465	453	1	85.5	171	163	158
45	-	452	440	430	-	83.2	162	153	150
43	-	428	415	408	-	80.5	153	144	140
41	-	406	394	387	-	77.5	143	134	131
39	-	386	375	367	-	74.0	135	126	122
37	-	367	356	347	-	70.0	125	116	113
35	-	348	337	327	-	66.0	116	107	104
33	-	330	319	309	-	61.0	108	100	96
31	-	312	302	294	-	55.0	99	91	87
29	-	296	286	279	-	47.0	91	83	79
27	-	281	271	265	-	39.0	84	76	72
25	-	267	258	253	-	30.0	76	67	64
23	-	255	246	241	-	20.0	69	61	57
21	99.5	245	236	230	-	05.0	62	54	50

Conversion Table For Corrosion Data

Corrosion data Units	Conversion Factors g/m²h	mm/year	mils/year
g/m²h	1.0	8.64/d	340/d
g/m²/24h	0.042	0.360/d	14.2/d
g/dm²/24h	4.17	36.0/d	1420.0/d
mg/dm²/24h	0.004	0.036/d	1.42/d
mg/cm²/24h	0.417	3.60/d	142/d
lbs/ft²/24h	203	1760/d	69200/d
lbs/ft²/year	0.564	4.88/d	192/d
mm/year	0.116xd	1.0	39.4
mm/month	1.39xd	12.0	473.0
um/48h	0.021xd	0.180	7.18
in/year	2.95xd	25.4	1000.0
in/month	34.8xd	305	12000.0
mils/year	0.003xd	0.025	1.0
mils/month	0.035xd	0.305	12.0

Where d = metal density

18/8 steel = 7.9 gms/cc

Titanium = 4.5 gms/cc

Aluminium = 2.7 gms/cc

mils = inch x 10^{-3}

Temperature Conversion

$^{0}C = 5/9(^{0}F-32)$ and $^{0}F = (9/5)^{0}C + 32$

To use the tables below, enter the central column with the number to be converted. If converting Fahrenheit degrees, read the Celsius equivalent in column headed "^{0}C" to the left. If converting Celsius degrees, read the Fahrenheit equivalent in the column headed "^{0}F" to the right.

^{0}C		^{0}F
-196	-320	
-168	-270	-454
-140	-220	-364
-112	-170	-274
-84	-120	-184
-57	-70	-94
-40	-40	-40
-17.8	0	32.0
-12.2	10	50.0
-6.7	20	68.0
-1.1	30	86.0
4.4	40	104.0
10	50	122.0
15.6	60	140.0
21.1	70	158.0
28.9	84	183.2
34.4	94	201.2
49.0	120	248.0
77.0	170	338.0
100.0	212	414.0

°C		°F
127.7	260	500
154.0	310	590
182.0	360	680
221	430	806
249	480	896
277	530	986
304	580	1076
332	630	1166
360	680	1256
388	730	1346
416	780	1436
454	850	1562
482	900	1652
510	950	1742
538	1000	1832
566	1050	1922
593	1100	2012
621	1150	2102
649	1200	2192
677	1250	2282
704	1300	2372
732	1350	2462
738	1360	2480
760	1400	2552
788	1450	2642
816	1500	2732
843	1550	2822
871	1600	2912

°C		°F
899	1650	3002
927	1700	3092
954	1750	3182
982	1800	3272
1010	1850	3362
1038	1900	3452
1066	1950	3542
1093	2000	3632
1121	2050	3722
1149	2100	3812
1177	2150	3902
1204	2200	3992
1232	2250	4082
1260	2300	4172
1288	2350	4262
1316	2400	4352
1343	2450	4442
1371	2500	4532
1399	2550	4622
1427	2600	4712
1454	2650	4802
1482	2700	4892
1510	2750	4982
1538	2800	5072
1566	2850	5162
1593	2900	5252
1621	2950	5342
1649	3000	5432