

Star International ELECTRODES



STAR
INTERNATIONAL

Worldwide Marine
and Offshore Services

Mild and Low Alloy

STAR GPO-6013
STAR LH-7018
STAR LH-7016
STAR LH-8018

Stainless Steel

STAR STAIN-316L
STAR STAIN-309MoL
STAR DUPLEX-2209

Special High/Hard mixed Steel

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Special Cast Iron

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REMOVER

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STAR INCO

Cutting & Gouging

STAR GOUGING

Star International office has installed a fast response centre, equipped with all the latest facilities, specifically to increase speed of service to you, the customer.

Star can offer different diameter size of electrodes - 2.0mm to 6.0mm if required, as with each packet we can offer the **BLISTER PACKS** (4pcs) to check that you have the right electrode to do that specific job...electrode packing comes from 1 kilo – 4 kilo packs, bigger packs are also available if required.



Star International Electrodes

Mild and Low Alloy Steel Electrodes

STAR GP-6013

Product Number	Dia	Pkt Size	Amp A	Classification
006-10000	2.5mm	4 kilo	55-90	AWS E6013
006-10001	3.2mm	4 kilo	70-120	
006-10002	4.0mm	4 kilo	110-200	

Description & Applications:

Superior all positional general purpose organic mild steel electrode for joining light and heavy gauge steel sections. May be used with conventional or touch welding techniques and are particularly suitable where welding has to be carried out in confined or awkward places. Welds are ductile and of a high radiographic quality.

STAR LH-7018

Product Number	Dia	Pkt Size	Amp A	Classification
006-10003	2.5mm	4 kilo	70-100	AWS E7018
006-10004	3.2mm	4 kilo	90-130	
006-10005	4.0mm	4 kilo	130-180	

Description & Applications:

High quality superior all positional low hydrogen Manual Metal Arc welding electrode using a silicon free, low nitrogen, high purity C:Mn core wire with concentrically extruded, moisture resistant chemically basic flux with a controlled iron powder addition, to provide 120% metal recovery. Welds are of smooth appearance, ductile and of high radiographic quality. For welding mild and medium tensile steels and for BS4360 1972 steels where low hydrogen levels and crack resistant weld metal are required. The electrodes are particularly suitable for welding heavy sections subject to high levels of resistance and for welding problem steels with high sulphur content. Recommended for unalloyed C:Mn ferritic steels with high sub-zero toughness requirements, e.g:- Charpy values down to -60°C. CTOD values at -10°C. Used to best advantage for welding thick sections either on-board ship or in fabrication shops.

STAR LH-7016

Product Number	Dia	Pkt Size	Amp A	Classification
006-10006	2.5mm	4 kilo 60-100	AWS E7016	
006-10007	3.2mm	4 kilo 80-130		
006-10008	4.0mm	4 kilo 120-170		

Description & Applications:

Low Hydrogen Manual Metal Arc welding electrode with a silicon free C: Mn core wire with a concentrically extruded chemically basic flux coating which has been so modified to provide good welding electrode for inexperienced welders.

STAR LH-8018

Product Number	Dia	Pkt Size	Amp A	Classification
006-10009	2.5mm	4 kilo	70-90	AWS E8018-B2
006-10010	3.2mm	4 kilo	90-130	
006-10011	4.0mm	4 kilo	130-180	

Description & Applications:

A superior versatile low hydrogen electrode Ni Cr type. AWS E8018-B2 which uses a silicon free, low nitrogen, high purity C:Mn core wire with a moisture resistant chemically basic flux with a controlled iron powder addition. Recommended for resistance to hydrogen attack up to 330°C and corrosive effects of processing high S crude oil up to 450°C and for prolonged elevated temperature service up to 550°C with reasonable degree of corrosion resistance in superheated stream. The AWS E8018-B2 also incorporates the following electrodes 316 – E8018-G, 314 – E7028, 319-E8018-C1 320-E8018-G making it a superior electrode.



Star International Electrodes

Stainless Steel Electrodes

STAR STAIN-316L

Product Number	Dia	Pkt Size	Amp A	Classification
006-10012	1.5mm	2 kilo	25-35	AWS E316L
006-10013	2.0mm	2 kilo	30-45	
006-10014	2.5mm	2 kilo	45-70	
006-10015	3.2mm	2 kilo	70-110	

Description & Applications:

High quality rutile low carbon stainless steel electrode depositing weld metal of the 19% Cr, 12% Ni, 3% Mo type for corrosion resistance. Suitable for use in all positions except vertical down, high acid resistance. Extra low carbon. Wide usage in textile, pulp and paper, rayon and chemical industries. May be used for overlaying carbon and low alloy steels to provide corrosion and acid resistance. Suitable for general service at temperatures up to 500°C and for acid resistance up to 350°C. The electrode is suitable for welding steels of AISI 316L, 316 and 317 types.

STAR STAIN-309MoL

Product Number	Dia	Pkt Size	Amp A	Classification
006-10016	2.5mm	2 kilo	50-60	AWS E309Mo
006-10017	3.2mm	2 kilo	70-100	
006-10018	4.0mm	2 kilo	110-140	

Description & Applications:

General purpose stainless steel electrode of 23/12/3 type designed for joining dissimilar stainless steels, of the most common types, to one another. Primarily designed for maintenance applications where various types of stainless steels intermediate in composition between 18/8 and 23/12 chrome nickel, are used and where the need for one electrode, to accommodate all applications on a general basis, is required. Most of the common types of stainless steel can be welded with this electrode, without the loss of properties.

STAR DUPLEX-2209

Product Number	Dia	Pkt Size	Amp A	Classification
006-10019	2.5mm	2 kilo	45-70	AWS E2209
006-10020	3.2mm	2 kilo	70-100	
006-10021	4.0mm	2 kilo	110-140	

Description & Applications:

General purpose stainless steel electrode of 23/12/3 type designed for joining dissimilar stainless steels, of the most common types, to one another. Primarily designed for maintenance applications where various types of stainless steels intermediate in composition between 18/8 and 23/12 chrome nickel, are used and where the need for one electrode, to accommodate all applications on a general basis, is required. Most of the common types of stainless steel can be welded with this electrode, without the loss of properties.



Star International Electrodes

Special High / Hard Mixed Steels Electrodes

STAR SUPER TENSILE

Product Number	Dia	Pkt Size	Amp A	Classification
006-10051	1.5mm	2 kilo	25-35	AWS E312 – 17
006-10052	2.0mm	2 kilo	30-45	
006-10053	2.5mm	2 kilo	50-70	
006-10054	3.2mm	2 kilo	90-110	
006-10055	4.0mm	2 kilo	120-140	

Description & Applications:

Superior specially designed high strength austenitic type electrode of duplex structure. Can be used for overlaying and joining dissimilar steels to one another, high and low carbon steels, spring steels, tool and die steels, cast steels, ferritic to austenitic steels and steels of unknown composition. High resistance to cracking coupled with good wear, heat, impact and corrosion resistance. Therefore this electrode has uses in practically every type of industry resulting in one of the most universally used electrodes for problem and unknown steels. The AWS E312 - 17 also incorporates the following 328N - E312 making the STAR SUPER WELD ELECTRODE one of the most superior electrodes.

STAR STELL-6

Product Number	Dia	Pkt Size	Amp A	Classification
006-10022	2.5mm	2 kilo	60-75	AWS E Co Cr-A (Grade 6)
006-10023	3.2mm	2 kilo	90-115	
006-10024	4.0mm	2 kilo	100-150	

Description & Applications:

Cobalt based electrode designed on a fully alloyed core wire to combat all four elements of wear, i.e. heat, impact, corrosion and abrasion. High impact properties. Most suitable of cobalt range where impact is the most predominant of the four elements of wear. Excellent for rebuilding corners with minimum base metal dilution. Has ability to overlay extensive areas without cracking. Will retain hardness at high temperatures. The welds are machinable. Suitable for repair to valve seats, piston rings,

STAR HF600

Product Number	Dia	Pkt Size	Amp A	Classification
006-10025	2.5mm	2 kilo	80-100	
006-10026	3.2mm	2 kilo	90-120	
006-10027	4.0mm	2 kilo	120-170	

Description & Applications:

Hard facing electrode designed for applications on ferrous metals involving friction and severe abrasion, also where certain heat and corrosive conditions apply. The electrode is of the rutile chromium carbide all positional type and has a metal recovery rate of 150%. Typical hardness value on a single pass 62HRC, multi-pass 65HRC

STAR HF900

Product Number	Dia	Pkt Size	Amp A	Classification
006-10028	3.2mm	2 kilo	90-130	
006-10029	4.0mm	2 kilo	139-170	

Description & Applications:

Hard facing electrode designed for applications on ferrous metals involving friction and severe abrasion, also where certain heat and corrosive conditions apply. The electrode is of the rutile chromium carbide all positional type and has a metal recovery rate of 150%. Typical hardness value on a single pass 62HRC, multi-pass 65HRC



Star International Electrodes

Special Cast Iron Electrodes

STAR CAST NICKEL

Product Number	Dia	Pkt Size	Amp A	Classification
006-10030	2.5mm	2 kilo	50-80	AWS ENi-Ci
006-10031	3.2mm	2 kilo	80-100	
006-10032	4.0mm	2 kilo	120-170	

Description & Applications:

High quality general purpose nickel electrode designed for economical joining and surfacing of cast iron. Positive arc, fast build-up, easy slag detachability and fully machinable porosity free welds. May be used for hot or cold welding of cast irons and for surfacing and building up on malleable irons. It is suitable for joining mild steel to cast iron and is ideal for maintenance repair where sound welds are required.

STAR CAST Ni-Fe

Product Number	Dia	Pkt Size	Amp A	Classification
006-10033	2.5mm	2 kilo	40-70	AWS Ni-Fe-Ci
006-10034	3.2mm	2 kilo	70-110	
006-10035	4.0mm	2 kilo	110-150	

Description & Applications:

High strength machinable electrode for joining and building up on cast irons. Low amperage, smooth arc, minimum spatter and high resistance to cracking. For the repair of grey, S.G., nodular or ductile irons where higher strength is required. Also suitable for joining cast iron to mild steel (in conjunction with Star Gouging), pressure vessels, etc.



Star International Electrodes

Bronze Al-Bro Electrodes

STAR TINBRONZE

Product Number	Dia	Pkt Size	Amp A	Classification
006-10039	2.5mm	2 kilo	50-75	AWS E Cu Sn
006-10040	3.2mm	2 kilo	80-120	

Description & Applications:

Superior coated tough bronze electrode for joining and overlaying steels, cast irons, malleable irons, bronzes and copper based metals. Due to the high thermal conductivity of copper and copper alloys pre-heating is advisable in certain instances particularly where heavy sections are involved. Highly recommended for bearing surfaces and for wear facing against sea water corrosion.

STAR AL-BRONZE

Product Number	Dia	Pkt Size	Amp A	Classification
006-10041	2.5mm	2 kilo	60-80	AWS E Cu Al-A2
006-10042	3.2mm	2 kilo	80-130	

Description & Applications:

An electrode designed for joining and overlaying aluminium bronze and for corrosion and wear resistant deposits on steel and cast irons. The weld metal deposits will produce good friction and corrosion resistance. Ideal for bearing surfaces, shafts, guides, slides, gear teeth and any wear application involving metal to metal friction.

STAR ALUMINIUM

Product Number	Dia	Pkt Size	Amp A	Classification
006-10043	2.5mm	2 kilo	60-90	DIN 1732S Al Si12
006-10044	3.2mm	2 kilo	80-110	

Description & Applications:

Aluminium 10/12% silicon type electrode for welding wrought and cast aluminium alloys of similar composition. Rapid deposition rate, good penetration characteristics, excellent stability, weldability and slag control. The special chemically active mineral coating enables easy removal of surface oxides during welding ensuring results of high quality. Suitable for slag over slag welding. Welding wrought alloys N4, H9, H10, H20, H30 and cast alloys LM6, LM8, LM9, LM13 and LM20. Used extensively for repair of casting defects such as surface voids where slag over slag techniques may be employed.



Star International Electrodes

Stud Remover Electrodes

STAR STUD REMOVER

Product Number	Dia	Pkt Size	Amp A	Classification
006-10045	2.5mm	2 kilo	50-90	No Specification exists
006-10046	3.2mm	2 kilo	75-130	

Description & Applications:

Extruded flux coated MMA electrode made on high alloy Duplex micro structured high tensile non-heat treatable (Hence no softening alloyed core wire). The electrode has the ability to maintain a continuous arc when slag over slag welding while restricting the flow of the molten metal. These physical welding characteristics make the electrode ideal for the removal of threaded bolt when the bolt head has sheared at or just below the surface.

Broken bolt removal procedure:

Selecting the appropriate diameter electrode, e.g. approximately 50% of the stud's diameter. Make short continuous build up welds. During the breaks in welding remove slag and check circumference of build-up is within the diameter of the stud. Repeat weld procedure until build up is 5 to 8mm above component surface. File two opposite flats on weld deposit and remove broken stud (unscrew) with the use of mole grips.

Cryogenic High Temperature Electrodes

STAR INCO

Product Number	Dia	Pkt Size	Amp A	Classification
006-10047	2.5mm	2 kilo	60-90	AWS ENi Cr Fe 3
006-10048	3.2mm	2 kilo	80-120	
006-10049	4.0mm	2 kilo	100-150	
006-10050	5.0mm	2 kilo	130-200	

Description & Applications:

Superior electrode for joining and overlaying almost any nickel chrome alloy for service in both cryogenic and high temperature conditions, with the emphasis on the cryogenic side. For welding Inconel 600 and 601 type alloys, Incoloy 800 and 800H, involved in temperatures up to 540°C and for dissimilar applications such as Incoloy 600 and 800HT to carbon or stainless steels; nickel 200 or monel 400 and nimonic 75. Also suitable for welding 3%, 5% nickel semi cryogenic steels and 9% nickel steels for full cryogenic conditions:



Star International Electrodes

Cutting and Gouging Electrodes

STAR Gouging

Product Number	Dia	Pkt Size	Amp A	Classification
006-10036	2.5mm	4 kilo	100-150	
006-10037	3.2mm	4 kilo	150-250	
006-10038	4.0mm	4 kilo	250-300	

Description & Applications:

An electrode specially designed for cutting, gouging and piercing operations on all metals without the use of air or oxygen. Easy to use with little skill required. Operates at lower current and produces fewer fumes than would normally be expected from an electrode of this type. Metal surfaces are seared by the force of the arc leaving them clean and ready for subsequent welding operations. Smooth and even grooves are easily produced. Applications include, grooving, cutting, gouging and piercing operations on all metals including those, which would normally present difficulties by machining. These include hard enable steels, armour plate, hard weld overlays, cast iron and stainless steels. The electrodes are ideal for back gouging of butt welded seams and almost indispensable for the preparation of cast irons prior to welding repair.