



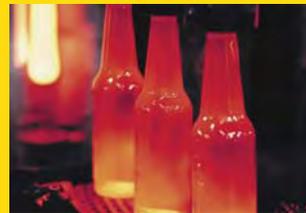
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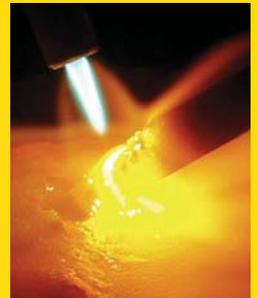
Consumables and Equipment range

Specialist Welding

Mig Wire



Edition September 2014



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Eutectic's **TEROMATEC** open arc (flux cored) wires are available for **mild steel, stainless steel, alloy steels** and **cast iron** welding and wear facing applications.

A flux cored wire is a tubular wire with a metallic powder flux inside. The primary advantage to flux cored wire over GMAW or stick welding is higher deposition rates, deeper penetration, improved bead appearance and is more cost effective.

Flux cored wire has a larger ball type transfer and produces low spatter levels. In addition, flux cored wire produces a rounder penetration profile with excellent sidewall fusion.



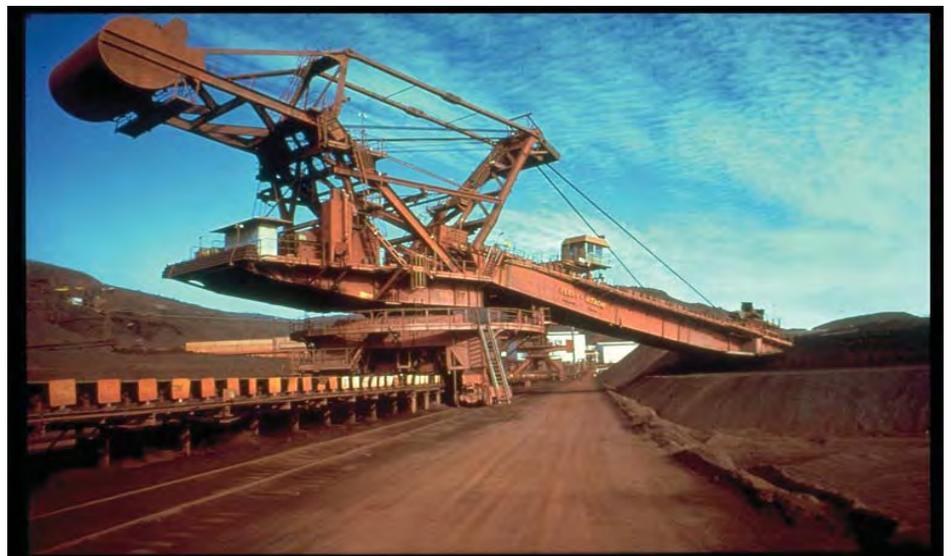
TeroMatec® Open Arc (Flux core) Welding

Product	Applications / Features	Mechanical Properties
OA 56 Hard Facing 	<p>OA 56 is an economical flux cored open arc wire producing hard overlays suitable for areas requiring abrasion and impact resistance.</p> <p>FEATURES: Resists Abrasion; Resists Impact; Resists Metal to Metal Wear; Multi Layer Build up (up to 3 layers).</p>	<p>Typical Hardness: 55-60 HRC</p>
OA 223 Joining Cast Iron	<p>Flux cored (gasless) wire for joining and overlay on cast iron, the nickel-iron weld metal provides a high strength machinable deposit which has a high resistance to cracking with good base metal colour match.</p> <p>PRINCIPAL APPLICATIONS: For joining grey SG malleable irons; Casting defect build-ups; Pump castings, motor bases, etc; Joining cast irons to iron-steel.</p> <p>OUTSTANDING FEATURES: smooth running characteristic; can be used with Co2 gas for higher voltage use where flat beads are required; can be used on most cast irons and cast iron to steel.</p>	<p>Tensile Strength: 470 MPa Yield Strength: 310 Mpa Elongation: 16%</p>
OA 690 Joining	<p>Semi-automatic application without shielding gas and without water cooling, for outdoor field welding of combinations of carbon and alloy steels. NucleO CGS produces fine grain structure for high strength, crack resistance, excellent ductility, corrosion and impact/resistance.</p> <p>PRINCIPAL APPLICATIONS: Structural steel, earthmoving equipment</p> <p>OTHER USES: Tough, wear-resistant cladding</p> <p>OUTSTANDING FEATURES: No shielding gas required; Wide base metal versatility; Impact, heat and corrosion resistance; Rapid deposition.</p>	<p>Tensile Strength: 620 Mpa 90,000 PSI Elongation: 50% Hardness: Rb 80 – 90</p>
OA 2020 Joining	<p>For applications involving high-speed joining or build-up of large areas using automatic and semiautomatic welding systems. Typical applications include installation of wear plates, maintenance of heavy mining and construction equipment and repair of tanks, railroad equipment and agricultural implements. Not recommended for use in low temperature applications.</p> <p>PRINCIPAL APPLICATIONS: Mining and construction equipment; agricultural implements, repair of tanks, joining.</p> <p>OUTSTANDING FEATURES: No shielding gas required; Ideal for field fabrication; Excellent for high deposition requirements; No stub loss; Easy slag removal.</p>	<p>Tensile Strength: 600 Mpa 87,000 PSI</p>



TeroMatec® Open Arc (Flux core) Welding

Product	Applications / Features	Mechanical Properties
OA 3110  Hard Facing	<p>Continuous electrode without shielding gas, for rebuilding and anti-wear coating of large parts, including guide rollers and running-gear components on tracked vehicles.</p> <p>OUTSTANDING FEATURES: Excellent resistance to deformation through compression; Multipass deposits possible; Dense, highly magnetic deposit; High deposition rate; For semi-automatic welding using reverse polarity arc transfer. Similar Arc Welding electrodes: Eutectrode 2B</p>	<p>Hardness: Approx. HRc 30–35</p>
OA 3205  Hard Facing	<p>High chromium manganese austenitic alloy for wear-preventive coating of carbon steels, low or high alloy steels and 14% manganese steels. Build-up and surfacing on steel mill wobblers, rail frogs and crossovers, shovel pads and crusher roll hammers. For use as a final overlay where impact is too great for harder and less tough materials. Also use as a high strength joining alloy for manganese, manganese to carbon, and manganese to several alloy steels. Produces tough, strong, crack-resistant deposits that work harden. Deposits resist deformation and spalling. Excellent cushion or padding for harder overlays.</p> <p>PRINCIPAL APPLICATIONS: Steel mill wobblers, rail frogs; Crusher rolls, hammers, shovel pads.</p> <p>OUTSTANDING FEATURES: No shielding gas needed; For build-up and overlay; Excellent for high deposition applications; Excellent crack resistance; Deposits resist deformation and spalling. Similar Arc Welding electrodes: Eutectrode 40 / Mantrak 1N</p>	<p>Hardness: HRc 25</p> <p>Work hardens to HRc 50</p>
OA 4603  Hard Facing	<p>A gasless high-chromium-iron tubular wire used for severe abrasion applications.</p> <p>PRINCIPAL APPLICATIONS: For use on alloy steels, construction steels and 12-14% manganese steels that may include crusher equipment, conveyor screws, earthmoving equipment, dredging pumps and buckets and mining slurry pumps.</p> <p>OUTSTANDING FEATURES: Weld deposits contain a high volume of primary chromium carbides; excellent low stress abrasion resistance; outstanding tolerance to dilution. Similar Arc Welding electrodes: EutecTrode 5003 / EutecTrode 6006</p>	<p>Hardness: 59 HRc</p> <p>Wear (ASTM G65) mm3: 20</p>
OA 4601  Hard Facing	<p>Very high chrome alloy for all steels. Designed especially for severe abrasion resistance. Typical uses include over-laying crusher rolls, jaw crushers, screw conveyors, cement die rings, augers, tampers, hammers, gyratory crusher and mantles, dredge pump parts, pusher shoes, catalyst pipes and valves and bucket teeth.</p> <p>PRINCIPAL APPLICATIONS: Crusher rolls, jaw crushers</p> <p>OTHER USES: Screw conveyors, bucket teeth, augers</p> <p>OUTSTANDING FEATURES: No shielding gas required; Excellent resistance to all types of wear; Superior abrasion resistance; Good corrosion resistance. Similar Arc Welding electrodes: EutecTrode 5003 / EutecTrode 6006.</p>	<p>Hardness: HRc 55 - 60</p>

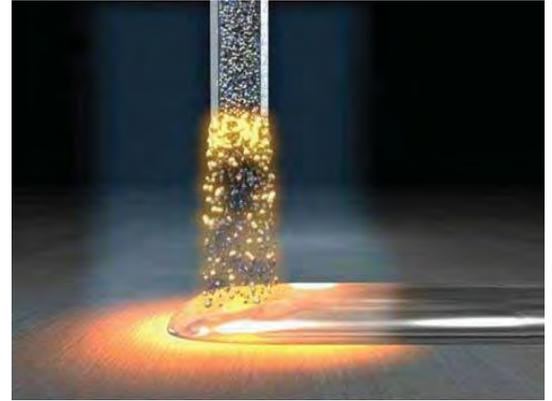


EnDotec® Metal Cored Welding Wires

Specific to the Castolin Group, **EnDotec** is a group of gas shielded, metal alloy cored wires, ideal for maintenance and repair applications as well as batch manufacturing where the highest integrity welding, efficiency and productivity are required.

Castolin Eutectic **EnDotec** wires will provide:

- Higher Deposit Efficiency – 90 to 95%
Flux-Cored wires generally deliver 80-90%;
Electrodes generally deliver 60-70%
- **EnDotec** = High Deposition Rates 2 to 12 kg/h
Electrodes generally deposit 0.5 to 4 kg/h
- **EnDotec** = Less Dilution – Typically 10 to 30%
Flux-Cored wires generally produce 15 to 30% Electrodes produce 25 to 30%,
while solid MIG wires = 20 to 30%
- **EnDotec** Lower Heat Transfer – less distortion leading to more trustable deposits
- **EnDotec** Wider Alloy Capability



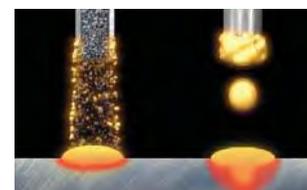
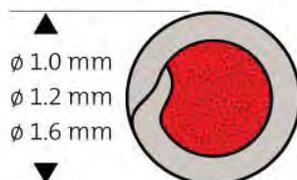
Product	Applications / Features	Mechanical Properties
EnDotec DO*02  Joining Buttering 1.2mm 1.6mm	<p>EnDotec DO*02 has been developed for semiautomatic welding of difficult to-weld steels and/or thick section steel parts. It is ideal for joining dissimilar martensitic or austenitic stainless steels. It can be applied either as a buttering layer or as an E+C TeroCote coating for protection against impact and high pressure.</p> <p>TYPICAL APPLICATIONS: Armour plate, manganese steels; steel alloy furnace components; superheated steam outlets; for building and buttering layers, multi-pass protective coatings; rail truck wheels; drive sprockets.</p> <p>FEATURES: Up to 40% elongation, excellent crack resistance, high resistance to metal/metal friction, very good resistance to thermal cycling and oxidation at working temperatures of up to 600°C, excellent work hardening, high ductility; slightly magnetic & machinable deposit.</p> <p>Alternative Arc Welding electrodes: 680 CGS / 680 S</p>	Tensile Strength Rm: 650 MPa Yield Strength Rp0.2: 350 MPa Elongation A5: 30-40% Impact Strength: 70J 20°C; 55J-20°C; 45J-60°C Hardness as welded 10 HRC Hardness after work hardening: 350 VHN30 (35HRC)
EnDotec DO*04  Hard Facing 1.6mm	<p>An exclusive, small-diameter special alloy, EnDotec DO*04 offers E+C TEROCOTE protective coatings of high hardness (~50 HRC in one pass) ideal for machine parts subject to metal/metal friction cavitation, corrosion and oxidation at high temperatures.</p> <p>FEATURES: Excellent corrosion and oxidation resistance at temperatures up to 650°C, excellent metal/metal friction resistance at high temperatures, ideal for use as cladding with no risk of cracking (hardness ~50 HRC); tough, creep resistant deposit; good corrosion resistance in high temperature gaseous media: combustion chamber, diesel engine, valves, etc.; no buttering layer necessary when coating heat resistant steels of CrMo/CrMoV type; good corrosion resistance in saline environment, with cavitation resistance.</p>	Hardness as welded: 500 - 540 HV30 Hardness after work hardening: 540 - 570 HV30 Quenching temp: 1040°C, for hardness of 470 HV30
EnDotec DO*05  Hard Facing 1.6mm	<p>EnDotec DO*05 has been developed for protective coating of parts subject to impact, metal/metal friction and abrasion. This non-magnetic deposit, with a high content of chromium and manganese, is ideal protection for carbon steels, high alloy steels and manganese steels.</p> <p>TYPICAL APPLICATIONS: For rebuilding applications, buttering layers and protective coatings on: Hammers and bars, Drills, Rollers, Dragline teeth and leading edges, Drive sprockets.</p> <p>FEATURES: High resistance to impacting pressure and metal to metal friction, exceptional work-hardening ability.</p>	Tensile Strength Rm: 900 MPa Yield Strength Rp0.2: 580 MPa Elongation: 25-35% Hardness after welding: 25 HRC After work Hardening: 43 HRC

EnDotec® Metal Cored Welding Wires

Product	Applications / Features	Mechanical Properties
EnDotec DO*11  Hard Facing 1.6mm	<p>The slag-free deposit features a high density of hard, cast tungsten carbide particles evenly distributed in a nickel alloy matrix which is further reinforced with very fine precipitates formed by recrystallisation. Exceptional resistance to abrasive/erosive particles with moderate impact and is specifically for service in hot or corrosive environments.</p> <p>TYPICAL APPLICATIONS: Designed for antiwear protective coatings on carbon steels, alloy steels, stainless steels and nickel alloys. Typical industries include agricultural, food, beverage, organic oils, pulp and paper, chemical processing. Oil pressing parts, transport screws, cellulose mixing blades, paddles, conveyors, bone mill hammers etc.</p> <p>FEATURES: Deposit weld is 50% tungsten carbide, crack resistant, low heat input, stable arc, all positional, high deposition rate.</p>	<p>Hardness after welding: 55 HRc</p>
EnDotec DO*14  Hard Facing 1.2mm 1.6mm	<p>EnDotec DO*14 has been developed as a protective overlay of parts subjected to combined wear phenomena: abrasion, impact and pressure. It is ideal for application on plain carbon steels, ferritic and martensitic steels, both low and high alloy steels and manganese steels.</p> <p>TYPICAL APPLICATIONS: Buckets and Shovels, Hot and Cold Shear Blades, Hot Forming and Forging Dies, Excavating Equipment, Rams and Punches.</p> <p>FEATURES: Resists impact and abrasion; hard, tough deposits are crack free; good heat-resistance for tooling applications to 500°C; deposits respond to heat treatment; multiple layer capability. Deposits are machinable with carbide tools; resists spalling and impact induced cracking; available in 13.6kg (spools) 300mm.</p>	<p>Typical hardness: 45 HRc</p> <p>Able to be flame hardened.</p> <p>Electrode closest match 6899XHD</p>
EnDotec DO*15  Hard Facing 1.6mm	<p>EnDotec DO*15 has been developed for protective coating of parts subject to combined wear phenomena: pressure, abrasion and severe impact. The deposit is formable and can be heat treated. It is ideal for coating carbon steels, both low and high alloy steels and manganese steels.</p> <p>TYPICAL APPLICATIONS: For the protective coating of drills, conveyor chains, gravel pumps, hot and cold forming tools.</p> <p>FEATURES: Magnetic deposit; very low dilution with base metal; very stable arc for coating edges, precision coatings; available in 15kg wire cage in diameters 1.2mm and 1.6mm</p> <p>ANNEALING TEMPERATURE: 750-800°C HARDNESS: 21 HRc TEMPERING TEMPERATURE: 500°C Hardness = 55 HRc 550°C = 55 HRc; 600°C = 48 HRc; 650°C = 40 HRc</p>	<p>Hardness as welded: 55-60 HRc Heat treatment: Quenching temp: 1000-1060°C</p> <p>Hardness: (cooling in oil or air) 57 HRc</p> <p>Electrode closest match 6899XHD</p>
EnDotec DO*23  Joining Cast Iron 1.0mm 1.2mm	<p>EnDotec DO*23 has been specifically developed for low heat input semiautomatic joining, rebuilding and E+C TeroCote anti-wear protective coating of Cast Iron. It can also be used to join cast iron to steels. Exceptional crack resistance under high restraint.</p> <p>TYPICAL APPLICATIONS: For spheroidal graphite cast iron, grey cast iron and malleable cast iron work pieces, as well as for joining cast iron to steels; casings for pumps and valves; machine tool beds; turbine sealing rings; textile industry machines; machining errors on castings.</p> <p>FEATURES: No cracks or porosity, even with multipass deposits; excellent wetting and bonding on contaminated surfaces; no peening required for joints that are not restrained; low heat input due to low welding current and fast travel speed; very good crack resistance.</p>	<p>Tensile Strength: 470 Mpa Elongation: 15% Hardness after welding: 190 HB30</p> <p>Electrode closest match Xuper 2233</p>
EnDotec DO*30  Hard Facing 1.2mm 1.6mm	<p>The deposit offers exceptional resistance to fine particle abrasion and erosion under moderate impact, thanks to a structural matrix which is tough and reinforced by extra-hard particles.</p> <p>TYPICAL APPLICATIONS: For protective coating of parts most subject to wear in activities such as public works, brick and tile, quarries, dredging. It is especially suitable in mining/cement making for: mixer blades and scrapers, rotary excavator buckets, auger flights</p> <p>FEATURES: Alloy characteristics including hardness fully transferred in just one pass; excellent weldability and arc stability, in all positions.</p>	<p>Hardness after welding: 63-68 HRc</p> <p>Electrode closest match Eutectrode 700</p>

EnDOTec® Metal Cored Welding Wires

Product	Applications / Features	Mechanical Properties
EnDOTec DO*48  Tungsten Hard Facing 1.6mm	<p>DO*48 has been designed specifically for anti wear protective coatings on carbon steels, alloy steels and cast iron.</p> <p>TYPICAL APPLICATIONS include mining, quarries, drilling, tunnelling, public works, extrusion press parts, transport screws, mixer blades, paddles, conveyors, scraper blades, cylinder crushers, pump rotors and bodies, etc.</p> <p>FEATURES: The slag-free deposit features a high density of hard, cast tungsten carbide particles evenly distributed in a ferrous alloy matrix which is further reinforced with very fine precipitates formed by re-crystallisation. This gives exceptional resistance to abrasive-erosive particles combined with moderate impact at ambient temperatures.</p>	<p>Hardness after welding HRc: 55 Micro hardness of carbides (HV): 2300</p> <p>Electrode closest match N112</p>
EnDOTec DO*55  Hard Facing Tool and die 1.2mm 1.6mm	<p>DO*55 specifically developed for E+C TeroCote anti-wear protective coatings on cutting, stamping and drop forging tools, as well as injection moulds for casting aluminium or forming plastics.</p> <p>TYPICAL APPLICATIONS Metal forging and hot injection moulding.</p> <p>FEATURES: Low coefficient of thermal expansion, simplified heat treatment, machinable, excellent edge retention, creep and corrosion resistant, highly suitable for polishing, easy to use, low heat input and low dilution, maximum weld metal recovery and faster deposition rates.</p> <p>Similar GTAW wire product: TIG45355W</p>	<p>Hardness after welding HRc 35</p> <p>Hardness after heat treatment HRc 58</p>
EnDOTec DO*60  Hard Facing Stellite 6 type 1.2 & 1.6mm	<p>A stellite type alloy containing cobalt, chromium and tungsten, this deposit is especially suited for carbon steels, low and high alloy steels, stainless steels, manganese steels, nickel and monel.</p> <p>TYPICAL APPLICATIONS: For protective coatings on valve shutters and caps combustion and whirl chambers, screw conveyors for chemical and food processing industries; woodworking tools; hot shear blades.</p> <p>FEATURES: Excellent resistance to corrosion, erosion and cavitation, plus resistance to metal/metal friction; low heat input for low dilution; ductile deposit, machinable by cutting tool; high hot hardness; excellent bead appearance, no spatter, stable arc, especially with arc modulation; "Stellite 6" type deposit; available in 15kg wire cage in 1.6mm diameter.</p>	<p>Hardness: 40-45 HRc</p> <p>Electrode closest match N9060 Tig 906</p>
EnDOTec DO*65  Joining Steels 1.2mm 1.6mm	<p>Ideal for joining fabrication steels (550 N/mm²), and for reconditioning cast steel parts marred by shrinkage cavities.</p> <p>TYPICAL APPLICATIONS: For applications requiring high deposition rates with good penetration and excellent deposit mechanical properties, including: equipment used in public works; railway equipment; tanks, containers; travelling cranes.</p> <p>FEATURES: Exceptional metallurgical bonding; Yield superior to 95%; excellent bead appearance; low hydrogen content for extra resistance to cold cracking; excellent arc characteristics with short arc transfer or spray transfer; all positional; available in 15kg plastic spool in diameters 1.2mm and 1.6mm.</p>	<p>Tensile Strength Rm: 575 MPa Yield Strength: 570 MPa Elongation A5: 26% Impact Strength: 100J 20°C</p>
EnDOTec DO*80  Hard Facing Stellite 21 type 1.2mm 1.6mm	<p>A stellite type alloy containing cobalt, chromium, nickel, molybdenum and manganese this deposit gives work hardenable protective coatings suitable for carbon steels, low-to-high alloy steels, stainless and manganese steels, nickel and monel.</p> <p>TYPICAL APPLICATIONS: For protective coating applications on hot cutting blades; stripper points; forging, hot forming tools; valve seats; extrusion press plungers.</p> <p>FEATURES: Exceptional increase of hardness under impact; excellent resistance to heat and corrosion; excellent resistance to metal/metal friction combined with corrosion resistance; superior crack resistance, for both repair and E+C TeroCote protective coatings, over large surfaces; ductile deposit, machinable by cutting tool; exceptional all-positional weldability; Stellite 21 Type Deposit; available in 15kg wire cage in 1.6mm diameter.</p>	<p>Hardness as welded 300-350 Vhn30 33-37 HRc</p> <p>Hardness after work hardening: 500 VHN30 48 HRc</p> <p>Electrode closest match N9080</p>



NanoAlloy EnDOtec® Metal Cored Welding

EnDOtec NanoAlloy 390, the "Flagship" of Nano range is a patented, gas shielded, metal cored alloy wire, ideal for maintenance and repair applications or batch manufacturing where highest integrity welding, efficiency and productivity are required. The slag-free deposit contains a high volume fraction of ultra-hard, complex Boro carbides uniformly distributed within an iron alloy matrix. The unique nanoscale type microstructure ensures exceptional performance against wear by severe abrasion & erosion retaining elevated bulk hardness properties to 750°C.

Increased Service Life - NanoAlloy®'s are characterised by high volume fractions of ultra-hard, complex Boro carbides (M23(BC) 6), metal carbides (MC) and metal borides (M2B) which are very finely dispersed within an alpha-Fe alloy matrix sub-micron refined. Composite wear-facing alloys typically consist of ultra-hard, angular tungsten carbide phases suspended within a relatively softer matrix binder (Ni or Fe based). In service, erosive or abrasive particles will rapidly attack the softer matrix to gradually expose the harder WC phases which either break or become detached. This effect is particularly evident when spherical shaped WC phases are involved. The resultant lost wear resistance causes premature failure or shorter service life with associated costly downtime losses. The same erosive or abrasive particles are thus unable to attack any "weak spots" due to the high, homogeneous wear resistance throughout the entire NanoAlloy® deposit. This results in longer, reliable service life, **lower operating costs and significant productivity gains**.

Less Weld Metal Required - It is important to understand that for any given wear-facing deposit volume requirement, **37% LESS kg** are necessary with EnDOtec DO390 due to its lower density (7.6 gm/cc compared with Ni + WC based alloys (12 gm/cc).

It was developed for protective coatings with extreme resistance to abrasion and erosion on carbon steels, alloy steels and stainless steels. Typical industries include steel, cement, waste recycling, power generation, foundries, chemical processing, mining, materials handling, petrochemical, etc. Transport screws, furnace chutes, exhaust fans, cyclones, conveyors, mixer blades, paddles, scrapers, press screws, material screens etc.



Cutting Teeth for Dredging Industry
Abrasion + Impact Resistance



Bucket Teeth for Quarry Industry
Abrasion + Impact Resistance



DO 390 can be built up to a thickness of up to 12.5mm (1/2 inch)



Shredder Hammer for Waste & Recycling Industry.
Abrasion + Impact + Heat Resistance



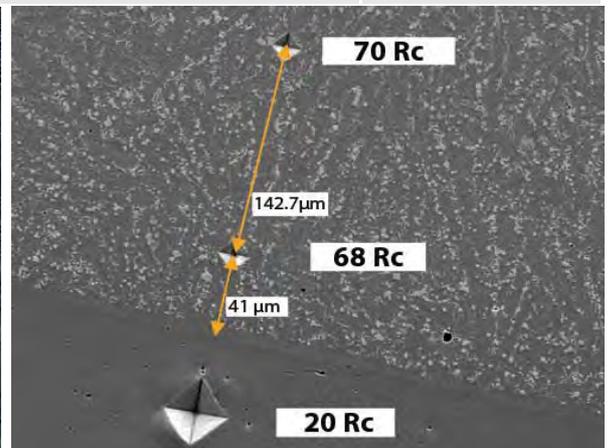
Clay Mixer Screws for Brick & Tile
Abrasion + Impact resistance



Sinter Crusher Hammers for Steel Ind.
Abrasion + Impact resistance

NanoAlloy® EnDOtec® Metal Cored Welding

Product	Applications / Features	Mechanical Properties
Eutectic DO*380  REDEFINING STEEL® Hard Facing 1.2mm 1.6mm	Overlay Description DO 380 GMAW OAW is an iron based steel alloy with a near nanoscale (submicron) microstructure that features exceptional abrasive wear resistance with superior toughness and no high-cost nickel, tungsten and molybdenum in material chemistry. Key Performance Characteristics <ul style="list-style-type: none"> • 67 - 70 HRc single and double pass weld deposits. • Cost effective alternative to complex carbides: iron-based chemistry contains no tungsten, no molybdenum and no nickel. • Provides exceptional wear resistance lasting significantly longer than most chrome carbide and complex carbide alloys. • High resistance to abrasion while maintaining high toughness. • Crystalline microstructure is engineered to submicron (400 nm) size. • Maintains high hardness after exposure to high temperatures. 	Hardness after welding HRc: 67-70 ASTM G65-04 Procedure A 6000 cycles mass loss = 0.12–0.14g. Weld deposit Density 7.36 g/cm³
Eutectic DO*385  REDEFINING STEEL® Hard Facing 1.2mm 1.6mm	Overlay Description DO 385 GMAW OAW is an iron based steel alloy with a near nanoscale (submicron) microstructure that includes chromium, molybdenum and niobium in the material chemistry, resulting in an overlay wear solution well suited for the toughest jobs in the most extreme service environments. Key Performance Characteristics <ul style="list-style-type: none"> • 66 - 71 HRc single and double pass weld deposits. • Exceptional resistance to severe sliding abrasion. • Provides longer lasting wear life than most chrome-carbide and complex carbide alloys. • Improved impact resistance results from complex boro-carbide phases surrounded by ductile phases that form during welding. 	Hardness after welding HRc: 66-71 ASTM G65-04 Procedure A 6000 cycles mass loss = 0.09–0.11g. Weld deposit Density 7.36 g/cm³
Eutectic DO*390  REDEFINING STEEL® Hard Facing 1.2mm 1.6mm	Overlay Description DO 390 GMAW OAW is an iron based steel alloy with a near nanoscale (submicron) microstructure that features extreme abrasion resistance with high toughness, high volume of hard phases and superior high temperature hardness. SHS 9192 is an alternative to chrome and tungsten carbides. Key Performance Characteristics <ul style="list-style-type: none"> • 69 - 72 HRc single and double pass weld deposits • Extreme resistance to abrasion while maintaining high toughness • Alternative weld material to: <ul style="list-style-type: none"> • Tungsten carbides • Chrome carbides • Complex carbides • Stick weld material loaded with carbides • Tungsten carbide laden Teflon® sheet overlays • Maintains high hardness after exposure to high temperatures. 	Hardness after welding HRc: 69-72 ASTM G65-04 Procedure A 6000 cycles mass loss = 0.09–0.11g. Weld deposit Density 7.68 g/cm³



Low dilution, predictable wear rates. Properties and hardness remain consistent throughout the entire hard facing layer.

GMAW (Mig) Welding Wires

Product	Applications / Features
GS 70S-4	AWS A5.18 ER70S-4 For low hydrogen gas shielded arc welding of mild steels, low and medium carbon steels. Copper coated double-deoxidised wire for better, stable arc action. Use with Argon-base or CO2 gas shielding.
GS 70S-6	AWS A5.18 ER70S-6 Precision wound GMAW wire for mild and medium strength steels. Copper coated, wire tensile strength 500 MPa
GS 71T-1	AWS A5.18-20 E71T-1 The wires have a rutile base slag. They are used DC electrode positive with CO2 and Argon CO2 shielding gases. CO2 shielding provides a globular transfer whereas Argon CO2 produces a spray transfer. Lower arc voltages are recommended for Argon shielding gases. Slag coverage is full and generally self-removing.
GS 71T-5	AWS A5.20 E71T-5 AS2203-1 – 1990 The wires have a lime fluoride base slag and are often referred to as Basic wires. They are designed for DC electrode negative with both CO2 and Argon CO2 shielding gases. Slag coverage may not be complete and slag is easily removed. Weld deposits from basic wires generally have better impact and crack resistance to wire from the rutile group.
GS 308L	AWS A5.9 ER308LSi A gas shielded 308 stainless steel wire for welding 18/8 stainless steel such as 304L, 304N, 304LN, 304, 304N, 321, 347. GS308L produces a low-carbon 20/10 stainless steel designed to give good resistance to corrosion. High silicon content gives good arc stability and fluidity producing excellent weld appearance with minimal porosity and spatter particularly in short circuit transfer.
GS 309L	AWS A5.9 ER309LSi A gas shielded 309L stainless steel wire designed for welding stainless steel 304 and 18/8 stainless when severe corrosion conditions exist. Also used for welding stainless to mild steel and for joining 304 and 18/8 clad stainless. Can be used for GTAW and SAW if desired.
GS 312	AWS A5.9 ER312 A gas shielded 29/9 stainless steel wire suitable for the GMAW, GTAW and SAW process. Produces high strength, crack resistant joints and can be used for welding stainless to mild steel and dissimilar stainless steels.
GS 316L	AWS A5.9 ER316LSi A gas shielded 316L silicon bearing stainless steel wire suitable for the GMAW and GTAW process. Produces low carbon weld metal of the 18/13/3 type with excellent resistance to corrosion. Contains high silicon to give better arc stability and better fluidity.
GS 347	AWS A5.9 ER347 A gas shielded 19/9 Niobium stabilized stainless steel wire designed for welding Ti and Nb/Cb stabilised 18/10 stainless steels. Used for high temperature applications above 400°C. The stabilised weld deposit provides resistance to inter-granular corrosion. GS347 can be used for GMAW, GTAW and SAW if desired.
GS 4043 AL	AWS A5.10 ER4043 A gas shielded aluminium - 5% Silicon alloy wire suitable for use with GMAW, GTAW, PAW and electron beam welding. GS4043 can also be used with the oxy-acetylene process if desired.
45554	MAG wire for welding austenitic steels with manganese and welding steels that are difficult to weld or thick sections. MPa 660 (ER 307 Si)

Many other GMAW products are available on request. Please ask your local Representative.

GMAW (Mig) Solid Welding Wires

Product	Applications / Features
GS 5356 AL Aluminium	AWS A5.10 ER5356 A gas shielded Aluminium - 5% Magnesium alloy wire suitable for use with GMAW, GTAW, PAW, and electron beam welding etc. Used for welding 5XXX, 6XXX and 7005 alloys. Excellent for cryogenic applications.
GS CU Copper	AWS A5.7 ER Cu A gas shielded copper wire containing phosphorus and silicon as deoxidisers. Used for welding oxygen free, deoxidised, and electrolytic tough pitch coppers. Can be used with oxy-acetylene process if desired.
GS ALBR 2 Aly Bronze	AWS A5.7 ER Cu Al-A2 A gas shielded aluminium bronze wire used for joining and overlaying aluminium bronze; manganese, silicon bronzes; some copper-nickel alloys, steels, cast irons and dissimilar combinations such as aluminium bronze to steel. GSALBR2 provides excellent wear and corrosion resistant surfaces.
GS PHOSBR Phos Bronze	AWS A5.7 ER Cu Sn-A Used for joining copper, brass, bronze including high strength bronze. Low coefficient of friction when running against steel faces. Excellent corrosion resistance in salt water. Does not suffer from dezincification.
GS SILBR Sil Bronze	AWS A5.7 ER Cu Si-A A gas shielded silicon bronze wire used for welding copper, copper-silicon (Si bronze), copper-zinc (brass), alloys to themselves and to steel. High corrosion resistance, strength and toughness. Can be used with the oxy-acetylene process if desired.
45252 CastoMag® Steel join and ID welding	AWS ER80S-B2 Highly alloyed chrome molybdenum solid-wire continuous electrode, designed for the semiautomatic welding of non-alloyed steels, high-yield point low-alloy steels and boiler-plate steels. The deposit is heat-tolerant and offers joints with service temperature of up to 550°C. It also features good resistance to cracking caused by alkaline corrosion. The deposit's inherent wear-resistant characteristics can be further increased by the application of nitriding and cementation treatments.
GS 35 Hardfacing	Gas shielded metal arc all positional copper coated wear facing wire, deposits are typical 35 Rc. For applications where abrasions with impact are a problem, resists spalling under impact and compressive wear. Suitable for multi pass build up.
45351 CastoMag® Hardfacing	Gas shielded metal arc all positional copper coated wear facing wire; deposits are heat treatable, deposits of up to 60 HRc. For applications where abrasions with impact are a problem, also suitable for elevated temperatures, resists spalling under impact.
GS 110 High Strength	GS 110 is a low alloyed GMAW wire type Ni, Cr, Mo for joining high strength and quench and temper steels.
GS 56 Hardfacing	GS 56 is an economical wire producing hard overlays (56 HRc) suitable for areas requiring abrasion and impact resistance. The weld metal is medium alloy martensitic steel useful for 2-3 layer applications.
GS Ni99 Nickel	GS Ni99 is a Gas Shielded 99% Nickel wire suitable for GMAW. Producing high strength, crack resistant joints and suitable for overlay of cast iron.

Many other GMAW products are available on request. Please ask your local Representative.

GTAW (Tig) Solid Welding Wires

Product	Applications / Features
TIG 5HSS Tool steel	TeroCoating alloy for use on composite high speed steel. For use where cutting, shaving or piercing qualities are required. High speed-steel type deposit. HRc 58-62 (as welded) HRc 64-65 (heat treated)
TIG 21 Aluminium alloy	For use with all Aluminium types and combinations, except where 5XXX series Al/Mg alloys form part of assembly. An Aluminium/silicon alloy with good strength, ductility and corrosion resistance. Tensile strength: 227 MPa
TIG 182 (45706) Copper alloys	For joining copper, copper-silicon and copper zinc base metals to themselves and to steel. Ideal to weld galvanised steel to minimize damage to zinc coating and help preserve corrosion resistance. A copper based alloy containing silicon and manganese. High strength alloy with corrosion resistance generally equal to copper. Tensile strength: 427 MPa
TIG 680 Dissimilar steel alloys	Joining and repair of dissimilar alloy steels. For high alloy, spring, tool and die steels. Very high strength joining. A high chrome-nickel alloy. Good machinability. Tensile strength: 827 MPa
ME006 Grade 6 alloy	A Cobalt based Grade 6 type (Cr Co W) wear resistant alloy especially useful for high temperature applications. Oxidation resistance to 800°C. Good aptitude to polishing and machining. "Stellite 6" type alloy in sizes 2.4, 3.2, 4.0, 5.0, 6.4 and 8mm. Hardness: 38-47 HRc
TIG 912 Grade 12 alloy	For applications requiring hardness with abrasion and erosion resistance. A cobalt base alloy with chrome and tungsten. Mild impact conditions only. "Stellite 12" type alloy. Hardness: 46-51 HRc
TIG 1851 Aluminium bronze	For joining and overlaying aluminium-bronze, copper alloys, other non-ferrous and ferrous materials. Excellent for joining copper alloys to steel. An aluminium-bronze alloy for high strength, ductile, corrosion resistant joining and overlaying. Tensile strength: 620 MPa 140-230 BHN
TIG 45612 Dissimilar steels and thick sections	For joining and overlaying high nickel alloys and dissimilar metal combinations. Ideal for elevated temperature or heat cycling applications. A nickel "super alloy" with high strength, exceptional elongation and corrosion resistance. Excellent thermal cycling properties and oxidation resistance. Tensile strength: 689 MPa
TIG 308L	For welding 300 series 18/8 and 19/9, 304L. AWS A5.9 ER308LS.
TIG 309L	For welding types 309-309L dissimilar joints of 300 series to ferritic stress. AWS A5.9 ER309LS.
TIG 310L	For welding types 310 & 309. AWS A5.9 ER310.
TIG 316L	For welding 316 and 316L molybdenum brazing stainless also 304 3cr12. AWS A5.9 ER316LS.
TIG 312	Joining and repair of dissimilar alloy steels. For high alloy, spring, tool and die steels. Very high strength joining. A high chrome-nickel alloy. Good machinability. Tensile strength: 827 MPa AWS A5.9 ER312.
TIG 2209	For welding duplex stainless steel 2205. AWS A5.9 ER2209.
TIG 224 Cast Iron	GTA high nickel alloy for repairing thin section Grey Cast Irons and especially useful for joining iron castings to steel. Tensile strength: 344 MPa Typ hardness: 90 HRb



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