Cast Iron

Pioneering Industrial Sustainability
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Xyron 223

Manual Metal Arc Electrode For Machinable Welds On Heavy Section Cast Irons

DESCRIPTION

The high nickel content of the core wire ensures a deposit which is easy to file, with a non-fragile transition zone, an absence of hard phases, and a coefficient of expansion similar to that of the base metal which minimises internal stresses.Containing graphite stabilising elements and deoxidising agents to optimise arc characteristics. This unique composition gives the 2-23 electrode a stable arc even at low welding currents.
Despite the low amperage, the transfer of metal in the form of fine droplets, is very fast. Furthermore, the coating composition gives this electrode a very high specific rate of fusion, i.e. a high weight in grams of melted metal per ampere per second.

Product Details

- Exceptional high speed weldability, Reduced penetration in the base metal, with low dilution and virtually no oxide inclusions.
- Dense deposit provides high crack resistance, leak-proof joints with good machinability.

APPLICATIONS:

Heavy Section Cast Iron, Can Be Used On Grey Cast iron, SG Cast iron Malleable Cast iron

PROCEDURE FOR USE

Preparation: Ensure that all areas to be welded are free from contaminants, remove casting defects such as sand inclusions and blowholes and damaged or fatigued base material. For the repair of cracks prepare, by gouging suitable «U» or «V» type joint-design, depending on wall thickness, using ExoTrode 04/03.

Preheating: For small and intricate castings, preheating between 200C 300-C may be necessary. For large and complicated sections, where pre-heating cannot be successfully applied (avoid local preheating) maintain the workpiece at ambient temperatures throughout the repair operation by allowing each weld bead to cool before commencing subsequent welds.

Welding technique: For non-preheated parts, select lowest possible amperage in order to minimise heat input and employ a balanced welding technique. Hold a near vertical electrode angle and maintain a short arc length, deposit stringer beads 4-3 cm in length followed by peening (do not peen thin section components). Maintain the workpiece temperature close to ambient temperature, allow each weld bead to completely cool prior to subsequent welds. Ensure that each weld pass is completely free from slag, defects, etc. Preheated parts should be cooled at a slow, even rate, down to room temperature.

Procedure A

High amperage welding for massive parts, maximum welding speed.

Procedure B

Low amperage welding for parts which should not be overheated, minimum dilution. Recommended procedure for the majority of applications

TECHNICAL DATA

Tensile strength: 393 N/mm2 (57000 psi)
Yield strength : 375 N/mm2 (54000 psi)
Typical hardness : 130-170HB

Current polarity: AC/DC (+)

DIAMETER	AMPERAGE Procedure A	AMPERAGE Procedure B
2.5mm	70-90	50-60
3.2mm	100-120	80-90
4.0mm	130-140	90-140

Note: For optimum result use the lowest amperage practical

Xyron 224

Manual Metal Arc Electrode For Machinable Welds For Cast Irons

DESCRIPTION

Special electrode offering optimum machinability for all cast irons, flat beads without under-cutting. The first Castolin low ampelectrode for welding grey cast iron with metal transfer by fine droplets, offering optimum machinability. No under-cutting (important for new parts in pre-machined cast iron). No preheating required, enhanced fluidity, easy to remove slag. Ideal for overlaying and for buttering layers as preparation for bronze electrodes.

Product Details

- Excellent deposition characteristics with Very good machinability.
- Good positional welding with low amperage welding current
- Homogeneous deposit structure with low dilution.

APPLICATIONS

Applications include machine tool carriages, bearing supports, crankshaft cases, cable drums, slideways, chain wheels, cog wheels, bronze or grey cast iron turbine blades, eroded turbine housings, gaskets, valve seats, electric motor cases and flanges, etc.

PROCEDURE FOR USE

Preparation: Ensure that all areas to be welded are free from contaminants, remove casting defects such as sand inclusions and blowholes and damaged or fatigued base material. For the repair of cracks prepare, by gouging suitable «U» or «V» type joint-design, depending on wall thickness, using ExoTrode 04.

Preheating: For small and intricate castings, preheating between 200 and 300.C may be necessary. For large and complicated sections, where preheating cannot be successfully applied (avoid local preheating) maintain the workpiece at ambient temperatures throughout the repair operation by allowing each weld bead to cool before commencing subsequent welds.

Welding technique: For non-preheated parts, select lowest possible amperage in order to minimizeheat input and employ a balanced welding technique. Hold a near vertical electrode angle and maintain a short arc length, deposit stringer beads 4-3 cm in length followed by peening (do not peen thin section components). Maintain the workpiece temperature close to ambient temperature, allow each weld bead to completely cool prior to subsequent weld. Ensure that each weld pass is completely free from slag, defects, etc. Preheated parts should be cooled at a slow, even rate down to room temperature.

TECHNICAL DATA

Tensile strength: 475 N/mm2 (69000 psi)
Yield strength : 375 N/mm2 (54000 psi)
Typical hardness: 195HB

Current polarity: AC/DC (-)

DIAMETER	AMPERAGE
2.5mm	50-80
3.2mm	70-110
4.0mm	90-130

Note: For optimum result use the lowest amperage practical

Xuper 2240

Manual Metal Arc Electrode For Repair And Maintenance Of Contaminated Cast Iron

DESCRIPTION

A high nickel alloy electrode producing low-heat-input deposits which are highly crack resistant and fully machinable. The electrode is designed with an electroplated core wire of controlled thickness to ensure a low electrical resistivity. This avoids overheating of the electrode, and ensures a unique metal transfer characteristic for low dilution and controlled metallurgical structure, with spherical graphite formation for high resistance to weld metal cracking. The special arc characteristics also allow positional welding even on contaminated surfaces.For the fabrication and repair of flake graphite and nodular cast iron where ease of welding, low heat input andhigh crack resistance are important. Also suitable for joining cast iron to carbon steels and low alloy steels.

Product Details

- Superior positional weldability with Nodular graphite deposit for crack resistance, strength and colour match
- Low heat input, smooth metal transfer
- Absence of electrode overheating
- Special arc characteristics for contaminated surfaces

APPLICATIONS:

Assembly of cast iron to steel, machine bases, pump casings, gear housings, flywheels, foundry defects, lathe beds and ways, pulleys, dies, levers, pump housings, differential housings, gears and gear boxes, engine blocks, turbine housings, flanges, hydraulic cylinders.

PROCEDURE FOR USE

Preparation:Ensure that all areas to be welded are free from contaminants, remove casting defects such as sand inclusions and blowholes and damaged or fatigued base material. For the repair of cracks prepare, by gouging suitable «U» or «V» type joint-design, depending on wall thickness, using ExoTrode 04.

Preheating:For small and intricate castings, preheating between 300-200.C may be necessary. For large and complicated sections, where pre-heating cannot be successfully applied (avoid local preheating) maintain the workpiece at ambient temperatures throughout the repair operation by allowing each weld bead to cool before commencing subsequent welds.

Welding technique:For non-preheated parts, select lowest possible amperage in order to minimise heat input and employ a balanced welding technique. Hold a near vertical electrode angle and maintain a short arc length, deposit stringer beads 4-3 cm in length followed by peening (do not peen thin section components). Maintain the workpiece temperature **close to ambient temperature, allow each weld bead to completely cool prior to subsequent welds. Ensure that each weld pass is completely free from slag, defects, etc. Preheated parts should be cooled at a slow, even rate down to room temperature.** allow each weld bead to completely cool prior to subsequent welds. Ensure that each weld pass is completely free from slag, defects, etc. Preheated parts should be cooled at a slow, even rate down to room temperature.

TECHNICAL DATA

Tensile strength: **346 N/mm2** (50,000 psi)
Yield strength : **307 N/mm2** (44,000 psi)
Typical hardness : 170HB

Current polarity: AC/DC (-)

Diameter (mm)	Amperage (A)
2.5mm	60-90
3.2mm	90-120
4.0mm	120-150

Note: For optimum result use the lowest amperage practical

Xuper 22*33N

Premium Nickel-Iron Electrode For Superior Cast Iron Welding With Highest Tensile Strength

DESCRIPTION

Xuper 2233N is a low-amperage, cored wire, flux-coated electrode for welding the widest range of cast irons as well as for welding cast iron to steel. Deposits are highly crack-resistant with superior machinability. Improved weldability and wash characteristics result in weld beads that are flat, even, and finely rippled. The advanced core wire prevents overheating at rated amperage reducing stub loss while Maintaining weldability. The smooth stable arc has great strike and re-strike characteristics with minimal spatter and fuming.

Product Details

- All position, AC/DC electrode for joining, build-up and overlays
- Durable, crack-resistant welds with great machinability
- High quality core wire reduces overheating and flux breakdown, meaning less stub loss
- Good for nodular and ductile cast irons, sections under restraint and dissimilar joints of cast irons and plain steels.

.Can be used on grey, malleable, meehanite,SG, Ni-resist Cast iron

APPLICATIONS

Ideal solution for a variety of cast iron repairs under demanding conditions, joints under severe restraint, dissimilar thickness and pipe welds to flanges. Excellent for repairs to machine bases and frames and oil pumps.

PROCEDURE FOR USE

Preparation: Clean joint and/or parts to be welding thoroughly. Terminate crack growth by drilling ¼" holes at the leading points. Preheat casting to °400F, holding for 1 hour per inch of thickness. Prepare joint with Eutectic ChamferTrode® or ExoTrode®. Joints below 1" should be beveled to a V-profile; Over 1" can be beveled to either a single or double J-profile. Allow a root opening of 8/1" for full penetration welds.

Technique: Deposit short runs no longer than -2in. and moderately peen 2nd and subsequent passes. For long cracks in heavy castings use either a cascade and/or block deposition sequence.

Post Welding: Slow cool after welding using insulating material such as vermiculite or heat-retardant blankets.

TECHNICAL DATA

Tensile strength: **496 N/mm2 (72,000 psi)**
Yield strength : 400 N/mm2 (58,000 psi)
Typical hardness : 87-90 HB

Current polarity: AC/DC (+)

DIAMETER	AMPERAGE
2.5mm	95-100
3.2mm	110-130
4.0mm	145-160

Note: For optimum result use the lowest amperage practical

Xuper Xyron 242

Manual Metal Arc Electrode With Superior Machinable For Cast Iron Joining

DESCRIPTION

Castolin 242 is a manual metal arc electrode with a special coating designed for hot welding of grey cast iron, matching the cast iron base metal. According to the heat treatment, the welded deposit can become ferritic or pearlitic-ferritic. Recommended for spheroidal (nodular) graphite cast irons.

Product Details

- Excellent deposition characteristics with Very good machinability.
- Good positional welding with low amperage welding current
- Homogeneous deposit structure with low dilution.

APPLICATIONS

Applications include machine tool carriages, bearing supports, crankshaft cases, cable drums, slideways, chain wheels, cog wheels, bronze or grey cast iron turbine blades, eroded turbine housings, gaskets, valve seats, electric motor cases and flanges, etc.

PROCEDURE FOR USE

Preparation: Ensure all areas to be welded are free from contaminants. Remove casting defects such as sand inclusions and blowholes. For crack repair, prepare by gouging suitable "U" or "V" type joint-design using ExoTrode 04.

Preheating: Mandatory. For small parts, preheat between °300C and °400C. For larger parts, preheat at °600C.

Heat Treatment:

Ferritic Treatment: Annealing at °920C for 2 hours, reduce temperature to °700C over 5 hours.

Ferritic–Pearlitic Treatment: Annealing at °880C – °920C for 2 hours, reduce temperature to °450C, then reheat at °550C for 3.5 hours.

Cooling: In oven, ensure no temperature differences between areas of the part during cooling.

TECHNICAL DATA

Tensile strength: **360 N/mm2** (52,000 psi)
Yield strength : **210 N/mm2** (30,000 psi)
Typical Hardness : 120 HB

Current polarity: AC/DC (+)

DIAMETER	AMPERAGE
2.5mm	120-160
3.2mm	160-190
4.0mm	200-240

Note: For optimum result use the lowest amperage practical

EutecTrode EC 2026

Manual Metal Arc Electrode For Crack Resistant Welding Of Cast Iron

DESCRIPTION

High nickel alloy electrode with fast fusion speed ensuring dense, crack resistant, easy to machine deposits on cast iron with comparable hardness and coefficientof expansion which minimises residual stresses.

Product Details

The special ionising flux coating creates a fine spray metal transfer promoting low heat input and reduced dilution effects.

APPLICATIONS: This electrode is recommended for both joining and overlaying applications on grey, nodular graphite, alloy and chilled cast irons, especially when the requirements call for high strength combined with crack resistance. It can also be used for joining steel to cast iron. Machine bases, pump casings, gear housings, die cladding, heavy sections of cast iron, etc.

PROCEDURE FOR USE

Preparation:Ensure that all areas to be welded are free from contaminants, remove casting defects such as sand inclusions and blowholes and damaged or fatigued base material. Prepare for the repair of cracks, by gouging suitable «U» or «V» type joint-design, depending on wall thickness, using ExoTrode04.

Preheating: For small and intricate castings, pre-heating between 200.C -300.C may be necessary. For large and complicated sections, where pre-heating cannot be successfully applied (avoid local pre-heating) maintain the workpiece at ambient temperatures throughout the repair operation by allowing each weld bead to cool before commencing subsequent welds

.**Welding:** For non-preheated parts, select the lowest possible amperage in order to minimise heat input and employ a balanced welding technique. Hold a nearly vertical electrode angle and maintain a short arc length, deposit stringer beads 3-4 cm in length followed bypeening (do not peen thin section components). Allow each weld bead to cool completely prior to subsequent welds. Ensure that each weld pass is completely free from slag, defects, etc. Preheated parts should be cooled at a slow, even rate, down to room temperature.

TECHNICAL DATA

Tensile strength: **325 N/mm2** (47,000 psi)
Yield strength : **310 N/mm2** (45,000 psi)
Typical Hardness : 165 HB

Current polarity: AC/DC (+)

DIAMETER	AMPERAGE
2.5mm	50-90
3.2mm	80-120
4.0mm	110-140

Note: For optimum result use the lowest amperage practical

EutecTrode 27

Manual Metal Arc Electrode For Buffering Layer For Problematic / Contaminated Cast Iron

DESCRIPTION

EutecTrode27 is an iron core electrode with a flux coating designed to produce 'arc spray' transfer type.It is excellent for bonding welds on parts highly degraded by oxidation, corrosion and thermal fatigue.It can be used for casting repairs and wearfacing cast iron parts.It removes the S and P excess on cast iron surfaces. The electrode produces a hard and dense iron carbide type deposit with excellent resistance to abrasion, pressure and high temperatures in a single pass.

Product Details

High arc force powers through contaminants to clean and seal metal surfaces. Good for pre-welding preparation on unknown and low-grade cast iron repairs. Non-machinable.

APPLICATIONS:

For bonding layer on old, burnt or poorly weldable cast iron. Another electrode (Castolin 224, Castolin 242, etc.) should be used to finish the joint.

Hard facing on cast iron parts subject to abrasion and frictional wear at high temperature (slides and guides in the steel industry, as well as drawing radii or brakes ithe die-making industry).

PROCEDURE FOR USE:

Preparation: Ensure that areas to be welded are free from surface defects, sand and scale. Damaged and fatigued base materials should be removed using ExoTrode 04.

Preheating:Preheating is not generally necessary, it is recommended that components are kept at ambient temperatures, and allowing each pass to cool before commencing subsequent welds.

Welding:Employ a near vertical electrode angle and maintain an arc length as short as possible. Deposit by applying stringer beads ensuring that the depth of deposit is as thin as possible, this is to avoid local overheating and minimise dilution. Limit each weld to between 5-2 cm, (2-"1") and insure that the workpiece iskept as cool as possible throughout the welding operation.

For joining applications and the repair of cracks complete the joint by using Xuper 2240, XHD 2230.

The machinability of EutecTrode 27 is poor and therefore may, only be effectively prepared by grinding.

TECHNICAL DATA

Tensile strength: **415 N/mm2** (60,000 psi)
Typical Hardness : 54 HRC

Current polarity: AC/DC (+)

DIAMETER	AMPERAGE
2.5mm	50-80
3.2mm	60-120
4.0mm	90-130

Note: For optimum result use the lowest amperage practical