Weldability

sif

Serving the weld for 90 Years

1925 2015

Downhand Welding

Welding Vetically Downwards

Fillet Welding

Welding in the Overhead Position

For use in Soldering

Welding Vertically Upward

The above welding position symbols, which are used within this guide identitfy the welding position or positions we recommend the consumable be used in.

APPROVED LR

CE

sif a joining force since 1925

Consumables Handbook

A full range of rods, wires and fluxes, for welding, brazing and more.

Weldability-Sif operate an ISO9001:2000 quality-assurance system and have been approved to these standards since 1993. Our customer-focused strategy has helped us develop our products, services and solutions that directly benefit our valued Trading Partners and Product Users. Our strong history of providing quality products is built on a foundation of conformance - we guarantee our products are produced to the required EN standards and where necessary, carry CE and/or 3rd party approval.

3rd Party Approvals + CE Certification
It is our policy to maintain 3rd party approvals and/or CE certification on our products as applicable. For current status on all our product approvals please see their pertinent product information sheet on our website at www.weldability-sif.com using the part numbers detailed inside this book.

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Sif History

1914 Saw the creation of the Suffolk Iron Foundry by a young Louis Tibbenham. Initially making castings such as flywheels and ploughshares, the company were doing well. Unfortunately the start of the Great War saw business grind to a halt. Determined to strive, Louis continued to pick up small contracts throughout this period that saw the company portfolio expand into a larger market which included making mangles.

After outgrowing their original premises and moving to a new 6 acre site, the Suffolk Iron Foundry were approached by a young experimental engineer to supply cast-iron rods containing extra silicon for use in welding cast-iron with an oxy-acetylene flame. Following this, Louis learned of the techniques of low-temperature bronze welding for cast iron which inspired him to develop a rod, which subsequently was found suitable for welding virtually any metal except aluminium. Using the initials SIF from Suffolk Iron Foundry and adding 'bronze' the Sifbronze technique was born.

1925 "Taking the initials SIF from Suffolk Iron Foundry and adding 'bronze', the Sifbronze technique was born"

1939 During the Second World War, most of the company's work was devoted to war work, largely for the Royal Air Force. The Sifbronze technique was used for the fabrication of air frames, amongst other military applications. **1945**

Further developments in the welding industry throughout the 1960's produced the demand for both faster and more efficient techniques. This saw the introduction of the semi-automatic MIG welding process which required new, high quality materials.

At this point Sifbronze expanded their already growing range of consumables to include a consumable electrode wire, SifMig.


Queen Elizabeth II takes the plunge

"When the QE2 was built, over 2,600 miles of SIFMIG was used"

Upon the popularity and reliability of this new, consumable, when the QE2 was built, over 2,600 miles of SifMIG was used in welding the 1,200 tons of aluminium of her superstructure.

In recent years, the company has taken positive steps to focus on it's SIF brand and heritage in the welding industry. The product range of consumables continues to develop and expand to meet the anticipated demands of our market place.

Consumables

Why Sif?

Sif offer a comprehensive range of high quality consumables for every application. You can rest assured that by purchasing Sif products you will receive quality consumables, which has been rigorously tested, to ensure the best product is produced for your application. Resting on over 85 years of heritage, the original brazing rod is still within our range and like back in 1925, Sif are developing innovative new products to continue to assist the welder for future years.

High Standards

All Sif products comply with the highest, European, International and British standards and where necessary have received 3rd party additional approval. A selection of products have the prestigious Lloyds Register approval, therefore guaranteeing reliability and consistent performance.

Extensive Range

Holding a full range of over 100 consumables, and even catering for specialised areas such as Duplex stainless and welding Cast Iron, Sif can offer you a solution for your application. Constant development, and working within the strictest guidelines, ensure our entire range is of consistent outstanding quality while expanding to meet the continually developing needs of the industry.

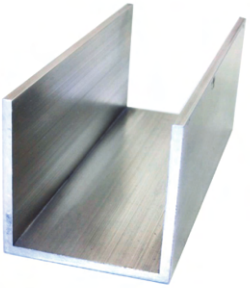
Sif Bronze
The Original
Consumable.

Aluminium

Aluminium and its alloys have special properties of lightness, strength, conductivity, malleability etc which make it a particularly useful material in a variety of industries. The metal can be either in 'cast' form or extruded (wrought), which then divides into non-heat treatable and heat treatable. Generally, it is readily weldable, but it is important to understand some of its characteristics.

In air aluminium immediately forms an oxide layer on its surface, which will increase in thickness with time. This oxide layer must be controlled during the welding process, by chemically and mechanically cleaning the metal, using an aggressive flux or ensuring the arc has reverse polarity (electrode positive). As aluminium is a very good thermal conductor, it will rapidly disperse heat, Care must be taken to avoid distortion and possibly cracking.

Unlike steel, there is no change in colour as it is being heated. Look out for a 'wet' appearance. For gas brazing, melting of flux powder is a temperature indicator.



Brass/Bronze

Brass is a generic term covering a wide range of copper alloys containing additions of zinc. All brasses, which includes Gilding Metal, can be silver soldered, MIG, and TIG welded successfully. However, the addition of lead for free cutting brass in gunmetal (LG1 & LG2) causes porosity and fume problems with gas shielded arc welding. Phosphor Bronze, copper/tin alloys such as PB2, can be readily brazed or welded. Gas welding of brass is not recommended as the zinc will tend to vaporise causing fumes (zinc oxide) and porosity.

For MIG and TIG welding a shielding gas of argon or argon/carbon dioxide is used. If it is felt necessary to use preheat, this must be limited to less than 80°C, otherwise the structure of the brass may become altered.

For successful 'bronze welding' or 'Sifbronzing', parts must be clean, and for optimum strength a 60° - 90° vee preparation is required. Using leftward welding technique, the parts should be heated with an oxidising flame to a 'dull red', before introducing the Sifbronze rod and flux. Overheating must be avoided, as this will lead to porosity and inferior work. Sifbronze flux plays an important role not just cleaning the metal, but it covers the weld pool surface, preventing further oxidation of the molton bronze.

Cast Iron

Broken castings should be aligned and tack-welded into position before pre-heating. All castings must be carefully supported on firebricks with a space of at least three inches beneath and preheated in a muffle to between 600°C and 800°C.

An oxy-acetylene flame, of ample capacity for the thickness of metal to be welded, is adjusted to a neutral condition. The edges of the fracture, or the sides of the vee groove, are melted by flame application; A little Sif Cast Iron Flux sprinkled in the weld area assists in forming a fluid pool of metal.

It is recommended that, on completion of welding, the casting should be brought once again to a uniform temperature of 600°C and 800°C and then allowed to cool very slowly inside the muffle. Cast iron welds correctly made by the oxy-acetylene process using SuperSilicon No.9 rods can be relied upon to provide a soft and easily machinable deposit with full physical properties similar to those of the parent metal. For spheroidal graphite cast iron, follow the above procedure and ensure you are using SIF Super Cast Iron.

Copper

Pure Copper has characteristics of high thermal and electrical conductivity and, because the metal requires about six times more heat (melting point is 1,083°C) for fusion welding than steel, particular care must be taken during welding and brazing.

Tough Pitch copper, which includes most varieties of high conductivity copper, contains up to 0.5% oxygen (cuprous oxide) and is notsuitable for fusion welding since it has a tendency to embrittlement and cracking, though it can be brazed. Deoxidised copper, where the oxygen has been removed during manufacture by the use of deoxidising agents, can be fusion welded.

For MIG and TIG welding it will be necessary to preheat the workpiece if it is over 6mm thick. The usual shielding gas is argon, but with thicker material an argon/helium mixture can beneficially increase the arc temperature. Consumables to be used are SifMIG 985 and SifSilCopper No985, although SifSilCopper No7 HQ can be used for TIG welding sheet up to 3mm thick. Gas welding of copper, such as whiskey stills, tanks etc, requires the parts to be preheated to 600°C and slowly cooled on completion of the joint.

SifSilCopper No7 together with SifSilCopper flux will produce a joint with excellent colour match.

Magnesium

Magnesium alloys containing small amounts of aluminium, manganese, zinc, zirconium, etc., have strength equalling that of mild steels. They can be rolled into plate, shapes and strip. Magnesium can be cast, forged, fabricated and machined.

As a structural metal it is used in aircraft. It is used by the materials-moving industry for parts of machinery and for hand-power tools due to its strength to weight ratio. Magnesium can be welded by many arc and resistance welding processes, as well as by the oxyfuel gas welding process, and it can be brazed.

The normal metallurgical factors that apply to other metals apply to magnesium as well. Magnesium is a very active metal and the rate of oxidation increases as the temperature is increased. The melting point of magnesium is very close to that of aluminium, but the melting point of the oxide is very high. In view of this, the oxide coating must be removed. Magnesium has high thermal heat conductivity and a high coefficient of thermal expansion.

The thermal conductivity is not as high as aluminium but the coefficient of thermal expansion is very nearly the same. The absence of colour change is not too important with respect to the arc welding processes.

Stainless Steel

Stainless steel is a generic term for a range of steels that contain a minimum of 12% chromium, although other elements such as nickel and molybdenum are added to improve corrosion resistance, which is their primary feature and use. Stainless Steels are grouped primarily into four classes depending on their crystal structure; austenitic (304, 308, 316, etc), martensitic (410, and 416), ferritic (409, and 430) and duplex (2304, 2205, 2507 etc). The groups of stainless steel most commonly welded are austenitic and duplex.

Austenitic steels have austenite as their primary phase (face centred cubic) structure. Austenite steels make up over 70% of total stainless steel production. They contain a maximum of 0.15% carbon, a minimum of 16% chromium and sufficient nickel and/or manganese to retain an austenitic structure at all temperatures from the cryogenic region to the melting point of the alloy.

Duplex Stainless Steels have a mixed microstructure of austenite and ferrite and have roughly twice the strength compared to austenitic stainless steels and also improved resistance to localized corrosion, particularly pitting, crevice corrosion and stress corrosion cracking. They are characterised by high chromium (19-32%) and molybdenum (up to 5%) and lower nickel contents. When welding stainless steel it is imperative that the weld and root face are protected from the atmosphere to eliminate the creation of chromium carbides.

Steel

As a general statement steel is readily weldable by the majority of welding processes. With alloy steels, it is necessary to select an appropriate filler metal for the material and service situation that the weld will be subjected to. As a guide, carbon content is the first consideration, followed by silicon and manganese. If there are other elements such as chromium, molybdenum etc, then these will usually take priority over carbon.

In todays world, the first thought for welding steel is to use the MIG process and SifMIG SG2 wire, or perhaps if a higher UTS is required SifMIG SG3. If deposition rate is important, then SifCored E71T-1 flux cored wire should be considered.

Steel can also be MIG brazed, as in the automotive industry on manganese boron steel with SifMIG 968. Other copper alloy wires SifMIG 8 and 328 are also suitable for brazing.

Gas Welding

The gas welding process uses heat from a flame generated by a mixture of a fuel gas (predominantly acetylene) and oxygen. The flame can reach a temperature of up to 3150°C, enough to melt the parent material being welded together.

Prior to welding, the flame profile must be adjusted to produce an un-shadowed cone at the back of the flame. Which provides the maximum heating efficiency. Once the flame is optimised the tip of the inner cone is presented to the joint and held until a molten pool begins to form on the surface of the parent material.

Most gas welding applications require an additional filler material to be added and this has to be fed into the molten weld pool manually by the welder.

Flame Setting

NEUTRAL FLAME
(balanced oxygen and acetylene)
For mild steel and general welding

OXIDIZING FLAME
(excess oxygen)
For welding brass and 'Sifbronzing'

CARBURIZING FLAME
(excess acetylene)
For aluminium, stainless steels and for hardfacing

TYPICAL FLAME TEMPERATURES

Oxy-acetylene	3200°C
Oxy-propane	2500°C
Oxy-natural gas	2200°C
Air-acetylene	2460°C
Air-natural gas	1870°C
Air-propane	1750°C

SIF FLUXCORED ALUMINIUM

Our Fluxcore AlSi5 is a flux cored aluminium wire rod for oxy-acetylene welding, repairing and surfacing forged and cast aluminium-silicon alloys and joining dissimilar aluminium alloys with a maximum 7% Si content. The internal flux core of the rod eliminates the need for additional fluxes.

Suitable for use in general fabrication and construction with aluminium base metals. Also suitable for marine and offshore construction along with repair and maintenance applications.

Can be used with Aluminium based materials such as Aluminium-MgSi alloys, Aluminium-Mg alloys upto 2.5% Mg, Aluminium-MuCu alloys, Aluminium-Si cast alloys and can also be used for joining dissimilar aluminium alloys.

Positions

For use in fillet positions only.

Typical Weld Metal Composition

Si 5% Mn 0.05% Al Bal

Typical Mechanical Properties

Melting Point	573-625°C
Ult Tensile Strength	130 N/mm^2
Hardness	40

Suitable Processes
Oxy/Acet Brazing

Available Formats

Dia.	1kg
3.0mm	RO153001F

Standards

EN ISO 18273 S 4043A

SIF SUPER SG CAST IRON

SIFSuper SG Cast Iron is a specialist rod for use in full-fusion oxy-acetylene welding of Spheroidal Graphite cast iron, providing a machinable weld and good colour match.

Can be used to join castings, building up worn parts, surfacing new castings and for the repair of all Spheroidal Graphite cast iron products. Suitable for use in the manufacture and repair of components made from Spheroidal Graphite cast iron. This rod is cast in a square section and available in a choice of two diameters. Some pre-heating may be required before welding. Use with SIF Cast Iron flux for best results.

Positions

For use in all positions, except overhead fillet.

Suitable Processes
Oxy/Acet Welding

Typical Weld Metal Composition

C 3.7% Si 2.5% Mn 0.1%
Fe Bal

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	650 N/mm²
Hardness	180

Available Formats

Dia.	1kg	5kg
6mm	RO296001	RO296050
10mm		RO291050

SIFSILCOPPER NO7

Our SIFSilCopper No7 is an easy flowing, high quality copper rod used for full-fusion welding dioxodised copper sheet. The finished weld is free from porosity and copper oxide inclusions.

This rod can be used for fabrication of stills for the brewing industry, repairs to copper pipes and castings, calorifiers, fireboxes and copper fittings. It exhibits a viscous weld pool and is typically best used on oxygen-free copper types. Preheating may be required on material thickness of >3mm (to a maximum of 60°C). Use with SIFSilCopper Flux for best results.

Positions

For use in all positions.

Typical Weld Metal Composition

Ag 1% Cu Bal

Typical Mechanical Properties

Melting Point	1060°C
Ult Tensile Strength	200 N/mm²
Hardness	75

Suitable Processes
Oxy/Acet Welding

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO071601	RO071625	RO071650
2.4mm	RO072401	RO072425	RO072450
3.2mm	RO073201	RO073225	RO073250

Standards

EN ISO 24373 Cu 1897 (CuAg1)
BS 1453 C1

SIF SUPER SILICON NO9

This rod is suitable for full fusion welding of cast iron, providing a high strength weld metal which is easily machinable. It gives an excellent colour match and has the same structure as grey cast iron.

The typical use is for joining castings, building up worn parts, surfacing new castings and for the repair of all cast iron items. Some pre-heating may be required before welding (not quite red hot) and a slow cooling rate is preferred, which may be achieved by wrapping the finished component, or immersing it in sand. This rod is cast in a square section. Use with SIF Cast Iron Flux for best results.

SuperSilicon No9 can also be used in TIG welding if the surface has been ground away and angled to a fine point. Suitable for use in the production and construction industries, particularly the repair and maintenance of cracked, broken or worn cast iron parts. Ideal for joining cast iron to high-alloyed steel or cast iron to manganese steel plates.

Positions

For use in all positions, except overhead fillet.

Suitable Processes
Oxy/Acet Welding

Typical Weld Metal Composition

C	3.3%	Si	3%	Mn	0.7%
S	0.1%	P	0.5%	X	Bal

Typical Mechanical Properties

Melting Point	1250°C
Ult Tensile Strength	200 N/mm²
Hardness	180

Available Formats

Dia.	1kg	5kg
4mm	RO094001	RO094050
5mm		RO095050
6mm		RO096050
10mm		RO091050

SIFSTEEL NO11

SIFSteel No11 is a low-carbon mild steel rod ideal for all types of mild steel and wrought iron welding. It is free-flowing and produces a high strength ductile weld. It is copper coated to ensure long shelf life. Particularly suitable for sheet metal panels, plates, tubes and fittings.

SIFSteel No11 can be used to weld structural, boiler or pipe steel. The operating temperature on the workpiece is a maximum of 350°C.

Positions

For use in general fabrication and construction, repair and maintenance.

Shielding Gas
Oxy/Acet Welding

Typical Weld Metal Composition

C 0.06% Mn 0.4%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	350 N/mm^2
Hardness	120

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO111601	RO111625	RO111650
2.4mm	RO112401	RO112425	RO112450
3.2mm	RO113201	RO113225	RO113250
4.8mm			RO114850

Standards

BS: 1453 A1
EN 12536 01

SIFSTEEL NO22

Our SIFSteel No22 is a special alloy steel rod containing 1.5% Manganese for toughness. It provides a weld deposit of high strength and ductility. Recommended for oxy/acetylene welding of steel pipelines and pressure vessels, but can also be used with TIG in suitable applications.

This rod is highly suitable for use in heating and ventilation, offshore and ship repair applications, particularly for welding pressure vessels.

Positions

For use in all positions, except vertical down.

Suitable Processes
Oxy/Acet Welding

Typical Weld Metal Composition

C	0.1%	Si	0.1%	Mn	1.1%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	450N/mm^2
Hardness	140

Available Formats

Dia.	5kg
1.6mm	RO221650
2.5mm	RO222550
3.0mm	RO223050

Standards

EN 12536 011
BS 1453 A2

MIG Welding

The MIG welding process utilises an electric arc, which is formed between the parent material and a tip of continually-fed consumable welding wire. The heat from the electric arc causes the parent material to melt and the consumable wire is transferred to the parent material and consumed into the welding pool. The heat produced by the welding arc is controlled by adjustment of the welding voltage and wire feed speed.

During the welding process the arc is protected by a gas shielding which minimises the possibility of atmospheric contamination. High production rates can be achieved as the consumable wire is continually fed from a large spool (commonly 15kg) allowing long, uninterrupted runs to be made.

MIG Brazing

MIG Brazing of pre-aluminised (galvanised) sheet

Zinc, in a galvanised coating, melts at temperatures of around 420°C and vaporises at 906°C. This causes unfavourable effects on the welding process as unalloyed SG2MIG welding wire melts around 1450°C. The zinc starts to vaporise as soon as the arc is struck; zinc vapours and oxides can lead to porosity and inadequate fusion. An alternative is to use the MIG brazing process, using our copper-silicon alloy wire, SIFMIG 968 (CuSi3). SIFMIG 968 has a relatively low melting point of approx 980°C.

On thin sheet steel and galvanised sheet use 0.8mm / 1.0mm SIFMIG968, keeping heat input to a minimum (approx 45-65 amps). Select a shielding gas, which will maintain a stable arc, such as pure Argon or Argon 2% CO2 mix.

Pushing MIG torch (as conventional MIG welding) will ensure not too deep penetration, avoiding burn through on thin sheet. If galvanised coating is thick, use dip transfer with a short arc.

For best results, use a programmable inverter MIG machine. This type of system will produce a neat, clean brazed joint, requiring a minimal amount of joint dressing prior to painting.

SIFMIG 1050

Our SIFMIG 1050 is a pure Aluminium (99.5% min) shaved wire which produces a ductile weld equal to that of the base metal. This wire is highly recommended for alloys that are to be anodised.

The joining of pure Aluminium by both MIG and TIG process of 1050, 1080, 1200, LM0.

Positions

For use in all positions.

Current	DC=+
Shielding Gas	Pure Argon Argon/Helium

Typical Weld Metal Composition

Mg 0.2% Si 0.4% Mn 0.2%
Fe 0.16%

Typical Mechanical Properties

Melting Point	650°C
Ult Tensile Strength	90N/mm^2
Hardness	15

Available Formats

Dia.	6.5kg
0.8mm	WO140865
1.0mm	WO141065
1.2mm	WO141265
1.6mm	WO141665

Standards

EN ISO 18273 S Al 1070 (A199.7)
BS 2901 1050A (GIB) (NG3)
AWS A5.10 ER1100
BS 1845 NG3

SIFMIG 4043

An Aluminium alloy with 5% silicon giving excellent flow characteristics and penetration. Precision layer-wound for positive uninterrupted feeding. Suitable for use in gas-shielded MIG welding on both semi-automated and fully automated systems.

SIFMIG 4043 is ideal for welding duralumin, cast and wrought alloys 6063 (H9), 6061 (H20) and 6082 (H30), as well as other '4 series' Aluminiums. The resulting weld will discolour if anodised. Pre-heating up to 120°C may be necessary, subject to material size and thickness. Wire brushing between passes is recommended, to remove build up of surface oxides.

Ensure that the parent metal surface is cleaned and fully degreased prior to welding. Clean joints with a stainless steel brush.

Positions

For use in all positions, except vertical down

Current	DC=+
Shielding Gas	Pure Argon Argon/Helium

Typical Weld Metal Composition

Si	5%	Al	Bal

Typical Mechanical Properties

Melting Point	635°C
Ult Tensile Strength	120N/mm²
Hardness	40

Available Formats

Dia.	0.5kg	2kg	6.5kg
0.8mm	WO150805	WO150820	WO150865
1.0mm	WO151005	WO151020	WO151065
1.2mm	WO151205	WO151220	WO151265
1.6mm			WO151665

Standards

EN ISO 18273 s Al 4043A (AlSi5)
BS 2901 (AlSi5) 4043A
BS 1845 NG21

SIFMIG 4047

An Aluminium alloy containing 12% Silicon, for high silicon alloys and automotive work. Typically chosen where good colour matching to parent material is important. Precision layer-wound for positive uninterrupted feeding. Suitable for gas-shielded MIG welding on both semi-automated and fully-automated systems.

SIFMIG 4047 is suitable for all types of Aluminium castings. Typical applications include repair, surfacing and construction of window frames, tubes, furniture, engine blocks and automotive parts.

Ensure that the parent metal surface is cleaned and fully degreased prior to welding. Clean joints with a stainless steel brush.

Positions

For use in all positions, except vertical down

Current	DC=+
Shielding Gas	Pure Argon Argon/Helium

Typical Weld Metal Composition

Al Bal Si 12%

Typical Mechanical Properties

Melting Point	585°C
Ult Tensile Strength	130N/mm^2
Hardness	50

Available Formats

Dia.	2kg	6.5kg
1.0mm	WO161020	WO161065
1.2mm		WO161265
1.6mm		WO161665

Standards

EN ISO 18273 S Al 4047A (AlSi12)
BS 2901 4047A
BS 1845 NG2

SIFMIG 5183

A special Aluminium alloy solid MIG wire containing 5% Magnesium and 0.75% Manganese, for improved weld strength and resistance to sea water.

SIFMIG 5183 can be used to weld forged and cast Aluminium- Manganese alloys in applications where high tensile strengths and/or high resistance to sea water is required. Typical applications include ship building, pressure vessel fabrications and general construction. Pre-heating up to 120°C may be necessary, subject to material size and thickness.

Wire brushing between passes is recommended to ensure removal of surface oxide build up. Ensure that the parent metal surface is cleaned and fully degreased prior to welding. Clean joints with a stainless steel wire brush.

Positions

For use in all positions, except vertical down.

Current	DC=+
Shielding Gas	Pure Argon Argon/Helium

Typical Weld Metal Composition

Mg	5%	Mn	0.75%	Al	Bal

Typical Mechanical Properties

Melting Point	640°C
Ult Tensile Strength	275N/mm²
Hardness	65

Available Formats

Dia.	6.5kg
1.0mm	WO281065
1.2mm	WO281265

Standards

EN ISO 18273 S Al 5183 (AlMg4.5Mn0.7)
BS 2901 5183

SIFMIG 5356

A general purpose solid Aluminium wire with 5% Magnesium that has excellent corrosion resistance and high strength. Precision layer wound for positive uninterrupted feeding. Ideal for both semi-automated and fully-automated systems.

Suitable for welding Magnesium bearing Aluminium alloys such as 5251 (N4), 5251 (N5), 5454 (N51) and also heat treatable alloys 6063 (H9), 6061 (H20) and 6082 (H30). Also suitable for welding forged and cast Aluminium-Magnesium components, and dissimilar Aluminium alloy grades containing a maximum of 5% Mg. Can also be used to weld components which are to be subsequently anodised. Pre-heating up to 120°C may be necessary, subject to material size and thickness.

Wire brushing with a stainless brush between passes is recommended to ensure removal of surface oxide build up. Suitable for use on plate, pipe, tube and components. Ensure that the parent metal surface is cleaned and fully degreased prior to welding.

Positions

For use in all positions, except vertical down.

Current	DC=+
Shielding Gas	Pure Argon Argon/Helium

Typical Weld Metal Composition

Mg	5%	Al	Bal

Typical Mechanical Properties

Melting Point	640°C
Ult Tensile Strength	250N/mm^2
Hardness	60

Available Formats

Dia.	0.5kg	2kg	6.5kg
0.8mm	WO270805	WO270820	WO270865
1.0mm	WO271005	WO271020	WO271065
1.2mm	WO271205	WO271205	WO271265
1.6mm			WO271665

Standards

EN ISO 18273 S Al 5356 (AlMg5)
BS 2901 5356
BS 1845 NG6

SIFMIG 5556

An Aluminium alloy containing 5.3% Magnesium and a normal 0.8% Manganese. All elements are closely controlled for optimum weld strength. It produces a higher strength weld metal than standard 5% Mg 5356 alloy.

Normally used on 5083 (N8) and for military applications when the full maintaining strength is required. 5083 is an alloy widely used in structural applications.

Ensure that the parent metal surface is cleaned and fully degreased prior to welding. Clean joints with a stainless steel brush.

Positions

For use in all positions, except vertical down.

Current	DC=+
Shielding Gas	Pure Argon Argon/Helium

Typical Weld Metal Composition

Mg	5.3%	Mn	0.8%	Cr	0.1%
Ti	0.1%	Al	Bal		

Typical Mechanical Properties

Melting Point	640°C
Ult Tensile Strength	300N/mm²
Hardness	70

Available Formats

Dia.	0.5kg	2kg	6.5kg
1.0mm			WO371065
1.2mm	WO371205	WO371220	WO371265
1.6mm			WO371665

Standards

EN ISO 18273 S Al 5556A (AlMg5Mn)
BS 2901 5556

SIFMIG 8

A phosphor Bronze wire containing 7% tin, which is suitable for fusion welding of phosphor bronze castings, copper alloys, and brass. It is also used for MIG brazing on ferrous, stainless and dissimilar metals or for applying a bearing surface.

Popularly used on bronze, brass, copper and copper alloys for applications such as crack repair in castings, and to provide a wear-resistance layer on surfaces subject to abrasion.

Where parent metal contains trace lead (such as LG2), it is advisable to apply SIFMIG 8 in stages, grinding between passes to remove lead drawn into the joint and to reduce porosity. Ensure surfaces of parent metal are cleaned thoroughly before welding.

Positions

For use in all positions, and particularly useful in hard to reach areas

Typical Weld Metal Composition

Sn 7% Cu Bal

Typical Mechanical Properties

Melting Point	900-1050°C
Ult Tensile Strength	260N/mm^2
Hardness	80

Current	DC=+
Shielding Gas	Pure Argon or 95/5 ArCO2 (5% CO2)

Available Formats

Dia.	0.7kg	4kg	12.5kg
0.8mm	WO080807	WO080840	WO080812
1.0mm	WO081007	WO081040	WO081012
1.2mm	WO081207	WO081240	WO081212

Standards

EN ISO 24373 Cu 5180A (CuSn6P)
BS 2901 C11

SIFMIG 44

An Aluminium Bronze alloy wire with the addition of nickel, suitable for welding materials of a similar composition and for MIG brazing dissimilar metal joints in maintenance applications which require increased hardness. The nickel content provides increased wear, cavitation and corrosion resistance, making SIFMIG 44 a popular grade in the marine sector.

It is recommended for use as a combination repair and surfacing metal, to provide wear-resistant surfaces, and for delivering resistance to corrosive media such as salt. SIFMIG 44 can be used on Aluminium bronze alloys and cast Aluminium bronzes. A small amount of pre-heat/warming may be required prior to brazing, depending on the material thickness and Aluminium content. Suitable for ship building and offshore industries, power generation, repair and maintenance and the chemical industry. Particularly useful in the maintenance of impellers/propellers, car parts, tools and bearings.

Positions

For use in all positions.

Typical Weld Metal Composition

Al	9%	Fe	3.2%	Mn	1.2%
Ni	4.5%	Cu	Bal		

Typical Mechanical Properties

Melting Point	1050°C
Ult Tensile Strength	700N/mm²
Hardness	290

Current	DC=+
Shielding Gas	Pure Argon Argon/Helium

Available Formats

Dia.	4kg	12.5kg
0.7mm		WO440812
1.2mm	WO441240	WO441212

Standards

EN ISO 24373 Cu 6328 (CuAl9Ni5Fe3Mn2)
AWS A5.7-84 ERCuNiAl
BS 2901 C20/26

SIFMIG 328

This is a 92/8 Aluminium Bronze wire suitable for welding materials of a similar composition and copper alloys. It is ideal for MIG brazing dissimilar metal joints and maintenance applications. Recommended for use as a surfacing metal for wear-resistant surfaces having relatively light loads, for resistance to corrosive media such as salt.

Can be used on Aluminium bronze alloys: CuAl8Fe3, CuAl10FeMn2, CuAl9Mn9 and cast Aluminium bronzes G-CuAl8, G-CuAl10Ni. A small amount of pre-heat/warming may be required prior to brazing, depending on the material thickness and Aluminium content.

Suitable for use in the ship building and offshore industries, power generation, repair and maintenance, and the chemical industry. Particularly useful in the maintenance of car parts and tools, bearings in general and galvanized steel sheets.

Positions

For use in all positions

Typical Weld Metal Composition

Al 8% Cu Bal

Typical Mechanical Properties

Melting Point	1030°C
Ult Tensile Strength	430N/mm^2
Hardness	85

Current	DC=+
Shielding Gas	Pure Argon

Available Formats

Dia.	4kg	12.5kg
0.8mm	WO320840A	WO320812A
1.0mm	WO321040A	WO321012A
1.2mm	WO321240A	WO321212A

Standards

EN ISO 24373 Cu 6100 (CuAl17)
AWS A5.7 ERCuAl-AI
BS 2901 C28

SIFMIG 967

An easy to weld copper wire containing 2% Silicon and 1% Manganese. These properties produce optimised flow characteristics and suitability for variable root gaps, high temperatures and corrosion resistance as well as good behaviour under compression stresses.

Suitable for brazing of galvanised autobody steel sheets and other steels as well as copper, copper alloys and cast iron.

Provides excellent gap-fills in automotive parts and pressing applications.

Positions

For use in all positions.

Current	DC=+
Shielding Gas	Pure Argon

Typical Weld Metal Composition

Si 2% Mn 1.0% Cu Bal

Typical Mechanical Properties

Melting Point	1030 - 1050°C
Ult Tensile Strength	285N/mm²
Hardness	62

Available Formats

Dia.	4kg	12.5kg	200kg
0.8mm	WO970840	WO970812	WO9708200
1.0mm	WO971040	WO971012	WO9710200
1.2mm	WO971240	WO971212	WO9712200

Standards

EN ISO 24373 Cu 6511 (CuSi2Mn1)

SIFMIG 968

A Copper wire containing 3% Silicon and 1% Manganese used for the fusion welding materials of similar composition, copper alloys (brass) and for MIG brazing steels. It is also suitable for surfacing steel and dissimilar metal applications. The Silicon and Manganese provide good flow properties and wear-resistance.

Frequently used to weld steels and cast-iron to copper, brass and bronze. SIFMIG 968 is the choice material for the manufacture and repair of motor vehicles. Can be used on galvanised and bronze coated steels. Pulsed MIG is recommended.

Suitable for use in various industries, including ship building and offshore, automotive, heating and ventilation. Can also be used in sculpture making and repair, the manufacture of bronze statues and castings, and tubular products.

Positions

For use in all positions.

Typical Weld Metal Composition

Cu Bal Si 3% Mn 1%

Typical Mechanical Properties

Melting Point	980 - 1020°C
Ult Tensile Strength	350N/mm²
Hardness	90

Current	DC=+
Shielding Gas	Pure Argon 1% O2 Argon for MIG brazing

Available Formats

Dia.	0.7kg	4kg	12.5kg
0.8mm	WO960807	WO960840	WO960812
1.0mm	WO961007	WO961040	WO961012
1.2mm		WO961240	WO961212

Standards

EN ISO 24373 Cu 6560 (CuSi3Mn1)
AWS A5.7 ERCuSi-A
BS 2901 C9

SIFMIG 985

A high quality wire containing a minimum of 98.5% copper with deoxidising elements. Provides resistance to high temperature and corrosion.

Used in MIG welding of copper, this wire is ideal for joint welding of high-oxygen copper joints and materials. If material thickness is >6mm, pre heat component 600°C< - control cooling after welding to ensure slow, gradual reduction in heat.

Positions

For use in all positions.

Typical Weld Metal Composition

Sn	0.85%	Mn	0.25%	P	0.01%
Si	0.2%	Cu	Bal		

Current	DC=+
Shielding Gas	Pure Argon

Typical Mechanical Properties

Melting Point	1025°C
Ult Tensile Strength	220N/mm²
Hardness	70

Available Formats

Dia.	4kg	12.5kg
0.8mm	WO980840	WO980812
1.0mm	WO981040	WO981012
1.2mm	WO981240	WO981212

Standards

EN ISO 24373 Cu 1898 (CuSn1)
BS 2901 C7

SIFMIG 308LSi

Stainless steel filler wire for welding 18/8 (304) austenitic stainless steels, providing good corrosion resistance and wear-resistance.

Typical applications include all industries where similar materials (incl. higher carbon types) as well as ferritic 13% Cr Steels are used. SIFMIG 308LSi is our solid wire for MAG welding low carbon 18Cr10Ni austenitic stainless steel grades. SIFMIG 308LSi is also suitable for Nb (Cb) or Ti stabilised grades 347 and 321. Weld metal has an excellent resistance to general and intergranular corrosion (up to 350EC), good resistance to oxidising acids and cold reducing acids.

Base materials to be welded: ASTM/AISI Grade 302, 304, 304L, 304LN, 321, 347. WNr 1.4306, 1.4301, 1.4541, 1.4550, 1.4311, 1.4311, 1.4300. CrNi 18 10 and similar stainless steel grades.

Positions

For use in all positions.

Typical Weld Metal Composition

C	0.02%	Si	0.8%	Mn	1.5%
Ni	10%	Cr	21%		

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	650N/mm^2
Hardness	180

Current	DC=+
Shielding Gas	Pure Argon M12-M13= ArCO2-ArO2

Available Formats

Dia.	0.7kg	3.75kg	15kg
0.8mm	WO330807	WO330840	WO330815
1.0mm	WO331007	WO331040	WO331015
1.2mm	WO331207	WO331240	WO331215

Standards

EN ISO 14343 19 9 LSi
AWS A5.9 ER 308LSi
BS 2901 308 S93

SIFMIG 309LSi

This Stainless steel wire contains higher chromium and nickel. It can be used for joining material of similar composition and also dissimilar stainless steels.

Applications include joining high strength steels, un- and low alloyed heat-treatable steels, stainless, ferritic chromium, austenitic chrome-nickel steels and austenitic manganese steels.

SIFMIG 309LSi is our solid wire for MAG welding corrosion resistant and heat resistant CrNi steels, dissimilar metals and buffering. SIFMIG 309LSi is suitable for joining clad steels. The FN content (FN -16) ensures good cracking resistance.

Can weld chemically resistant weld claddings ranging from ferritic-pearlitic steels to fine grain steels, including high temperature fine grain steels. Also used as an intermediate after layer on steels before hard facing.

Positions

For use in all positions.

Typical Weld Metal Composition

C	0.1%	Si	0.4%	Mn	1.5%
Ni	13%	Cr	26%		

Current	DC=+
Shielding Gas	M13, ArCO2

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	650N/mm²
Hardness	180

Available Formats

Dia.	3.75kg	15kg
0.8mm	WO340840	WO340815
1.0mm	WO341040	WO341015
1.2mm	WO341240	WO341215

Standards

EN ISO 14343 23 12 LSi
AWS A5.9 ER 309LSi
BS 2901 309 S93

SIFMIG 312

This is a 29/9 stainless MIG wire, suitable for difficult-to-weld steels (manganese steels, tool and spring steels), and dissimilar steel grades. It has high resistance to weld metal cracking.

Typical applications for this wire include joining hard Manganese steels, spring steels, buffering as well as joining dissimilar steel grades. SIFMIG 312 is our solid wire for MAG welding which is to be considered a problem solver for all kinds of steel grades incl: Stainless and difficult to weld steels. SIFMIG 312 deposits a crack-resistant weld metal with an increased ferrite content of approx. FN50.

Materials to be welded: High strength, unalloyed heat treatable steels; Stainless, Ferritic Chromium and austenitic CrNi steels; Austenitic Manganese steels. Chemically resistant weld claddings ranging from Ferritic-Pearlitic steels to fine grain steels, including high temperature fine grain steels.

Positions

For use in all positions.

Typical Weld Metal Composition

C	0.1%	Si	0.4%	Mn	1.7%
Ni	9%	Cr	30%	Mo	0.1%

Current	DC=+
Shielding Gas	M12-M13= ArCO2-ArCO2

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	750N/mm^2
Hardness	200

Available Formats

Dia.	3.75kg	15kg
0.8mm	WO350815	WO350815
1.0mm	WO351040	WO351015

Standards

EN ISO 14343 29 9
BS 2901 312 S94
AWS A5.9 ER312

SIFMIG 316LSi

A Molybdenum bearing, stainless steel with low carbon content. It is corrosion resistant for welding molybdenum bearing austenitic stainless steels.

Universal in applications but typical for all industries where superior corrosion resistance is required: textile industry, paper mills, chemical industry, cellulose industry etc., resistance to general and intergranular corrosion (up to 400EC), good resistance to hot cracking. SIFMIG 316LSi is our solid wire for MAG welding low carbon 17Cr12Ni3Mo austenitic acid resistant stainless steel grades like AISI 316, 316L.

Base materials to be welded: ASTM/AISI Gr. 316, 316L, 316LN, 316Cb, 316Ti, WNr 1.4583, 1.4435, 1.4436, 1.4401, 1.4571, 1.4580, 1.4406*, 1.4429*, CrNiMo 17 12 3 and similar stainless grades.

*without postweld quenching.

Positions

For use in all positions.

Typical Weld Metal Composition

C	0.02%	Si	0.8%	Mn	1.5%
Ni	12%	Cr	19%	Mo	2%

Current	DC=+
Shielding Gas	M13 ArCO2

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	650N/mm²
Hardness	180

Available Formats

Dia.	0.7kg	3.75kg	12.5/15kg
0.6mm	WO210607	WO210640	WO210612
0.8mm	WO210807	WO210840	WO210815
1.0mm	WO211007	WO211040	WO211015
1.2mm	WO211207	WO211240	WO211215

Standards

EN ISO 14341 19 12 3 LSi
BS 2901 316 S93
AWS A5.9 ER 316LSi

SIFMIG 347

A Niobium-stabilised stainless steel wire which prevents weld decay, giving excellent corrosion resistance. The high silicon content gives better arc stability and weld metal flow which improves bead appearance, particularly when dip transfer welding.

Suitable for use on 18/8 type stainless steel, Nb and Ti stabilised such as 304, 321 and where the weld is subject to temperatures of 400°C and above.

Commonly used in shipbuilding, offshore and power-generation industries, as well as general structural fabrications and maintenance.

Positions

For use in all positions.

Current	DC=+
Shielding Gas	Ar/CO_2

Typical Weld Metal Composition

C	0.04%	Si	0.8%	Mn	1.5%
Ni	9.7%	Cr	19.5%	Nb	0.6%
P	0.015%	S	0.10%	Mo	0.1%
Cu	0.1%	N	0.06%		

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	630N/mm^2
Hardness	180

Available Formats

Dia.	12.5kg
0.8mm	WO200815
1.0mm	WO201015
1.2mm	WO201215

Standards

EN ISO 14343 19 9 NbSi
BS 2901 347 S96

SIFMIG DUPLEX

A continuous, solid, bare duplex stainless steel filler wire, for welding austenitic-ferritic alloys where a high resistance to intergranular corrosion, stress corrosion and pitting is required.

SIFMIG Duplex is a material that is increasing in popularity for its strength-to-weight ratio, price stability and corrosion resistant properties. It is used for sheet and pipe applications, in a wide range of industry sectors, including petrochemical, chemical/pharmaceutical, pulp & paper, mining and food & beverage.

SIFMIG Duplex 2209 is designed to be used to weld parent material of a similar composition, including 2205 grades and is common in sour applications where exposure to corrosive chlorides and hydrogen sulphides can occur.

Positions

For use in all positions.

Current	DC=+
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C	0.02%	Si	0.5%	Mn	1.7%
Ni	8.5%	Cr	22.5%	Mo	3.3%

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	765N/mm²
Hardness	240

Available Formats

Dia.	15kg
0.8mm	WO220815
1.0mm	WO221015
1.2mm	WO221215

Standards

EN ISO 14343-A 22 9 3 N L
AWS A5.9 ER 2209

SIFCORED 308L

A rutile flux cored wire which operates with a very stable, spatter free arc. SIFCored 308LT1-1/4 is designed for welding 18/10 stainless steels, and alloys of a similar composition.

This wire is designed for welding 18%Cr-10%Ni type stainless steels like type 304L. Due to the low carbon contents in the weld metal, it is possible to obtain high resistance to intergranular corrosion. Offers fast deposition and easy slag removal for increased productivity.

Positions

For use in all positions, including vertical down

Current	DC=+
Shielding Gas	CO2/ArCO2

Typical Weld Metal Composition

Ni	9.9%	Cr	19.5%	Mn	1.7%
C	0.03%	Si	0.70%	P	0.0019%
S	0.004%				

Typical Mechanical Properties

Ult Tensile Strength	580N/mm^2
Yield Strength	410N/mm^2
Impact Values ISO-V	50J@-20°C
Elongation	41%

Available Formats

Dia.	15kg
1.2mm	WF331215

Standards

EN ISO 17633-A-T 19 9 L P C/M 1
AWS A5.22 E308LT1-1/4

SIFCORED 309L

A rutile cored wire which operates very stable, spatter free arcs producing bright, smooth weld bead surfaces and self releasing slag.

Designed for dissimilar welding such as welding stainless steel to mild steel or low alloy steel. They are also suitable for the first layer on mild steel or low alloy steel prior to overlaying. Offers fast deposition and easy slag removal for increased productivity.

Positions

For use in all positions, including vertical down

Current	DC=+
Shielding Gas	CO2/ArCO2

Typical Weld Metal Composition

Ni	9.9%	Cr	19.5%	Mn	1.70%
C	0.03%	Si	0.70%	P	0.019%
S	0.004%				

Typical Mechanical Properties

Ult Tensile Strength	580N/mm^2
Yield Strength	410N/mm^2
Impact Values ISO-V	50J@-20°C
Elongation	41%

Available Formats

Dia.	15kg
1.2mm	WF341215

Standards

EN ISO 17633-A-T 23 12 L P C/M 1
AWS A5.22 E309LT1-1/-4

SIFCORED 316L

A rutile flux cored wire which operates very stable, spatter free arcs, producing bright, smooth weld bead surfaces and self releasing slag.

Designed for welding 18%Cr-12%Ni-2.5%Mo stainless steels like 316L. With low carbon contents in their weld metals, it is possible to obtain high resistance to intergranular corrosion. Offers fast deposition and easy slag removal, for increased productivity.

Positions

For use in all positions, including vertical down and is ideal for high productivity in vertical up positions.

Current	DC=+
Shielding Gas	CO2/ArCO2

Typical Weld Metal Composition

Ni	12.3%	Cr	18.4%	Mo	2.90%
C	0.03%	Si	0.70%	Mn	1.40%
P	0.019%	S	0.006%		

Typical Mechanical Properties

Ult Tensile Strength	570N/mm^2
Yield Strength	430N/mm^2
Impact Values ISO-V	46J@-20°C
Elongation	40%

Available Formats

Dia.	15kg
1.2mm	WF211215

Standards

EN ISO 17633-A-T 19 12 3 L P C/M 1
AWS A5.22 E316LT1-1/-4

SIFMIG SG2

Copper coated double-deoxidised mild steel MIG wire for welding unalloyed and low alloyed mild and medium tensile steels, for impact toughness down to -20°C. Manufactured with a high-quality copper finish for improved feeding. Precision layer wound.

Can be used on a wide variety of mild steels, structural steel, fine-grain steel, pipe steel, boiler steel and cast steel. Suitable for use in general fabrication, construction, tanks and boilers, repair and autobody applications. Features specific addition of manganese and silicon to provide good mechanical properties.

Positions

For use in all positions.

Typical Weld Metal Composition

C 0.1% Si 0.8% Mn 1.3%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	400N/mm²
Hardness	120

Current	DC=+
Shielding Gas	CO2, ArCO2

Available Formats

Dia.	0.7kg	5kg	15kg	250kg
0.6mm	WA180607	WA180650	WA180615	
0.8mm	WA180807	WA180850	WA180815	WA1808250
1.0mm		WA181050	WA181015	WA1810250
1.2mm			WA181215	WA1812250

Dia.	15kg Baskets
0.8mm	WA180815K
1.0mm	WA181015BS
1.0mm	WA181215K
1.2mm	WA181215BS
1.2mm	WA181215K

K = B300 (requires adaptor)
BS = BS300 (no adaptor needed)

Standards

EN ISO 14341-A: 2008 G3Si1
EN 440 G3Si1 BS 2901: A18
Din SG2

SIFMIG SG3

Copper coated double-deoxidised mild steel MIG wire, with increased silicon and manganese content, for welding unalloyed and low-alloyed mild and medium tensile steels requiring good impact toughness down to -20°C. Manufactured with a high-quality copper finish for improved feeding. Precision layer wound. SIFMIG SG3 typically provides a higher ultimate tensile strength over standard SIFMIG SG2.

Suitable for use in general fabrication, construction, ship building, tanks and boilers, repair and autobody applications. Comprises increased manganese and silicon to provide improved mechanical properties.

This MIG wire can be used on a variety of mild steels, structural steel, fine-grain steel, pipe steel, boiler steel and cast steel. Popular in the construction, power generation and offshore sectors.

Positions

For use in all positions.

Typical Weld Metal Composition

C 0.1% Si 1.0% Mn 1.75%

Current	DC=+
Shielding Gas	CO2, ArCO2

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	550-600N/mm²
Impact Value	70J@-20°C
Elongation	24%

Available Formats

Dia.	15kg	250kg
0.8mm	WG030815	WG0308250
1.0mm	WG031015	WG0310250
1.2mm	WG031215	WG0312250

Standards

EN ISO 14341-A: 2008 G4Si1
AWS A5. 18: ER70S-6

SIFMIG ZERO SG3

Double-deoxidised mild steel MIG wire, free from copper coating with increased silicon and manganese content for welding unalloyed and low-alloyed mild and medium tensile steels requiring good impact toughness down to -20°C. Manufactured with a high-quality uncoppered finish for improved feeding and conductivity.

SIFMIG Zero SG3 typically provides a higher ultimate tensile strength over standard SIFMIG SG2 and the absence of copper on the wire surface results in a cleaner deposit and avoids the metallurgical risks of increased copper in the weld pool.

The arc-stability characteristics and improved feedability of the SIFMIG Zero SG3 make it ideal for robotic or automated processes, where welding steadiness and uniformity are essential in order to avoid welding defects and very expensive cycle interruptions. Less post-weld clean up means less grinding. Popular in the construction sector, wind turbine tower fabrication and car industries.

Positions

For use in all positions.

Typical Weld Metal Composition

C 0.1% Si 1.0% Mn 1.75%

Current	DC=+
Shielding Gas	CO_2, ArCO_2

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	550-600N/mm²
Impact Value	100J@-20°C
Elongation	24%

Available Formats

Dia.	15kg/18kg	250kg
0.8mm	WA190815	
1.0mm	WA191018	WA1910250
1.2mm	WA191218	WA1912250

0.8mm is available on a 15kg wire basket. 1.0mm and 1.2mm diameters are available in 18kg wire baskets and 250kg drums

Standards

EN ISO 14341-A:2008 G4Si1
AWS A5. 18: ER70S-6

SIFMIG A15

A triple deoxidised mild steel MIG wire for MAG welding unalloyed and low alloyed galvanised structural steels. The Titanium, Zirconium and Aluminium make this product ideal for welding oxidised rusted material and also coated plate (primed or painted). It is also often used in the welding of rimming and semi-killed steels.

Suitable for use in the shipbuilding and offshore industry, general fabrication and construction, power generation, repair and maintenance and the transport and lifting industries. Suitable for use with CO2 and Ar-CO2 shielding gases. The wire is precision layer wound for positive uninterrupted feeding in semi-automatic and automated systems.

Popular in welding steel and C-Mn steels used in the fabrication of tanks, pipework, machinery, tubular furniture, chassis and steel frames structures.

Positions

For use in all positions.

Typical Weld Metal Composition

C	0.1%	Si	0.6%	Mn	1.3%
Al	0.2%				

Current	DC=+
Shielding Gas	Ar/ArCO2

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	440N/mm^2
Impact Value	80J@-20°C
Hardness	120

Available Formats

Dia.	15kg
0.8mm	WA150815
1.0mm	WA151015
1.2mm	WA151215

Standards

EN ISO 636A: 2008 W2Ti
AWS A5 18 ER70S-2
BS 2901 A15

SIFMIG A31

A copper coated, alloy steel wire containing 0.5% Molybdenum designed for welding low-alloy steels with high tensile strength and creep-resistance steels. Good impact strength at low temperatures.

Suitable for use on pipelines and pressure vessels with operating temperatures of about 500°C. Can also be used in applications for the repair of steel castings.

Positions

For use in all positions.

Current	DC=+
Shielding Gas	ArCo2

Typical Weld Metal Composition

C	0.1%	Si	0.7%	Mn	1.8%
S	0.01%	P	0.01%	Cu	0.12%
Mo	0.5%				

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	450N/mm²
Hardness	180

Available Formats

Dia.	1kg
0.8mm	WA310815
1.0mm	WA311015
1.2mm	WA311215

Standards

EN ISO 14341-A-G4Mo
AWS A5.18 ER80S-D2
BS 2901 A31

SIFMIG A32

A Copper coated, alloy steel wire containing 1.25% Chromium and 0.5% Molybdenum. It is ideal for low alloy and creep resistant steels.

Low alloy copper-coated MIG wire with 1.25 Cr and 0.5% Mo content to be used for the welding of creep-resistant steel. It is used in the chemical industry and in the ammonia synthesis process, for heat exchangers, boilers, piping and pressure vessels for temperature service up to about 550°C.

It will also find applications in the petro-chemical industries, suitable for facing on casting and casting repairs.

Positions

For use in all positions.

Current	DC=+
Shielding Gas	Ar/ArCo2

Typical Weld Metal Composition

C	0.1%	Si	0.5%	Mn	1.0%
Cr	1.25%	Mo	0.5%%		

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	500N/mm^2
Hardness	180

Available Formats

Dia.	15kg
0.8mm	WA320815
1.0mm	WA321015
1.2mm	WA321215

Standards

EN ISO 21952-A G CrMo1Si (1CM)
AWS A5.28 : ER80S-B2
BS 2901 A32

SIFMIG GASLESS

SIFMIG Gasless is our cored wire for self shielding single pass arc welding of unalloyed and low alloyed structural steels. The wire is excellent for joining thin sheet metals, size 0.8mm allows you to weld sheets as thin as 1.2mm. 0.8mm and 0.9mm are ideal for use on light industrial MAG welding machines with a max output range up to 160 - 170A.

Suitable applications include automotive repair, general fabrication, power generation and repair & maintenance.

Positions

For use in all positions.

Current
Shielding Gas n/a

Typical Weld Metal Composition

C 0.25% Si 0.4% Mn 0.7%
Al 2.4%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	400N/mm²
Hardness	120

Available Formats

Dia.	0.45kg	0.9kg	4.55kg
0.8mm	WG180805	WG180809	WG180845

Standards

AWS: E71T-GS

SIFCORED E70C-6M

A metal cored wire which produces low hydrogen weld metal with good mechanical properties. SIFCored E70C-6M is suitable for welding mild steel and 490MPa high tensile steels, at high rates of deposition.

Well suited for applications such as steel work, ship building, bridge construction, trailer making and tank building.

Positions

Suitable for use in all positions, and is especially good for high speed vertical down with negative polarity.

Current	DC=+/DC=-
Shielding Gas	ArCO2

Typical Weld Metal Composition

	DC+	DC-
C	0.08%	0.08%
Si	0.52%	0.50%
Mn	1.43%	1.39%
P	0.008%	0.009%
S	0.009%	0.009%

Typical Mechanical Properties

	DC+	DC-
Ult Tensile Strength	600 N/mm^2	604N/mm^2
Yield Strength	510 N/mm^2	523N/mm^2
Impact Values ISO-V	110J@-40°C	116J@-40°C
Elongation	30%	29%

Available Formats

Dia.	5kg	15kg
1.2mm	WO701250	WO701215

Standards

EN ISO 17632-A-T 46 4 M M 1 H5
AWS A5.18 E70C-6M

SIFCORED E71T-1

A rutile flux-cored wire for MIG/MAG (GMAW) welding of thin sheet steels or unalloyed / low alloyed structural steels in all positions, with Argon/CO2 shielding gases. SIFCored E71T-1 delivers good mechanical properties, impact toughness properties down to low temperatures, low spatter and excellent weldability.

Commonly used in shipyards, offshore and construction applications, for welding mild steel tube, pipe, strip, forgings and a range of pressure-vessel steels, typically as an improvement in productivity, moving from low-hydrogen MMA electrode welding.

Can be used in applications on prime-coated plate. Can also be used in vertical-down welding of non-critical sheet fabrication.

Positions

For use in all positions, in single and multi-pass applications under spray-transfer. Produces a smooth even bead with good slag detachability.

Current	DC=+
Shielding Gas	ArCO2

Typical Weld Metal Composition

C	0.05%	Si	0.48%	Mn	1.22%
P	0.013%	S	0.009%		

Typical Mechanical Properties

Ult Tensile Strength	570N/mm²
Yield Strength	510N/mm²
Impact Value ISO-V	110J@-20°C
Elongation	30%

Available Formats

Dia.	15kg
1.2mm	WO711215
1.6mm	WO711615

Standards

EN ISO 17632-A-T 42 2 P M 1 H5
AWS A5.20 E71T-1M

SIFCORED E81T1-Ni

A rutile flux cored wire which has been specially formulated to meet the rigorous demands for low temperature service steels. SIFCored E81T1-Ni delivers a good weld bead appearance, negligible spatter losses and easy slag removal. This wire can be used in low temperature applications.

Commonly used in offshore applications, platforms, containers, pipeline construction and pressure vessels.

Positions

For use in all positions, except vertical down.

Current	DC=+
Shielding Gas	CO2/ArCO2

Typical Weld Metal Composition

C	0.055%	Si	0.32%	Mn	1.26%
P	0.006%	S	0.006%	Ni	0.95%

Typical Mechanical Properties

Ult Tensile Strength	582N/mm^2
Yield Strength	517N/mm^2
Impact Value ISO-V	142J@-40°C
Elongation	29%

Available Formats

Dia.	15kg
1.2mm	WO811215

Standards

EN ISO 17632-A-T 46 6 1Ni P M 2 H5
AWS A5.29 E81T1-Ni 1M-J

SIFCORED E110C-G

A metal cored wire designed for welding 690 N/mm² yield strength steels and 110ksi class high strength steels and provides excellent mechanical properties and crack resistance.

Ideal for use in heavy industries such as offshore, pipeline, crane and construction machinery where high strength steels are used.

Fast deposition and easy slag removal.

Positions

Suitable for use in flat and horizontal positions.

Current	DC=+
Shielding Gas	ArCO2

Available Formats

Dia.	15kg
1.2mm	WO111212

Typical Weld Metal Composition

C	0.06%	Si	0.48%	Mn	1.87%
Ni	2.37%	P	0.008%	S	0.010%

Typical Mechanical Properties

Ult Tensile Strength	791N/mm²
Yield Strength	720N/mm²
Impact Value ISO-V	145J@-40°C
Elongation	24%

Standards

EN ISO 18276-A T 69 6 Mn2.5Ni M M 3 H5
AWS A5 2.8 E110C-G H4

SIFMIG HF600

A gas-shielded, solid, hard-facing MIG wire, for high wear resistance, used in the MIG welding process for applications requiring a combination of impact and abrasion-resistance.

Typically used in hardfacing applications in the earthmoving and quarry industries, such as digger buckets, crusher hammers and blades, and in the agricultural sector on ploughshares etc. Most frequently used on mild and medium tensile steels.

Areas to be hardfaced should be clean and free from oil, grease and dirt prior to application. Any base metal showing signs of cracking or previous hardfacing should be removed.

Positions

For use in all positions, except vertical down.

Direction of travel Push (R-L [RH])
Shielding Gas 95/5 ArCO2 or Pure Argon

Typical Weld Metal Composition

C 0.45% Si 3% Mn 0.4%
Cr 9%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	N/A
Hardness	570-650

Available Formats

Dia.	5kg	15kg
1.0mm	WF601050	WF601015
1.2mm	WF601250	WF601215

Standards

EN 14700 T Fe8
Din 8555 MSG6-GZ-60

SIFCORED 600

A gas-shielded, tubular cored hard facing MIG wire, for high wear resistance, used in the MIG welding process for applications requiring a combination of impact and abrasion-resistance, and in building-up or overlay tasks.

Typically used in hardfacing applications in the earthmoving and quarry industries, such as digger buckets, crusher hammers and blades, and in the agricultural sector on ploughshares etc. Most frequently used on mild and medium tensile steels.

Areas to be hardfaced should be clean and free form oil, grease and dirt prior to application. Any base metal showing signs of cracking or previous hardfacing should be removed.

Positions

For use in all positions, except vertical down.

Direction of Travel Pull (L-R [RH])
Shielding Gas 95/5 ArCO2 or Pure Argon

Typical Weld Metal Composition

C 0.5% Si 1% Mn 1.5%
Cr 5%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	N/A
Hardness	570-650

Available Formats

Dia.	5kg	15kg
1.0mm		WO601015
1.2mm	WO601250	WO601215

Standards

EN 14700 S Fe8
Din 8555 MSG6-4Z-60

SIFMIG 120S-G

A low-alloy, copper-coated solid MIG wire with additions of Nickel, Chromium and Molybdenum, designed for welding of high-strength steels with minimum yield strength of 890 MPa and minimum tensile strength of 940 MPa. Exhibits excellent mechanical properties and good toughness characteristics at low temperatures.

Suitable for use on high-strength steels, in applications such as earth moving equipment, cranes and industrial truck fabrication, and on high-strength pressure vessels and some heat treatable steels.

SIFMIG120S-G can be used on high-strength parent steel grades such as API 5AL80, HY100, HY80, S890QL and BS 4360 Gr55F and is also suitable for Hystal 77, Navy Q1, Naxtra 70, QT 445, RQT 701 and weldox 900. Mechanical properties are greatly influenced by preheat, interpass temperature, and post weld heat treatment.

Positions

For use in all positions.

Current	DC=+
Shielding Gas	ArCO2 or CO2

Typical Weld Metal Composition

Cr	0.40%	Mn	1.90%	Mo	0.50%
Ni	2.15%	Si	0.80%	Ti	0.10%

Typical Mechanical Properties

Ult Tensile Strength	940 MPa
Yield Strength	890 MPa
Impact Value ISO-V	140J@-40°C
Elongation	16%

Available Formats

Dia.	15kgD3000	15kg K300	250kg
0.8mm	WG120815	WG120815K	WG1208250
1.0mm	WG121015	WG121015K	WG1210250
1.2mm	WG121215	WG121215K	WG1212250

Standards

EN ISO 16834-A G 89 4 M (Mn4Ni2CrMo)
AWS A5.28 ER120S-G

SIFMIG Ni2

A fine-grained, copper-coated low-alloy MIG wire with addition of Nickel for improved performance at low temperatures, where greater toughness is required down to -80°C.

SIFMIG Ni2 is used in applications including the repair of heavy machinery, offshore constructions and components requiring improved abrasion resistance and where good fracture toughness from as-welded joints is needed. Often used on cryogenic and fine-grain steels in the shipbuilding, offshore, petrochemical and power-generation sectors.

Positions

For use in all positions.

Current	DC=+
Shielding Gas	Ar/CO2

Typical Weld Metal Composition

C	0.10%	Cr	0.08%	Mn	1.0%
Ni	2.3%	Si	0.55%		

Typical Mechanical Properties

Ult Tensile Strength	620N/mm²
Yield Strength	530N/mm²
Impact Value ISO-V	50J@-60°C
Elongation	26%

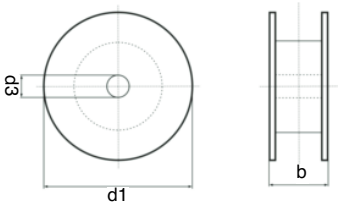
Available Formats

Dia.	15kg
1.0mm	WG721015
1.2mm	WG721215

Standards

EN ISO 14341 A G 50 6 M G2Ni2
AWS A 5.28 ER80S-Ni2

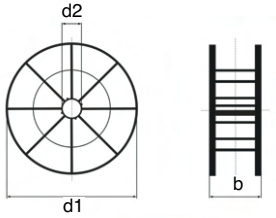
PLASTIC SPOOL

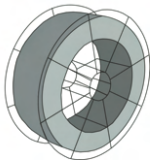


ENISO 544	Outside Diameter d_1	Spindle Hole d_3	External Width b	Tapped Hole Diameter d_4	Distance From Center e_1	Kg Wire
S 100	100	16,5	45	-	-	1,0
S 200	200	50,5	55	10	44,5	5
S 300	300	51,5	103	10	44,5	15

D-BASKET SPOOL

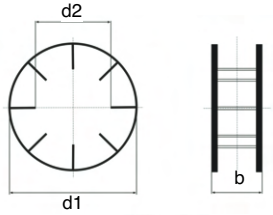
Please enquire if you have specific delivery requests for wire electrodes or other filler metals.





ENISO 544	Outside Diameter d_1	Inside Diameter d_2	External Width b	Kg Wire
BS 300	300	50,5	103	15

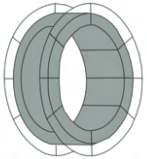
WIRE BASKET SPOOL



Wire net weight per spool for:

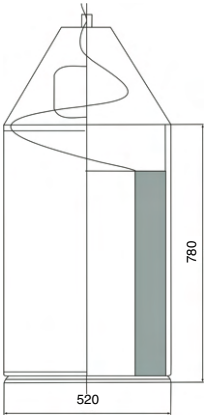
non-alloyed/low alloy solid wires	18Kg
high-alloy solid wires and flux-cored wires	15Kg
non-alloy/low-alloy flux-cored wires.	16Kg

ENISO 544	Outside Diameter d_1	Inside Diameter d_2	External Width b	Kg Wire
B 300	300	180	103	15/16/18



ECO DRUM

Ideal bulk pack for 250kg of non-, low- and high alloy welding wires in robotic quality; outstanding for welding robots and other mechanised stations.

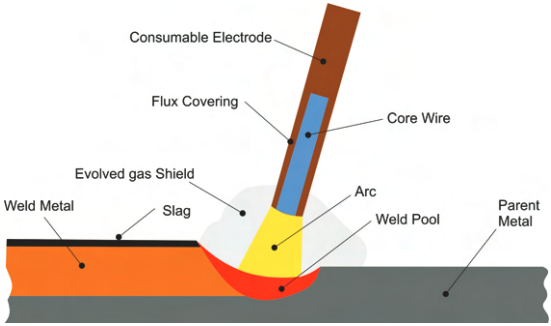


MMA Welding

The MMA welding process utilises an electric arc, which is formed between the parent material and the tip of a consumable welding electrode, often referred to as a rod or 'stick'. The heat from the electric arc causes the parent material to melt and the electrode is transferred across the welding arc and consumed into the welding pool.

The heat of the welding arc is controlled by setting the appropriate current for the diameter of the welding electrode, and adjusting the arc length. The electrode has a flux coating that melts as the arc is struck and is used as a protective shield to protect the weld metal from atmospheric contamination. The flux coating can also contain elements to improve the properties of the weld metal.

The molten flux leaves a residual slag on the weld bead after welding, providing protection from atmospheric contamination during the solidification phase and during the cooling cycle.



SIFCHROME 308L

A rutile coated electrode for welding low carbon 18Cr10Ni austenitic stainless steel grades like 304. SIFChrome 308L produces a self-releasing slag with brilliant weld appearance and excellent resistance to general and intergranular corrosion (up to 350°C).

SIFChrome 308L is typically used in industries where similar materials (including higher carbon types) as well as ferritic 13% Cr steels are used. Commonly used in shipbuilding and offshore applications, power generation, general fabrication, construction and in the process industries.

Positions

For use in all positions, except vertical down.

	Current Range
Dia	Amps
2.5mm	50 - 90
3.2mm	80 - 120
4.0mm	110 - 160

Available Formats

Dia.	4kg
2.5mm	RC3082540
3.2mm	RC3083240
4.0mm	RC3084040

Typical Weld Metal Composition

C	0.03%	Si	0.8%	Mn	0.8%
Ni	10.2%	Cr	0.03%	S	0.025%
P	0.03%				

Typical Mechanical Properties

Ult Tensile Strength	550N/mm²
Yield Strength	420N/mm²
Impact Values	27J@-29°C
Elongation	35%

Standards

EN ISO 1600 E 19 9 L R 32
AWS A5.4 E308L-17

SIFCHROME 312

A rutile coated high Cr/Ni electrode for welding difficult-to-weld steels like armour plate, austenitic Mn steel, high carbon steel and CR/Ni steels. SIFChrome 312 produces a self-releasing slag with excellent weld appearance.

Considered a problem solver for all kinds of steel grades including most stainless. Typical applications include joining hard manganese steels, tool steels, spring steels, buffering as well as joining dissimilar steel grades.

Commonly used in the transport and lifting industries and in general repair and maintenance.

Positions

For use in all positions, except vertical down.

	Current Range
Dia	**Amps**
2.5mm	60 - 80
3.2mm	80 - 120
4.0mm	110 - 145

Available Formats

Dia.	4kg
2.5mm	RC3122540
3.2mm	RC3123240
4.0mm	RC3124040

Typical Weld Metal Composition

C	0.1%	Si	1.2%	Mn	0.7%
Ni	9.5%	Cr	28.5%	S	0.02%
P	0.025%				

Typical Mechanical Properties

Ult Tensile Strength	800N/mm^2
Yield Strength	650N/mm^2
Impact Values	30J@20^{o}C
Elongation	22%

Standards

EN ISO 1600 E 29 9 R 32
AWS A5.4 E 312-17

SIFCHROME 316

A rutile coated electrode for welding molybdenum stainless alloys 18/12 and similar CR/Ni/Mo steels. SIFChrome 316L produces a self-releasing slag and excellent weld appearance. It also provides high resistance against general and intergranular corrosion (up to 400°C) and good resistance to hot cracking.

Suitable for universal applications but typical for all industries where superior corrosion resistance is required, such as the food, drink and textile industries, paper mills and the chemical industry. Commonly used in shipbuilding and offshore, power generation, general fabrication and construction and process industries.

Positions

For use in all positions, except vertical down.

	Current Range
Dia	Amps
2.5mm	50 - 90
3.2mm	80 - 120
4.0mm	110 - 160

Available Formats

Dia.	4kg
1.5mm	RC3161540
2.0mm	RC3162040
2.5mm	RC3162540
3.2mm	RC3163240
4.0mm	RC3164040

Typical Weld Metal Composition

C	0.03%	Si	0.86%	Mn	0.8%
Ni	11.7%	Cr	18.8%	S	0.025%
P	0.03%				

Typical Mechanical Properties

Ult Tensile Strength	580N/mm²
Yield Strength	450N/mm²
Impact Values	32J@-120°C
Elongation	35%

Standards

EN ISO 1600 E 19 12 3 LR 12
AWS A5.4 E316L-17

SIFCHROME 316 CRYO

A 316L grade, low carbon electrode used in cryogenic applications where impact toughness is required. SIFChrome 316LCRYO can also be used where low-temperature magnetic permeability is needed. The weld metal is very resistant to cracking and porosity.

SIFChrome 316LCRYO is specifically designed for cryogenic and LNG applications, including MRI scanners, frozen food storage and blood banking.

Positions

For use in all positions.

	Current Range
Dia	**Amps**
2.5mm	60 - 80
3.2mm	80 - 120

Available Formats

Dia.	4kg
2.5mm	RC3162540CRYO
3.2mm	RC3163240CRYO

Typical Weld Metal Composition

C	0.04%	Si	0.5%	Mn	1.7%
Ni	12%	Cr	18.5%	Cu	0.3%

Typical Mechanical Properties

Ult Tensile Strength	540N/mm^2
Yield Strength	400N/mm^2
Impact Values	60J@-120°C
Elongation	40%

Standards

EN ISO 1600 E 19 12 3 LB 22
AWS A5.4 E316L-15

SIFTRODE 6010

SIFTrode 6010 is a cellulosic coated electrode designed specifically for use on pipe root runs. It is suitable for use on dirty pipes, which are contaminated with rust, grease or paint, although attention should be paid to a clean and properly prepared surface prior to welding.

SIFTrode 6010 can be used on pipe root runs on many popular pipe steel grades and St 37.0 to St 52.0, St 37.4 to St 52.4, StE 210.7 to StE360.7, StE 210.7 TM to 360.7 TM & API 5 LX: X 42 to X56 materials.

Positions

For use in all positions, performs especially well in vertical down.

	Current Range
Dia	Amps
2.5mm	70 - 90
3.2mm	90 - 140
4.0mm	130 - 180

Typical Weld Metal Composition

C	0.1%	Si	0.25%	Mn	0.35%
S	0.02%	P	0.02%		

Typical Mechanical Properties

Ult Tensile Strength	480N/mm²
Yield Strength	410N/mm²
Impact Values	27J@-29°C
Elongation	20%

Available Formats

Dia.	5kg Vac Pack
2.5mm	RE612550V
3.2mm	RE613250V
4.0mm	RE614050V

Standards

EN ISO 2560 E 42 3 C 25
AWS A5.1 E 6010
EN499 E 42 3 C 25

SIFTRODE 6013-M

SIFTrode 6013-M is a versatile and general purpose rutile-coated mild steel MMA electrode which runs smoothly and leaves an attractive weld bead. SIFTrode 6013-M offers good arc ignition, low spatter and easylifting slag to reveal a finely-rippled bead.

SIFTrode 6013-M is ideal for both butt and fillet joints in a broad variety of general fabrication and repair tasks, including platework, pipe flanges, frames and tubes, as well as on pressure vessels.

It can be used in either DC+, DC- or AC (min OCV 50V) currents/polarities, and should be re-dried at 100°C for 1hr if required.

Positions

For use in all positions.

	Current Range
Dia	Amps
2.5mm	60 - 100
3.2mm	85 - 130
4.0mm	130 - 170

Typical Weld Metal Composition

C	0.1%	Si	0.4%	Mn	0.6%
S	0.03%	P	0.03%		

Typical Mechanical Properties

Ult Tensile Strength	500N/mm^2
Yield Strength	420N/mm^2
Impact Values	47J@ 0°C
Elongation	22%

Available Formats

Dia.	2.5kg	5kg
2.5mm	RE652525	RE652550
3.2mm	RE653225	RE653250
4.0mm	RE654025	RE654050

Standards

EN ISO 2560 E 42 0 RC 11
AWS A5.1 E 6013

SIFTRODE 6013

SIFTrode 6013 is a versatile and general purpose rutile-coated mild steel MMA electrode which runs smoothly and leaves an attractive weld bead. SIFTrode 6013 offers easy arc ignition, low spatter and easylifting slag to reveal a finely-rippled bead.

SIFTrode 6013 is ideal for both butt and fillet joints in a broad variety of general fabrication and repair tasks, including platework, pipe flanges, frames and tubes, as well as construction, structural steels and pressure vessels.

It can be used in either DC+, DC- or AC (min OCV 50V) currents/polarities, and should be re-dried at 100°C for 1hr if required. SIFTrode6013 can be confidently used on land-based steel structures and general fabrication alike.

Positions

For use in all positions.

Dia	Current Range Amps
2.5mm	60 - 100
3.2mm	85 - 130
4.0mm	130 - 170

Typical Weld Metal Composition

C	0.07%	Si	0.4%	Mn	0.4%
S	0.01%	P	0.02%		

Typical Mechanical Properties

Ult Tensile Strength	520N/mm²
Yield Strength	420N/mm²
Impact Values	50J@ 0°C
Elongation	24%

Available Formats

Dia.	2kg	5kg
1.6mm	RE601602	
2.5mm		RE602550
3.2mm		RE603250
4.0mm		RE604050

Standards

EN ISO 2560 E 42 0 RC 11
AWS A5.1 E 6013

SIFTRODE 7018-M

SIFTrode 7018-M is a basic coated electrode with extremely low hydrogen content and very high efficiency, designed for welding carbon and carbon-manganese steels with tensile strength up to 510 MPa. It is characterised by very good mechanical properties, especially at low temperatures and offers good arc ignition.

SIFTrode 7018-M is used in applications such as tanks, boilers, structural steel works, earth moving and construction machinery. SIFTrode 7018-M provides excellent X-ray results.

This product can be used on carbon steel in earthwork machinery, maintenance, Naval yards, pipelines, pressure vessels, shipbuilding and tanks.

Positions

For use in all positions, except vertical down.

	Current Range
Dia	Amps
2.5mm	60 - 100
3.2mm	85 - 130
4.0mm	130 - 170

Typical Weld Metal Composition

C	0.08%	Si	0.5%	Mn	1.2%
S	0.02%	P	0.02%		

Typical Mechanical Properties

Ult Tensile Strength	510N/mm^2
Yield Strength	420N/mm^2
Impact Values	47J@-50°C
Elongation	25%

Available Formats

Dia.	2.5kg	5kg
2.5mm	RE752525	RE752550
3.2mm	RE653225	RE753250
4.0mm	RE754025	RE754050

Standards

EN ISO 2560 E 42 4 B 42
AWS A5.1: E 7018

SIFTRODE 7018

SIFTrode 7018 is a basic coated electrode with extremely low hydrogen content and very high efficiency, designed for welding carbon and carbon-manganese steels with tensile strength up to 510 MPa. It is characterised by very good mechanical properties, especially at low temperatures and offers excellent ignition and smooth deposition.

SIFTrode 7018 is used in applications such as tanks, boilers, structural steel works, earth moving and construction machinery. SIFTrode 7018 provides excellent X-ray results.

This product can be used on carbon steel beams, bridges, earthwork machinery, maintenance, Naval yards, pipelines, pressure vessels, shipbuilding and tanks.

Positions

For use in all positions, except vertical down.

	Current Range
Dia	Amps
2.5mm	60 - 100
3.2mm	85 - 130
4.0mm	130 - 170

Typical Weld Metal Composition

C	0.05%	Si	0.4%	Mn	1.3%
S	0.015%	P	0.02%		

Typical Mechanical Properties

Ult Tensile Strength	540N/mm^2
Yield Strength	470N/mm^2
Impact Values	34J@-40^{o}C
Elongation	26%

Available Formats

Dia.	5kg
2.5mm	RE702550
3.2mm	RE703250
4.0mm	RE704050

Standards

EN ISO 2560 E 42 4 B 42 H5
AWS A5.1 E 7018
EN499 E 42 B 42

SIFTRODE 7024

SIFTrode 7024 is an iron powder double rutile-coated electrode with 150% efficiency. It offers optimum arc stability along with smoothness of deposit and ease of slag removal. This electrode is primarily used for high speed horizontal or fillet welds, in production.

Suitable for butt and fillet welds on medium to thick plates in shipbuilding and structural steel. Can also be used in plate fabrication, mining equipment and earthmoving machinery.

Positions

For use in butt and fillet welds only.

	Current Range
Dia	**Amps**
2.5mm	85 - 120
3.2mm	120 - 160
4.0mm	160 - 230

Available Formats

Dia.	5kg
2.5mm	RE723250
3.2mm	RE724050
4.0mm	RE725050

Typical Weld Metal Composition

C	0.10%	Si	0.40%	Mn	0.60%
S	0.030%	P	0.030%		

Typical Mechanical Properties

Ult Tensile Strength	510N/mm^2
Yield Strength	430N/mm^2
Impact Values	47J@ 0°C
Elongation	24%

Standards

EN ISO 2560-A: E 42 0 RR 54
AWS A 5.1: E7024

SIFTRODE 7016 SPEZIAL

SIFTrode 7016 Spezial is a vac-packed rutile-basic coated low-hydrogen electrode for all positions. The electrode ensures fully penetrated root passes, even under adverse conditions. Low moisture content coating and high resistance to moisture re-absorption.

Suitable for mild, medium/high-tensile and low alloy steels and as a buffer layer on medium to thick plates and pipes across a range of industries.

Positions

For use in all positions, except vertical down.

	Current Range
Dia	**Amps**
2.5mm	60 - 115
3.2mm	80 - 150
4.0mm	120 - 185

Available Formats

Dia.	5kg Vac Pack
2.5mm	RE712550V
3.2mm	RE713250V
4.0mm	RE714050V

Typical Weld Metal Composition

C	0.07%	Si	0.4%	S	0.015%
Mn	1.3%	Cr	0.07%	Ni	0.07%
P	0.025%	Mo	0.02%	Cu	0.07%

Typical Mechanical Properties

Ult Tensile Strength	510N/mm^2
Yield Strength	420N/mm^2
Impact Values	150J@-20^{o}C
Elongation	22%

Standards

EN 499 E 38 3 B 42 H10
AWS A5.1 E 7016

TIG Welding

The TIG welding process utilises an electric arc, which is formed between the parent material and the tip of a non-consumable tungsten electrode. Most TIG welding machines have both AC and DC modes. When welding Aluminium use an AC current and for welding steels use a DC current. The heat of the welding arc is controlled by setting the appropriate current for the thickness of the parent material being welded.

Most TIG welding applications require an additional filler material to be added and this has to be fed into the molten weld pool manually by the welder. During the welding process the arc is protected by an inert gas shielding which minimises the possibility of atmospheric contamination. TIG welding offers exceptional control of heat input and is therefore well suited to welding of intricate parts or thin gauge materials.

TIG Brazing

TIG Brazing can cover a wide range of applications, from the point of view of materials to be joined and joint design, from a one off special repair job to quantity production. Initial reaction is that TIG is a fusion welding process and brazing gets obscured with the thought of oxy-acetylene torches, flux powder etc. In practice, the heat source is the TIG arc but run on a low current so as not to melt the material with a suitable filler rod fed into the arc. The filler rod is quite different from conventional oxy-acetylene ‘silicon bronze’ brazing rod. As the TIG torch provides a protective gas shroud, there is no need for the addition of flux.

TIG Brazing is relatively straight forward. The TIG torch needs a thoriated or lanathanated tungsten and DC current (torch +), whereas TIG welding with a 1.6mm SIFSteel A15 would require 80-95 amps, TIG brazing with SIFSilcopper No968 will only require less than half that current, more in the order of 35-45 amps. As you can imagine, it is important for the welder to be comfortably positioned with regards to the parts being joined, so that the whole procedure can flow at a relatively fast rate.

Maintaining torch and filler rod angles with respect to the workpiece is key, to prevent breakdown of the inert gas envelope and to avoid atmospheric contamination of the joint.

SIFALUMIN NO14

A commercially-pure aluminium (99.5% minimum) shaved rod which has a maximum of 0.5% alloying elements. This rod produces a ductile weld often equal in strength to that of the base metal. The weld is capable of being hammered, stretched and drawn into a shape without fracture.

Suitable for welding unalloyed aluminium products, such as aluminium alloy types 1050, 1070, 1200 and equivalents. Used in applications in electronic, electrical and construction industries, equipment and containers for food, chemical, brewing and atomic energy industries, and decorative assemblies in architecture and transport.

Positions

For use in all positions.

Current	AC
Shielding Gas	Ar/ArHe

Typical Weld Metal Composition

Sl	0.25%	Fe	0.4%	Cu	0.05%
Mn	0.05%	Mg	0.05%	Zn	0.07%
Ti	0.05%	Al	99.5%		

Typical Mechanical Properties

Melting Point	650°C
Ult Tensile Strength	105N/mm^2
Hardness	35

Available Formats

Dia.	1kg	2.5kg
1.6mm	RO141601	RO141625
2.4mm	RO142401	RO142425
3.2mm	RO143201	RO143225

Standards

EN ISO 18273 S Al 1070 (Al99.7)
BS 2901 1050 A (GIB)
BS 1845 (NG3)

SIFALUMIN NO15

An aluminium alloy with 5% silicon, offering excellent flow characteristics and penetration. Suitable for welding duralumin cast (LM25) and wrought alloys 6063 (H9), 6061 (H20) and 6082 (H30). Weld will discolour if anodised. Can be used TIG or in Oxy Acetylene. If used in Oxy Acetylene, use our SIFNo14 aluminium welding flux.

Ensure that the parent metal surface is cleaned and fully degreased prior to welding. Clean joints with a stainless steel brush.

Positions

For use in all positions.

Typical Weld Metal Composition

Al Bal Si 5%

Typical Mechanical Properties

Melting Point	635°C
Ult Tensile Strength	120N/mm^2
Hardness	40

Current	AC
Shielding Gas	Ar, ArHe

Available Formats

Dia.	1kg	2.5kg
1.6mm	RO151601	RO151625
2.4mm	RO152401	RO152425
3.2mm	RO153201	RO153225
5.0mm		RO155025

Standards

EN ISO 18273 S Al 4043A (AlSi5)
BS 2901 4043A
BS 1845 (NG21)

SIFALUMIN NO16

An Aluminium alloy containing 12% silicon, for high silicon alloys and automotive work. Typically chosen where good colour matching to parent material is important.

Suitable for all types of aluminium castings. Typical applications include repair, surfacing and construction of window frames, tubes, furniture, engine blocks and automotive parts.

Frequently used in the aerospace sector as a brazing alloy on thin gauge material. Ensure that the parent metal surface is cleaned and fully degreased prior to welding. Clean joints with a stainless steel brush. Can be used in both TIG and Oxy/Acetylene processes. When brazed in oxy/acetylene, use our SIFNo12 aluminium brazing flux.

Positions

For use in all positions.

Current	AC
Shielding Gas	Ar, ArHe

Typical Weld Metal Composition

Al	Bal	Si	12%	Mn	0.3%

Typical Mechanical Properties

Melting Point	585°C
Ult Tensile Strength	130N/mm²
Hardness	50

Available Formats

Dia.	1kg	2.5kg
1.6mm	RO161601	RO161625
2.4mm	RO162401	RO162425
3.2mm	RO163201	RO163225

Standards

EN ISO 18273 S Al 4047A (AlSi12)
BS 2901 4047A
BS 1845 (NG2)

SIFALUMIN NO27

A general purpose aluminium alloy rod containing 5% magnesium that has excellent corrosion resistance and high strength. Suitable for welding magnesium bearing aluminium, alloys such as 5251 (N4), 5154 (N5), 5454 (N51), and also heat treatable alloys 6063 (H9), 6061 (H20) and 6082 (H30). Can be used in TIG or Oxy/Acetylene. If used in Oxy/Acetylene, use with our SIF No. 36 aluminium welding flux.

Suitable for welding forged and cast aluminium-manganese/ aluminium-magnesium components and dissimilar aluminium alloy grades containing a maximum of 5% Mg. Can also be used to weld components which are to be subsequently anodised. Pre-heating may be necessary, subject to material size and thickness. Wire brushing between passes is recommended to ensure removal of surface oxide build up.

Also suitable for use on plate, pipe, tube and components. Ensure that parent metal surface is cleaned and fully degreased prior to welding.

Positions

For use in all positions, except vertical down.

Current	AC
Shielding Gas	Ar, ArHe

Typical Weld Metal Composition

Mg 5% Al Bal

Typical Mechanical Properties

Melting Point	640°C
Ult Tensile Strength	250N/mm^2
Hardness	60

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO271601	RO271625	RO271650
2.4mm	RO272401	RO272425	RO272450
3.2mm	RO273201	RO273225	RO273250

Standards

EN ISO 18273 S Al 5356 (AlMg5)
BS 2901 5356
BS 1845 (NG6)

SIFALUMIN NO28

A special aluminium alloy containing 5% magnesium and 0.75% manganese for improved weld strength and resistance to sea water. Provides excellent feedability and arc control, and the low oxide levels result in superior welds.

Suitable for use in general aluminium fabrication and repairs on boats and ships, bullbars and rollbars, storage tanks, welding of aluminium alloys where higher strength is required. SIFAlumin No28 can also be used on forged and cast aluminium-manganese alloys where high tensile strength and/or high resistance to sea water is required.

Positions

For use in all positions.

Current	AC
Shielding Gas	ArHe

Typical Weld Metal Composition

Cu	0.05%	Mn	0.75%	Si	0.25%
Zn	0.25%	Ti	0.15%	Mg	5%
Cr	0.15%	Fe	0.4%	Al	Bal

Typical Mechanical Properties

Melting Point	620°C
Ult Tensile Strength	275N/mm²
Hardness	60

Available Formats

Dia.	1kg	2.5kg
1.6mm	RO281601	RO281625
2.4mm	RO282401	RO182425
3.2mm	RO283201	RO283225

Standards

EN ISO 18273 S Al 5183 (AlMg4.5Mn0.7)
BS 2901 5183

SIFALUMIN NO37

An aluminium alloy containing 5.3% magnesium for welding aluminium alloys with up to approx 5% magnesium that are not age hardenable and alloys where a higher tensile strength is required. All elements are closely controlled for optimum weld strength.

Suitable use in the marine environment, where good corrosion resistance is required. Used for marine castings and fabrication, and also on 5083 (N8).

Positions

For use in all positions.

Typical Weld Metal Composition

Si	0.25%	Mn	0.8%	Cr	1.3%
Cu	0.1%	Ti	0.13%	Zn	0.2%
Fe	0.4%	Mg	5.3%	Al	Bal

Current	AC
Shielding Gas	Ar/ArHe

Typical Mechanical Properties

Melting Point	620°C
Ult Tensile Strength	300N/mm^2
Hardness	70

Available Formats

Dia.	1kg	2.5kg
1.6mm	RO371601	RO371625
2.4mm	RO372401	RO372425
3.2mm	RO373201	RO373225

Standards

EN ISO 178273 S Al 5556A (AlMg5Mn)
BS 2901 5556

SIFSILCOPPER NO7 HQ

An easy flowing, high quality double cleaned copper rod for full fusion welding of deoxidised high-purity copper sheet. The finished weld is free from porosity and copper oxide inclusions. Suitable for use in the Oxy/Acetylene brazing process (use SIFSilCopper Flux). Also commonly used in TIG welding. Suitable for fabrication and repairs to copper pipes, tanks, stills etc.

The rod can be used for fabrication of stills for the brewing industry, repairs to copper pipes and casting, calorifiers, fireboxes and copper fittings. It exhibits a viscous weld pool and is typically best used on oxygen-free copper types. A pre-heat may be required on material thicknesses of 73mm (to a maximum of 60°C).

Suitable for use in repair and maintenance in the portable water, brewing, offshore and process industries. This alloy also provides good electrical conductivity and is often used in machinery construction and conductor earthing rail manufacture.

Positions

For use in all positions.

Typical Weld Metal Composition

Ag 1% Cu Bal

Typical Mechanical Properties

Melting Point	1060°C
Ult Tensile Strength	200N/mm²
Hardness	75

Current	DC=-
Shielding Gas	Pure Argon

Available Formats

Dia.	5kg
1.6mm	RO071650HQ
2.4mm	RO072450HQ
3.2mm	RO073250HQ

Standards

EN ISO 24373 Cu 1897 (CuAg1)
BS 1453 C1

SIFPHOSPHOR BRONZE NO8

A phosphor-bronze rod containing 7% tin and suitable for fusion welding of phosphor bronze castings, copper alloys and brass in TIG and Oxy/Acetylene welding. SIFPhosphor bronze No8 is also used for TIG brazing on ferrous, stainless and dissimilar metals.

Commonly used on bronze, brass, copper and copper alloys for applications such as crack repair in castings. The use of flux is normally unnecessary in most applications, but SIFSilcopper Flux can be beneficial in aiding flow when used on copper which is dirty or oxidised. Weldable in all positions and particularly suitable for welding around pipes (with wall thickness >1.6mm). Ensure surfaces of parent metal are cleaned thoroughly before welding.

Positions

For use in all positions.

Typical Weld Metal Composition

Cu	Bal	Sn	7%	P	0.1 - 0.4%

Typical Mechanical Properties

Melting Point	900 - 1050°C
Ult Tensile Strength	260N/mm²
Hardness	80

Current	DC=-
Shielding Gas	Pure Argon

Available Formats

Dia.	1kg	2.5kg	5kg
1.2mm	RO081201	RO081225	RO081250
1.6mm	RO081601	RO081625	RO081650
2.4mm	RO082401	RO082425	RO082450
3.2mm	RO083201	RO083225	RO083250

Standards

EN ISO 24373 Cu 5180a (CuSn6P)
BS 2901 C11

SIFPHOSPHOR BRONZE NO82

A Phosphor bronze rod suitable for all welding positions with 12% Tin. for improved colour match on brass and lighter bronzes.

The welding material attains high hardness similar to cast bronzes, therefore to be used for specially wear-resistance surfacing, joining and repair welding of bronzes. Particularly suitable for oven soldering.

Where parent metal contains trace lead (such as in LG2), it is advisable to use SIFPhosphorBronze No82 in the TIG brazing process, and apply in stages, grinding between passes to remove lead drawn into the joint and reduce porosity.

Positions

For use in all positions.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

Cu	Bal	Sn	12%	P	0.2%

Typical Mechanical Properties

Melting Point	825 - 990°C
Ult Tensile Strength	320N/mm²
Hardness	120

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO821601	RO821625	RO821650
2.4mm	RO822401	RO822425	RO822450

Standards

EN ISO 24373 Cu 5410 (CuSn12P)
BS 2901 C27

SIFALBRONZE NO32

This is a 90/10 aluminium bronze rod suitable for welding materials of a similar composition. It is also used for surfacing and dissimilar metal joints, and TIG brazing on ferrous and dissimilar metals.

Can be used on aluminium bronze alloys: CuAl8Fe3, CuAl10FeMn2, CuAl9Mn9, and cast aluminium bronzes G-CuAl8 and G-CuAl10Ni. Can be used to braze some dissimilar metals, including aluminium bronze to steel, and copper to steel.

Suitable for use in shipbuilding, offshore power generation, and the repair and maintenance process industry. An excellent alloy for building up or over-lapping for wear-resistance and corrosion-resistance.

Positions

For use in all positions.

Typical Weld Metal Composition

Al	10%	Fe	1%	Cu	Bal

Typical Mechanical Properties

Melting Point	1030°C
Ult Tensile Strength	500N/mm^2
Hardness	95

Current	DC=-
Shielding Gas	Pure Argon

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO321601	RO321625	RO321650
2.4mm	RO322401	RO322425	RO322450
3.2mm	RO323201	RO323225	RO323250

Standards

EN ISO 24373 Cu 6180 (CuA11oFe)
AWS A5.7 ERCu Al-A2
BS 2901 C13

SIFALBRONZE NO44

SIFAlBronze No44 is a nickel aluminium bronze for AB2 material and marine/corrosive applications and can be used for the assembly of cupro-aluminium materials of similar composition.

SIFAlBronze No44 provides increased resistance against wear and abrasion, for example when seawater, cavitations and erosion are simultaneously affecting the welding material.

For use in the following applications: ship propellers, parts for turbines, bearings, valves, sifters, pumps, pipe systems, apparatus engineering, containers.

Positions

For use in all positions.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

Cu	Bal	Al	9%	Ni	4.5%
Fe	3.25%	Mn	1.5%		

Typical Mechanical Properties

Ult Tensile Strength	380N/mm²
Yield Strength	500N/mm²
Impact Values	68J@20°C
Elongation	16%

Available Formats

Dia.	1kg	2.5kg	5kg
2.4mm	RO442401	RO442425	RO442450

Standards

EN ISO 24373 Cu6328 (CuAl9Ni5Fe3Mn2)
BS 2901 C20/C26

SIFSILCOPPER No968

A copper rod, containing 3% silicon and 1% manganese used for fusion welding materials of similar composition, copper alloys (brass) and for TIG brazing steels. It is also suitable for surfacing steel and dissimilar metal applications. Offers excellent performance on galvanized steel and provides good corrosion-resistance.

For use in the shipbuilding/offshore industries as well as the heating and ventilation industries for corrosion-resistance, and tubular product fabrication. Can also be used for sculpture repair.

When used in Oxy/Acet
SIFSilCopper No968 can be used in oxy-acetylene for fusion welding of copper alloys and brass. Oxy-Acetylene gas flame should be slightly oxidizing. Keep the weld puddle small, in order to promote fast solidification and minimize cracking. SIFSilCopper Flux should be used both before and during welding. Pre-heat is not recommended.

Positions

For use in all positions.

Typical Weld Metal Composition

Mn	1%	Si	3%	Cu	Bal

Current	DC=-
Shielding Gas	Pure Argon

Typical Mechanical Properties

Melting Point	980 - 1020°C
Ult Tensile Strength	350N/mm^2
Hardness	90

Available Formats

Dia.	1kg	2.5kg	5kg
1.2mm	RO961201	RO961225	RO961250
1.6mm	RO961601	RO961625	RO961650
2.4mm	RO962401	RO962425	RO962450
3.2mm	RO963201	RO963225	RO963250

Standards

EN ISO 24373 Cu6560 (CuSi3Mn1)
BS 2901 C9

SIFSILCOPPER No985

A high quality rod containing a minimum of 98.5% copper with deoxidizing elements. It is ideal for TIG welding of copper.

Serves as an alternative to SIFSilcopper No7HQ in applications where tin is preferable to silver. It is used in manufacture of grounding/earthing bars and in repair of high-purity deoxidised copper sheet/pipe.

Positions

For use in all positions.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

Mn 0.25% Si 0.25% Cu Bal

Typical Mechanical Properties

Melting Point	1025°C
Ult Tensile Strength	220N/mm²
Hardness	70

Available Formats

Dia.	1kg	2.5kg	5kg
1.2mm	RO981201	RO981225	RO981250
1.6mm	RO981601	RO981625	RO981650
2.4mm	RO982401	RO982425	RO982450
3.2mm	RO983201	RO983225	RO983250

Standards

ISO 24373 Cu 1898 (CuSn1)
BS: 2901 C7

SIFSTEEL STAINLESS 308L

SIFSteelStainless 308L is our solid wire for TIG welding low carbon 18CR10Ni austenitic stainless steel grades. The weld metal has an excellent resistance to general and intergranular corrosion up to 350°C and also provides good resistance to oxidising acids and cold reducing acids.

Used extensively for corrosive-resistant applications in various industries, including shipbuilding and offshore engineering, the pressure vessel and boiler industry, construction work, repair and maintenance, refrigeration, the furniture industry and the petrochemical industry.

Positions

For use in all positions.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C	0.02%	Si	0.4%	Mn	1.5%
Ni	10%	Cr	21%		

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	650N/mm^2
Hardness	180

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO331601	RO331625	RO331650
2.4mm	RO332401	RO332425	RO332450
3.2mm	RO333201	RO333225	RO333250

Standards

EN ISO 14343 19 9 L
AWS A5.9 ER 308LSi
BS 2901 308S92

SIFSTEEL STAINLESS 309LSi

SIFSteelStainless 309LSi is our solid wire for TIG welding corrosion resistant and heat resistant CrNi steels, dissimilar metals and buffering. This stainless rod contains higher chromium and nickel. It can be used for joining material of similar composition and also on dissimilar stainless steels.

Typical applications include joining high-strength steels, un- and low alloyed heat treatable steels, stainless, ferritic chromium and austenitic chrome-nickel steels and austenitic manganese steels. SIFSteelStainless 309LSi is also suitable for joining clad steels.

Positions

For use in all positions, except vertical down.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C	0.1%	Si	0.4%	Mn	1.5%
Ni	13%	Cr	26%		

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	650N/mm^2
Hardness	180

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO341601	RO341625	RO341650
2.4mm	RO342401	RO342425	RO342450

Standards

EN ISO 14343 23 12 LSi
AWS A5.9 ER 309LSi
BS 2901 309S93

SIFSTEEL STAINLESS 310

SIFSteel Stainless 310 is a solid corrosion-resistant, chromium-nickel rod for TIG welding high heat-resistant austenitic steels with high 25% Cr / 20% Ni contents. Offers good general oxidation resistance especially at high temperatures - and is therefore common in industrial furnaces and heat exchangers. Fully austenitic so is therefore sensitive to hot cracking, care must be taken not to overheat. PWHT is usually unnecessary.

Positions

For use in fillet positions only.

Typical Weld Metal Composition

C	0.1%	Cr	26%	Mn	1.8%
Ni	21%				

Current	DC=+
Shielding Gas	Pure Argon

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	590N/mm^2
Hardness	200

Available Formats

Dia.	2.5kg
1.2mm	RT701225
1.6mm	RT701625
2.4mm	RT702425
3.2mm	RT703225

Standards

EN ISO 14343 G 25 20
AWS A5.9 ER310

SIFSTEEL STAINLESS 312

Our SIFSteel Stainless 312 can be considered as a problem solver for all kinds of steel grades, including stainless and difficult to weld steels. This is a 29.9 stainless TIG filler rod that has high resistance to weld metal cracking.

Typical applications for this 'weld-all' rod include joining hard manganese steels, tool steels, spring steels, buffering as well as joining dissimilar steel grades. It deposits a crack-resistant weld metal with an increased ferrite content.

Base materials to be welded: Armour plate, hardenable steels incl. DFTW-steels, tool, die and spring steels, austenitic manganese steels, hardfacing clutches, gear wheels, shafts, buffer layers prior to hardfacing, dissimilar joining.

Positions

For use in all positions, except vertical down.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C	0.1%	Si	0.4%	Mn	1.6%
Ni	9%	Cr	30%	Mo	0.1%

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	750N/mm^2
Hardness	200

Available Formats

Dia.	1kg	2.5kg
1.2mm	RO351201	RO351225
1.6mm	RO351601	RO351625
2.4mm	RO352401	RO352425

Standards

EN ISO 14343 29 9
AWS A5.9 ER 312
BS 2901 312S94

SIFSTEEL STAINLESS 316L

A molybdenum-bearing stainless steel filler rod with low carbon content. It is corrosion resistant for welding molybdenum-bearing austenitic stainless steels. A solid wire for depositing a low C -19% Cr-12% Ni-2.8% Mo weld metal for the welding of 316 and 316L stainless steels.

The wire is used for a range of applications including the fabrication of pipe and plate in food/drink processing industries. The weld metal provides good resistance to pitting corrosion and crevice corrosion by non-oxidising acids.

Intended for applications where service temperatures do not exceed 400°C.

Positions

For use in all positions, except vertical down.

Current	DC=-
Shielding Gas	ArH[2]

Available Formats

Dia.	1kg	2.5kg	5kg
0.8mm	RO210801	RO210825	
1.0mm	RO211001	RO211025	RO211050
1.2mm	RO211201	RO211225	RO211250
1.6mm	RO211601	RO211625	RO211650
2.4mm	RO212401	RO212425	RO212450
3.2mm	RO213201	RO213225	RO213250

Typical Weld Metal Composition

C	0.02%	Si	0.4%	Mn	1.5%
Ni	12%	Cr	19%	Mo	2%

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	650N/mm[2]
Hardness	180

Standards

EN ISO 14343 19 12 3 L
AWS A5.9 ER 316L
BS 2901 316S92

SIFSTEEL STAINLESS 347

A niobium stabilised stainless steel filler rod engineered to prevent weld decay and give excellent corrosion resistance. Suitable for use on 18/8 type stainless steel such as 304, 321 and where the weld is subjected to temperatures above 400°C.

Typical applications include all industries where similar materials (including higher carbon types) as well as ferritic 13% Cr steels are used. The resulting weld metal has an excellent resistance and intergranular corrosion.

Suitable for use in the shipbuilding, aerospace, turbine and offshore industries, power generators, construction, and for repair and maintenance in the process industries.

Positions

For use in all positions except vertical down.

Current AC/DC =+

Typical Weld Metal Composition

C	3.7%	Si	2.5%	Mn	0.02%
Mn	1.5%	Si	0.4%	S	0.02%
P	0.03%				

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	650N/mm²
Hardness	180

Available Formats

Dia.	1kg	2.5kg	5kg
1.0mm	RO201001	RO201025	RO201050
1.2mm	RO201201	RO201225	RO201250
1.6mm	RO201601	RO201625	RO201650
2.4mm	RO202401	RO202425	RO202450

Standards

EN ISO 14343: 19 9 Nb
BS: 2901 347S96

SIFSTEEL STAINLESS DUPLEX

Our SIFSteel Stainless Duplex is designed to be used to weld parent material of a similar composition, and is common in sour applications where exposure to corrosive chlorides and hydrogen sulphides can occur. This is a solid, bare duplex stainless steel TIG filler rod, for welding austenitic-ferritic alloys where a high resistance to intergranular corrosion, stress corrosion and pitting is required.

Duplex is a material that is increasing in popularity for its strength to weight ratio, price stability and corrosion-resistant properties. It is used for sheet and pipe applications, in a wide range of industry sectors, including petrochemical, chemical/pharmaceutical, pulp & paper, mining and food & beverage.

Positions

For use in all positions, except vertical down.

Current	DC=-
Shielding Gas	Ar, ArHe

Typical Weld Metal Composition

C	0.02%	Si	0.5%	Mn	1.7%
Ni	8.5%	Cr	22.5%	Mo	3.3%
Fe	Bal				

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	765N/mm^2
Hardness	240

Available Formats

Dia.	5kg
1.0mm	RT741050
1.2mm	RT741250
1.6mm	RT741650
2.4mm	RT742450
3.2mm	RT743250

Standards

EN ISO 14343-A 22 9 3 N L
AWS A5.9 ER2209

SIFSTEEL STAINLESS SUPER DUPLEX

A 2594 super duplex rod for welding austenitic-ferritic stainless alloys where a high corrosion resistance is required, in sour applications and where exposure to corrosive chlorides and hydrogen sulphides can occur.

It is used for sheet and pipe applications, in a wide range of industry sectors, including petrochemical, chemical/pharmaceutical, pulp & paper, mining and food & beverage.

Care must be taken not to overheat during welding, to avoid pitting and cracking . PWHT is usually not required.

Positions

For use in fillet positions only.

Typical Weld Metal Composition

Cr	25.0%	Ni	9.8%	Mn	0.4%
Mo	4.0%	Fe	Bal		

Current	DC=-
Shielding Gas	Pure Argon

Typical Mechanical Properties

Melting Point	1440°C
Ult Tensile Strength	850N/mm^2
Hardness	250

Available Formats

Dia.	5kg
1.6mm	RT781650
2.4mm	RT782450
3.2mm	RT783250

Standards

EN ISO 14343-A 25 9 4 N L
AWS A5.9 ER2594

SIFSTEEL A15

Our SIFSteel A15 is a copper-coated triple-deoxidised mild steel rod. Used with the TIG process it enables sound, porosity-free welds to be made on mild and low-alloy steels. Typical applications include pipe welding and root runs on heavy vessels.

Suitable for use on mild and medium tensile steels and also ideal for rusty and mill-scaled plate. Suitable for TIG welding with Thoriated, Ceriated or Lanthanated tungsten electrodes, and pure argon shielding gas. Used primarily for single pass applications on steels. Also performs well on surfaces not cleaned before welding.

Positions

For use in all positions, except vertical down

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C	0.1%	Si	0.6%	Mn	1.3%
Al	0.2%				

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	440N/mm^2
Hardness	120

Available Formats

Dia.	2.5kg	5kg
1.0mm	RA151025	RA151050
1.2mm	RA151225	RA151250
1.6mm	RA151625	RA151650
2.4mm	RA152425	RA152450
3.2mm	RA153225	RA153250

Standards

EN ISO 636-A 208 W2Ti
EN 1668 W2Ti
BS 2901 A15
AWS ER70S-2

SIFSTEEL A17

A low carbon, double deoxidised rod for TIG welding unalloyed and low alloyed steels. To be used in combination with thoriated tungsten, thorium-free cerium, or lanthanum electrodes. Typical applications include general constructions, shipbuilding, bridges and tanks.

Suitable for use in applications within the shipbuilding industry, bridge and road construction, pressure vessel and boiler industries, repair shops and the car industry.

Can be used on structural, boiler, pipe, cast and fine grain steel.

Positions

For use in all positions, except vertical down.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C 0.1% Si 0.3% Mn 1%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	400N/mm²
Hardness	120

Available Formats

Dia.	5kg
1.6mm	RA171650
2.4mm	RA172450

Standards

EN ISO 636-A 208 W2Si
BS 2901 A17

SIFSTEEL A18

A copper-coated deoxidised steel rod for TIG welding unalloyed and low alloyed steels. To be used in combination with thoriated, ceriated or lanathanated tungsten electrodes.

Suitable for use in applications within general maintenence and repair construction, pressure vessel and boiler production, and in the car industry.

Can be used on structural, boiler, pipe, cast and fine grain steels.

Positions

For use in all positions, except vertical down

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C 0.1% Si 1% Mn 1.3%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	400N/mm^2
Hardness	120

Available Formats

Dia.	5kg
1.0mm	RA181050
1.2mm	RA181250
1.6mm	RA181650
2.4mm	RA182450
3.2mm	RA183250

Standards

EN ISO 636-A 208 W3Si1
BS 2901 A18
AWS ER70S-6

SIFSTEEL A31

SIFSteel A31 is our copper-coated alloy steel rod containing 0.5% molybdenum. Suitable for use on low temperature pressure vessel and pipe work applications. This low alloy solid wire is designed for welding low-carbon steels with high tensile strength, and creep-resistant steels.

Suitable for pipelines and pressure vessels with operating temperatures of about 500°C.

Positions

For use in all positions.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C 0.1% Si 0.7% Mn 1.8%
Mo 0.5%

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	460N/mm^2
Hardness	180

Available Formats

Dia.	5kg
1.6mm	RA311650
2.4mm	RA312450

Standards

EN ISO 14341-A G4Mo
AWS ER 80S-D2
BS 2901 A31

SIFSTEEL A32

Our SIFSteel A32 is a copper-coated low-alloy steel rod containing 1.5% chromium and 0.5% molybdenum. Ideal for creep-resistant steels of a similar composition.

It is used in the chemical industry and in the ammonia synthesis process, for heat exchangers, boilers, piping and pressure vessels for temperature service up to about 550°C. It will also find applications in the petro-chemical industries.

Suitable for facing on casting and for casting repairs.

Positions

For use in all positions.

Typical Weld Metal Composition

C	0.1%	Si	0.5%	Mn	1%
Cr	1.3%	Mo	0.5%		

Current	DC=-
Shielding Gas	Pure Argon

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	500N/mm^2
Hardness	180

Available Formats

Dia.	5kg
1.0mm	RA321050
1.2mm	RA321250
1.6mm	RA321650
2.4mm	RA322450

Standards

EN ISO 21952-A W CrMo1Si (1CML)
AWS ER80S-B2
BS 2901 A32

SIFSTEEL A33

SIFSteel A33 is a copper-coated alloy steel rod containing 2.25% chromium and 1.0% molybdenum. It is suitable for high-temperature and high pressure applications on materials of similar composition and creep-resistant steels.

It is used in the chemical industry and in the ammonia synthesis process, for heat exchangers, boilers, piping and pressure vessels for the temperature service up to about 600°C. It will also find applications in the petro-chemical industries.

Suitable for facing on castings and for casting repairs.

Positions

For use in all positions.

Typical Weld Metal Composition

C	0.1%	Si	0.5%	Mn	1%
Cr	2.25%	Mo	1%		

Current	DC=-
Shielding Gas	Pure Argon

Typical Mechanical Properties

Melting Point	1450°C
Ult Tensile Strength	525N/mm^2
Hardness	200

Available Formats

Dia.	5kg
1.6mm	RA331650
2.4mm	RA332450

Standards

EN ISO 636-A W2Ni2
AWS A5.28 ER80S-Ni2
BS 2901 A33

SIFSTEEL Ni2

Ni-alloyed solid wire for TIG welding low alloyed cryogenic steels under argon gas shielding. Typically used in applications requiring sub-zero toughness down to -80°C.

Suitable for applications within the offshore and shipbuilding industries, general fabrication and construction, power generation and in the oil and gas industries.

Can also be used on fine grain steel, where high tensile strength is required.

Positions

For use in all positions, except vertical down.

Current	DC=-
Shielding Gas	Pure Argon

Typical Weld Metal Composition

C 0.1% Ni 2.1% Mn 1.0%

Typical Mechanical Properties

Ult Tensile Strength 620N/mm^2

Available Formats

Dia.	5kg
1.6mm	RT721650
2.4mm	RT722450
3.2mm	RT723250

Standards

EN ISO 636A W2Ni2
AWS A5.28 ER80S-Ni2

SIFALLOY No73

Our SIFAlloy No73 is a CuNi alloyed wire/rod for joining and surfacing similar alloys with nickel content up to 30%.

Particularly suitable for highly stressed corrosion-resistant weld surfacing on grey cast iron and on unalloyed and low-alloyed steel. Due to the resistance to sea water the alloy is suitable for offshore applications, ship building, chemical and food industries and also oil refineries.

Positions

For use in all positions.

Current	DC=-
Shielding Gas	Ar

Typical Weld Metal Composition

Cu	Bal	Ni	30%	Fe	0.5%

Typical Mechanical Properties

Melting Point	1180°C
Ult Tensile Strength	420N/mm²
Hardness	115

Available Formats

Dia.	5kg
1.6mm	RT731650
2.4mm	RT732450
3.2mm	RT733250

Standards

EN ISO 24373 Cu7158 (CuNi30)

SIFALLOY No75

This alloy is commonly called '6-4', for welding alloyed titanium with 6% aluminium and 4% vanadium. This wire provides high strength, weldability, excellent fatigue strength and hardness. SIFAlloy No75 can also be heat treated.

Suitable for a wide range of applications such as petrochemical, aircraft components, motorsport components, turbine parts and blades, exhaust systems and heat exchangers.

Positions

For use in all positions.

Typical Weld Metal Composition

C	0.5%	Al	5.8%	V	4%
Ti	Bal				

Typical Mechanical Properties

Melting Point	1668°C
Ult Tensile Strength	890N/mm^2
Hardness	334

Current	DC=-
Shielding Gas	Ar/ArHe

Available Formats

Dia.	2.5kg
1.6mm	RT751625
2.4mm	RT752425

Standards

AWS A5.1AWS A5.16-Ti-5
AWS 4954

SIFALLOY No79

A CuNi alloyed wire/rod for joining and surfacing similar alloys with nickel content up to 10%.

Particularly suitable for highly stressed corrosion-resistant weld surfacing on grey cast iron and on unalloyed and low-alloyed steel. Due to the resistance to sea water the alloy is suitable for offshore applications, shipbuilding, chemical and food industries and oil refineries.

Positions

For use in all positions.

Current	DC=-
Shielding Gas	Ar

Typical Weld Metal Composition

Cu	Bal	Ni	10.2%	Fe	0.5%

Typical Mechanical Properties

Melting Point	1120°C
Ult Tensile Strength	300N/mm²
Hardness	80

Available Formats

Dia.	15kg
1.6mm	RT731650
2.4mm	RT732450
3.2mm	RT733250

Standards

EN ISO 24373 Cu7061 (CuNi10)

SIFMAGNESIUM No23

This magnesium rod with 6% aluminium is suitable for welding magnesium aluminium alloy casting of similar composition eg G-Mg-Al 3 to 1, G-Mg Al5Mn. This product has good weldability when used with wrought alloys for ambient use.

Used in the auto industry, aerospace and mechanical engineering, specialised in engines and gearboxes, panels, and as construction material.

Positions

For use in all positions.

Typical Weld Metal Composition

Al	6%	Zn	0.6%	Mn	0.15%
Mg	Bal				

Typical Mechanical Properties

Melting Point	600°C
Ult Tensile Strength	280N/mm^2

Current	DC=-
Shielding Gas	Ar

Available Formats

Dia.	12 Rod/Pack	1kg
3.0mm	RO233212	RO233201

Standards

AZ61A

SIFSTEEL HF6

A Chromium-Molybdenum steel rod with specific addition of Vanadium, Tungsten and other hardening alloying elements, for the repair and reclamation of machining errors in high-speed steel, tool steels and die steel, and for the hardsurfacing of carbon-steel components.

SIFSteel HF6 is a unique alloy, making possible the repair welding of die, tool and high speed steels using the TIG process. The reduced heat affected zone provided by TIG helps to prevent embrittlement, and the specific addition of vanadium in the SIFSteel HF6 composition provides tool steel compatibility.

The weld deposit of SIFSteel HF6 is extremely crack-resistant when repairing difficult to weld steels.

Positions

Suitable for butt and fillet use.

Typical Weld Metal Composition

C	1%	Si	0.5%	Mn	0.3%
Cr	4%	Mo	8%	V	2%
W	1.5%				

Typical Mechanical Properties

Hardness	60

Current	DC=-
Shielding Gas	Pure Argon

Available Formats

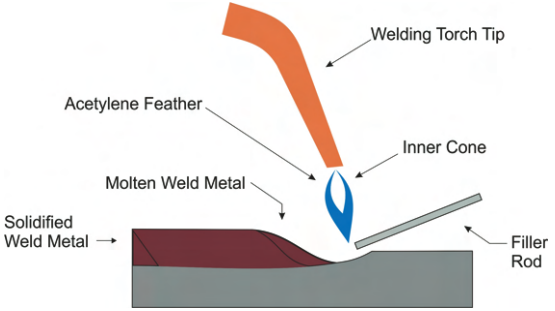
Dia.	12 rod/pk	1kg
1.6mm	ROHF61612	ROHF61601
2.4mm	ROHF62412	ROHF62401

Brazing

SIFBronzing or Brazing is a non-fusion metal joining process that uses a filler material with a melting point below that of the parent material. The filler metal is brought slightly above its melting temperature and it then flows over and around the base metal (known as wetting) and is then cooled to join the work pieces together.

Silver brazing, sometimes known as a silver soldering or hard soldering, is brazing using a silver alloy based filler. These silver alloys consist of many different percentages of silver and other metals, such as copper and Zinc.

Braze welding is the use of a bronze or brass filler rod coated with flux to join steel workpieces. The equipment needed for braze welding is basically identical to the equipment used in brazing. Since braze welding usually requires more heat than brazing, acetylene fuel is commonly used. The name comes from the fact that no capillary action is used. A flux is required when carrying out brazing operations to prevent oxides from forming while the metal is heated and to aid the flow of the brazing filler material.



SIFBRONZE No1

The original multi-purpose SIFBronze low temperature rod for brazing and bronze welding of steels, cast iron, copper and its alloys. It is a rod favoured throughout industry for its variety of applications and ease of use.

Ideally suited for general mild steel work, galvanised steel and dissimilar metal applications. Widely used in the manufacture of vehicle bodies, bicycle frames and wheelchairs, and for benchwork fabrications of tubular components. Also suitable for repair of iron castings.

All joints should be clean and free of dirt, grease, rust and paint/primer prior to brazing. Use SIFBronze brazing flux. For flux-coated variants, see SIFRedicote and SIFAutobronze.

Positions

For use in downhand and fillet positions.

Suitable Processes

Brazing, Oxy/Acetylene
Oxy/Propane (1.6mm max)

Typical Weld Metal Composition

Cu	60%	Sn	0.3%	Si	0.3%
Zn	Bal				

Typical Mechanical Properties

Melting Point	875 - 895°C
Ult Tensile Strength	430N/mm^2
Hardness	120

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO011601	RO011625	RO011650
2.4mm	RO012401	RO012425	RO012450
3.2mm	RO013201	RO013225	RO013250
4.8mm			RO014850

Standards

EN 1044 CU302
BS 1845 CZ6A
BS 1453 C2

SIFREDICOTE No1

This rod is SIFBronze No1 with a full flux coating providing the added benefit of faster, continuous brazing through not having to flux-dip. It is ideally suited for general mild steel work, galvanised steel and dissimilar metal applications.

Suited to tubular component manufacturing, casting repair (cast iron) and dissimilar joints. Favoured for fast repair and maintenance applications owing to greater flux coverage.

All joints should be clean and free of dirt, grease, rust and paint/primer prior to brazing.

Positions

For use in downhand and fillet positions.

Typical Weld Metal Composition

Cu	60%	Sn	0.3%	Si	0.3%
Zn	Bal				

Suitable Processes
Brazing, Oxy/Acetylene
Oxy/Propane (1.6mm max)

Typical Mechanical Properties

Melting Point	875 - 895°C
Ult Tensile Strength	430N/mm^2
Hardness	120

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RR011601	RR011625	
2.4mm	RR012401	RR012425	RR012450
3.2mm	RR013201	RR013225	RR013250

Standards

EN 1044 CU 302
BS 1845 CZ6A
BS 1453 C2

SIF AUTOBRONZE

Formally known as 'SIFSeriated', this rod is SIFBronze No1 with a flux impregnation, providing a third option between bare and fully flux-coated rod. Suited to general mild steel work, galvanised steel and dissimilar metal applications.

Popular in tubular component manufacturing, cast iron repair and dissimilar joints.
A versatile 'general purpose' brazing rod.

All joints should be clean and free of dirt, grease, rust and paint/primer prior to brazing. Top up with SIFBronze brazing flux if needed.

Positions

For use in downhand and fillet positions.

Suitable Processes

Brazing, Oxy/Acetylene

Typical Weld Metal Composition

Cu	60%	Sn	0.3%	Si	0.3%
Zn	Bal				

Typical Mechanical Properties

Melting Point	875 - 895°C
Ult Tensile Strength	430N/mm^2
Hardness	120

Available Formats

Dia.	1kg	2.5kg	5kg
2.4mm	RS412401	RS412425	RS412450
3.2mm	RS413201	RS413225	RS413250

Standards

EN 1044 CU 302
BS 1845 CZ6A
BS 1453 C2

SIFBRONZE No101

A special brazing rod containing specific additions of Manganese and Tin, giving it free-flowing characteristics. It is particularly suitable for use with 'gas flux'. A popular choice in the manufacture of bicycle frames and automotive components.

Specially formulated to provide a faster flow rate in order to deliver increased efficiencies in high production applications.

Favoured by many vehicle manufacturers and widely used with the gas flux process. All joints should be clean and free of dirt, grease, rust and paint/primer prior to brazing. Use SIFBronze brazing flux.

Positions

For use in downhand and fillet positions.

Typical Weld Metal Composition

Cu	60%	Mn	0.2%	Si	0.1%
Sn	0.1%	Zn	Bal		

Typical Mechanical Properties

Melting Point	870 - 890°C
Ult Tensile Strength	460N/mm^2
Hardness	130

Suitable Processes

Brazing, Oxy/Acetylene
Oxy/Propane (2.0mm max)

Available Formats

Dia.	1kg	2.5kg	5kg
1.5mm	RO101501	RO101525	RO101550
2.0mm	RO102001	RO102025	RO102050
2.5mm	RO102501	RO102525	RO102550
3.0mm	RO103001	RO103025	RO103050

SIFBRONZE No2

A bronze brazing rod containing 9% nickel, for use on cast iron, copper alloys, stainless and alloy steels. It has excellent wearing properties and high strength making it ideal for tubular structures, brazing cutting tips and as a general maintenance alloy. Use with SIFBronze flux on general applications or with SIF tool tip/braze stainless flux on stainless brazing applications.

This is a high duty bronze rod which produces an exceptionally strong joint on steel and stainless steel, cast iron and copper alloys; joints are 25% stronger than SIFBronze No1.

It has excellent wearing properties and is recommended for building up worn components like bearings, gear teeth and valve seats. The high strength characteristics of this rod make it ideal for joining tubular steel structures as well as brazing cutting tips for the mining and engineering industries.

Positions

For use in downhand, fillet and vertical up positions.

Suitable Processes

Brazing, Oxy/Acetylene

Typical Weld Metal Composition

Cu	48%	Ni	10%	Si	0.3%
Zn	Bal				

Typical Mechanical Properties

Melting Point	920 - 980°C
Ult Tensile Strength	540N/mm²
Hardness	200

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO021601	RO021625	RO021650
2.4mm	RO022401	RO022425	RO022450
3.2mm	RO023201	RO023225	RO023250
4.8mm			RO024850

Standards

EN ISO 17672 Cu773
BS 1845 CZ8
EN 1044 CU305
BS 1453 C5

SIFREDICOTE No2

This rod is SIFBronze No2 with a full flux coating and with similar characteristics. The UTS is approximately 25% greater than SIFRedicoteNo1 and is ideal for high strength production and maintenance applications.

This is a high duty bronze rod which contains 9% nickel and produces an exceptionally strong joint on alloys and stainless steel, cast iron and copper alloys.

It has excellent wearing properties and is recommended for building up worn components like bearings, gear teeth and valve seats. The high strength characteristics of this rod make it ideal for joining tubular steel structures as well as brazing cutting tips for the mining and engineering industries.

Positions

For use in downhand, fillet and vertical up positions.

Suitable Processes
Brazing, Oxy/Acetylene

Typical Weld Metal Composition

Cu	48%	Si	0.3%	Ni	10%
Zn	Bal				

Typical Mechanical Properties

Melting Point	920 - 980°C
Ult Tensile Strength	540N/mm^2
Hardness	200

Available Formats

Dia.	1kg	2.5kg	5kg
2.4mm	RR022401	RR022425	RR022450
3.2mm	RR023201	RR023225	RR023250

Standards

EN ISO 17672 CU773
EN 1044 CU305
BS 1845 CZ8
BS 1453 C5

SIFCUPRON No17

SIFCupron No17 is a free-flowing copper phosphorus alloy rod, containing a nominal 7% phosphorus. It has good electrical conductivity and corrosion resistance make it ideal for copper tubing, switchgear, motors etc. When brazing copper it has a self-fluxing capability.

This high quality copper-phosphorous alloy rod has a low melting point and is ideal for brazing joints in non ferrous metals, such as copper, brass, and bronze. It is self fluxing on copper but SIFSilCopper Flux is required when used to join brass, or brass to copper.

Not suitable to braze iron-containing materials like carbon or stainless steels or nickel containing materials. Suitable for use in heating and ventilation industries, pipework and offshore processes. It offers a low level of ductility, so is not suitable for applications when vibration or deformation are likely.

Positions

For use in downhand and fillet positions.

Suitable Processes

Brazing, Oxy/Acetylene
Oxy/Propane (1.5mm max)

Typical Weld Metal Composition

P 7% Cu Bal

Typical Mechanical Properties

Melting Point	705 - 800°C
Ult Tensile Strength	500N/mm²
Hardness	200

Available Formats

Dia.	1kg	2.5kg	5kg
1.5mm	RO171501	RO171525	RO171550
2.4mm	RO172401	RO172425	RO172450
3.2mm	RO173201	RO173225	RO173250

Standards

EN ISO 17672 CuP 180
BS 1845 CP3
EN 1044 CP201
DIN8513 L-Cu7P

SIFCUPRON No17-2Ag

A self-fluxing copper phosphorus alloy with the addition of 2% silver to improve ductility and flowing characteristics. Highly resistant to corrosion and not subject to dezincification. It is ideal for pipe cylinders, electric motors and also general maintenance work. For brazing copper to copper no flux is needed.

This high quality copper phosphorous rod is recommended for use when brazing seams on hot water cylinders, as its highly resistant to corrosion. The optimum brazing gap is typically 0.05 - 0.2mm.

Suitable for use in heating and ventilation industries, refrigeration and offshore and electrical industries. Owing to low ductility, it should only be used with capillary type joints. 'Bell mouthed' joints should be avoided.

Positions

For use in downhand and fillet positions.

Typical Weld Metal Composition

Ag	2%	P	6%	Cu	Bal

Suitable Processes

Brazing, Oxy/Acetylene
Oxy/Propane (1.6mm max)

Typical Mechanical Properties

Melting Point	645 - 740°C
Ult Tensile Strength	430N/mm^2
Hardness	195

Available Formats

Dia.	1kg	2.5kg	5kg
1.6mm	RO181601	RO181625	RO181650
2.4mm	RO182401	RO182425	RO182450
3.2mm	RO183201	RO183225	RO183250

Standards

EN ISO 17672 CuP 180
BS1845 CP2
EN 1044 CP105
DIN8513 L-Ag2P

SIFCUPRON No17-5Ag

A copper/phosphorus alloy with 5% silver, exhibiting ductility and capillary flow characteristics between SIFCupron No17-2Ag and SifCupron No17-15Ag. It provides the best combination of flow and ductility of all the silver-copper-phosphorous type brazing filler metals.

It is recommended for use in the production of electrical motors, dynamos and the joining of copper pipes in the ship building and offshore industries. It is extensively used in refrigeration, air conditioning and heat-exchanger components for flux-free brazing of copper pipes and tubes.

Not suitable for brazing iron-containing materials like carbon, stainless steel, or materials with a nickel content as the phosphorus within the filler will form brittle compounds at the joints. For brazing copper to copper no flux is needed.

Positions

For use in downhand and fillet positions.

Typical Weld Metal Composition

Ag 5% P 6% Cu Bal

Typical Mechanical Properties

Melting Point	645 - 730°C
Ult Tensile Strength	600N/mm²
Hardness	190

Suitable Processes
Brazing, Oxy/Acetylene
Oxy/Propane (1.5mm max)

Available Formats

Dia.	1kg	2.5kg	5kg
1.5mm	RO1815015Ag	RO1815255Ag	RO1815505Ag
2.4mm	RO1825015Ag	RO1825255Ag	RO1825505Ag

Standards

EN ISO 17672 CuP 282
BS 1845 CP4
EN 1044 CP104
AWS A5.8 BCuP-3

SIFCUPRON No17-15Ag

A silver copper-phosphorus brazing alloy which is used to braze copper and copper alloys. With 15% silver for stressed applications, it is ideal for poor fitting joints. It is one of the most ductile of the silver-copper-phosphorus brazing filler metals, and is recommended where a self-fluxing alloy must be used and joint ductility is a factor.

SIFCupron No17 finds extensive use in electrical engineering applications where it is used to make electrically conductive joints.

This product is highly suited to pipework and offshore industries, as well as the electrical motor industries. It is ideal for stressed applications where poor fitting joints are problematic. Rapid heating to the brazing temperature is required to avoid liquation. Use SIFSilCopper Flux when brazing copper alloys, brass, bronze etc.

Positions

For use in downhand and fillet positions.

Typical Weld Metal Composition

Ag	15%	P	5%	Cu	Bal

Suitable Processes
Brazing, Oxy/Acetylene
Oxy/Propane

Typical Mechanical Properties

Melting Point	645 - 700°C
Ult Tensile Strength	640N/mm^2
Hardness	185

Available Formats

Dia.	1kg	6 Rod Pack
1.5mm	RX181500	RO181506

Standards

EN ISO 17672 CuP 284
BS 1845 CP1
EN 1044 CP102
AWS A5.8 BCuP-5

SIF SILVER SOLDER No39

A general-purpose, cadmium-free silver brazing filler metal. It is suitable for all ferrous and non-ferrous metals except aluminium. It can be used with a range of heat sources. It also offers a combination of medium melting temperature and flow characteristics. Use with SIF Silver Solder Flux.

This solder offers excellent fluidity and wetting characteristics. Ideal for applications within the food and medical equipment industries.

It is used as a general silver brazing filler metal as well as in joining copper to steel in refrigeration and pipe work. SIFSilver Solder No39 can be used to join most common engineering metals including mild, carbon, tool steel, stainless steels, and low alloy steel.

This alloy should only be used to form capillary joints.

Positions

For use in soldering.

Typical Weld Metal Composition

Ag 38% Cu 32% Zn 28%
Sn 2%

Typical Mechanical Properties

Melting Point	650 - 725°C
Ult Tensile Strength	460N/mm²
Hardness	140

Suitable Processes

Oxy/Acetylene, Oxy/Propane
Butane, Air Butane

Available Formats

Dia.	4 Rod Pack	6 Rod Pack	1kg
1.5mm		RO391506	RX391500
2.5mm	RO392504		RX392500

Standards

EN ISO 17672 Ag 138

SIF SILVER SOLDER No40

A popular grade of Silver Solder offering good capillary action and ductility in many applications. It is suitable for all ferrous and non-ferrous metals, except aluminium. It can be used with a range of heat sources. It also offers a combination of medium melting temperature and flow characteristics.

This is a cadmium-free silver solder offering excellent fluidity and wetting characteristics. Ideal for applications within the food and medical industries. It is used as a general silver brazing filler metal as well as in joining copper to steel in refrigeration and pipe work.

SIFSilver Solder No39 can be used to join most common engineering metals - copper, copper alloys including brasses, bronzes, gun metal, nickel silver, aluminium bronze, copper nickel, and steels including mild, carbon, tool steel, stainless steels, and low alloy steel. Use with SifSilver Solder Flux.

Positions

For use in soldering.

Suitable Processes

Oxy/Acetylene, Oxy/Propane
Butane, Air Butane

Typical Weld Metal Composition

Ag	40%	Cu	30%	Zn	28%
Sn	2%				

Typical Mechanical Properties

Melting Point	670 - 710°C
Ult Tensile Strength	440N/mm^2
Hardness	130

Available Formats

Dia.	1kg
1.5mm	RX401500
2.5mm	RX402000

Standards

EN ISO 17672 Ag 140

SIF SILVER SOLDER No43

A highly-ductile, fast-flowing, cadmium-free silver brazing filler metal. It is suitable for all ferrous and non-ferrous metals except aluminium. It can be used with a range of heat sources. It also offers a combination of low melting temperature and excellent flow characteristics. Use with SIFSilver Solder Flux.

Ideal for applications within the food and medical industries. It is used as a general silver brazing filler metal as well as in joining copper to steel in refrigeration and pipe work.

SIFSilver Solder No43 can be used to join most common engineering metals and is most suitable for use in heating and ventilation, refrigeration, electrical, and process industries. However, this alloy should only be used to form capillary joints.

Positions

For use in soldering

Suitable Processes

Oxy/Acetylene, Oxy/Propane
Butane, Air Butane

Typical Weld Metal Composition

Ag 55% Cu 21% Zn 22%
Sn 2%

Typical Mechanical Properties

Melting Point	630 - 660°C
Ult Tensile Strength	415N/mm²
Hardness	145

Available Formats

Dia.	6 Rod Pack	1kg
1.5mm	RO431506	RX431500

Standards

EN ISO 17672 Ag 155
BS 1845 AG14
EN 1044 AG 103

SIF SILVERCOTE No43

This is SIF Silver Solder No43 with a full flux coating and with similar characteristics. Suitable for all ferrous and non-ferrous metals except aluminium and can be used with a wide range of heat sources.

SIF Silvercote No43 offers excellent fluidity and wetting characteristics. Ideal for applications within the food, process and medical equipment industries.

Can be used to join most common engineering metals - copper, copper alloys including brasses, bronze, gun metal, nickel silver, copper nickel and steels including mild, carbon, tool steel, stainless steels, and low alloy steel. However, these alloys should only be used to form capillary joints.

Positions

For use in soldering.

Suitable Processes
Oxy/Acetylene, Oxy/Propane, Butane, Air Butane

Typical Weld Metal Composition

Ag 55% Cu 21% Zn 22%
Sn 2%

Typical Mechanical Properties

Melting Point	630 - 660°C
Ult Tensile Strength	415N/mm^2
Hardness	145

Available Formats

Dia.	6 Rod Pack	1kg
1.5mm	RR431506	RR431501

Standards

EN ISO 17672 AG 155
EN 1044 AG 103
BS 1845 AG14

SIF 555 AISOLDER

SIF555 ALSolder is a self fluxing solder for use on aluminium and its alloys, which reduces the over fluxing problem and makes aluminium soldering quick and easy.

This process is commonly used by manufacturers of aluminium windows and doors, it is ideal for repairing and sealing defects in aluminium boats, gutters, engine parts, castings and sheets and is especially recommended for applications where flux residue removal is a problem.

Suitable for use in repair and maintenance, aluminium windows, door manufacturing, marine, aerospace and automotive industries.

Positions

For use in downhand, fillet positions.

Typical Weld Metal Composition

Zn 93% Al 4% Cu 3%

Typical Mechanical Properties

Melting Point	380°C
Ult Tensile Strength	200N/mm²
Hardness	100

Suitable Processes
Brazing, Oxy/Acetylene
Oxy/Propane, Air/Propane

Available Formats

Dia.	12 Rod Pack	1kg	2.5kg
1.6mm	RO553212	RO553201	RR553225

SIF AUTOTIN SOLDER

SIF Autotin Solder is ideal for use as a fitting solder for copper pipe installations and plumbing works or for finishing/repair on metal goods. Also suitable for use in the food stuffs industry.

The solder has a very large melting range which makes it a very useful consumable in many different industries. Popular in panel-patching during car door/body manufacture.

Positions

For use in downhand, fillet and vertical up positions.

Suitable Processes
Oxy/Acetylene, Oxy/Propane

Available Formats

Dia.	1kg
5.0mm	FXS0928501
10.0mm	FXS09281001
12.0mm	FXS09281201

Typical Weld Metal Composition

Zn 92% Cu 8%

Typical Mechanical Properties

Melting Point 227 - 418°C

Standard

EN ISO 9453: 206 S Sn92Cu8

Flux

In brazing operations flux is required to prevent oxides from forming while the metal is heated. The flux also serves the purpose of cleaning any contamination left on the brazing surfaces.

Flux can be applied in any number of forms including flux paste, liquid, powder or pre-made brazing pastes that combine flux with filler metal powder. Flux can also be applied using brazing rods with a coating of flux, or a flux core. In either case, the flux flows into the joint when applied to the heated joint and is displaced by the molten filler metal entering the joint.

Excess flux should be removed when the cycle is completed because flux left in the joint can lead to corrosion, impede joint inspection, and prevent further surface finishing operations. On certain applications, due to the material; size or shape of the workpiece, it is necessary to use chemical cleaning. For ferrous metals, use a weak solution of hydrochloric acid and on copper alloys use a 10-15% sulphuric acid solution. Whenever using chemicals, ensure that all parts are thoroughly washed after treatment.

Fluxes are generally selected based on their performance on particular base metals. To be effective, the flux must be chemically compatible with both the base metal and the filler metal being used.Phosphorus-containing brazing alloys can be self-fluxing when joining copper to copper.

SIF ALUMINIUM FLUX

SIF Aluminium flux powders are designed to facilitate the gas brazing and welding of aluminium and it's alloys. Use No12 for low-melting-point alloys, No14 for medium-melting-point alloys (eg Si12) and No36 for higher-melting-point (eg 5356).

This aluminium flux powder complies to EN 1045 - FL10

Available Formats

500kg Jar	
FO120050	No12 - Low melting point
FO140050	No14 - Medium melting point
FO360050	No36 - High melting point

SIF ECO FLUX

SIF Eco flux is a pre-mixed paste at optimal liquidity free of boric acid and suitable for brazing of mild steel and copper alloys. Designed to perform similarly to SIFBronze flux mixed with water. Adheres well to parent material.

This ECO flux complies to EN 1045 - FH10

Available Formats

350kg Jar
FO050035

SIFBRONZE FLUX

SIF's most popular flux for general brazing work. Available in 225g and 500g jars.
This flux is used with SIFBronze No1 or No101 in brazing steels, copper alloys, bronzes or cast iron.

This powder flux complies to EN 1045 - FH10

Available Formats

225kg Jar	500kg Jar
FO010022	FO010050

SIFCAST IRON FLUX

SIF's revolutionary powder flux for fusion welding of cast iron. Designed to be used with SuperSilicon No9 and Super SG rods.

This powder flux complies to EN 1045 FH20

Available Formats

500kg Jar
FO090050

SIFSILCOPPER FLUX

SIFSilcopper flux is a powder for brazing and welding of copper alloys. Available in a 500g jar. For use with SIFSilcopper No968, No7 or No985, or with the SIFCupron series on dissimilar materials.

This flux powder complies to EN 1045 - FH11

Available Formats

500kg Jar
FO070050

SIF TOOL TIP & BRAZING FLUX

A powder flux for tool tipping or brazing stainless with SIFBronze No1 or No2 filler rods. Supplied in a 500g jar.

SIF tool tip & brazing flux conforms to EN 1045 - FH12

Available Formats

500kg Jar
FO020050

SIF SILVER SOLDER FLUX

A commonly-used powder flux for silver solder applications. Available in 225g and 500g jars.

SIFSilver solder complies to EN 1045 - FH10

Available Formats

225kg Jar	500kg Jar
FO380022	FO380050

SIF GASFLUX LIQUID

Specially formulated liquid flux which allows fuel gas (acetylene) to absorb flux into the torch flame. It is a flammable liquid UN No 1993 and is supplied in 3 litre plastic containers. Commonly used with SIFBronze No101.

SIF gas flux conforms to EN 1045 - FH10

Available Formats

3L Container
FXGF3L

4 Containers per carton

TUNGSTENS

Selecting the proper tungsten electrode will greatly improve weld quality and productivity. Each oxide has different characteristics effecting tungsten performance. Electrodes are colour coded to indicate the type of oxide used in the mix.

Available Formats

Thoriated

Dia.		Part No
1.0mm	Thoriated (red tip)	HP16110
1.2mm	Thoriated (red tip)	HP16112
1.6mm	Thoriated (red tip)	HP16116
2.4mm	Thoriated (red tip)	HP16124
3.2mm	Thoriated (red tip)	HP16132
4.0mm	Thoriated (red tip)	HP16140
4.8mm	Thoriated (red tip)	HP16148

Zirconiated

Dia.		Part No
1.6mm	Zirconiated (white tip)	HP16216
2.4mm	Zirconiated (white tip)	HP16224
3.2mm	Zirconiated (white tip)	HP16232
4.0mm	Zirconiated (white tip)	HP16240
4.8mm	Zirconiated (white tip)	HP16248
5.5mm	Zirconiated (white tip)	HP16255

Ceriated

Dia.		Part No
1.0mm	Ceriated (grey tip)	HP16310
1.2mm	Ceriated (grey tip)	HP16312
1.6mm	Ceriated (grey tip)	HP16316
2.4mm	Ceriated (grey tip)	HP16324
3.2mm	Ceriated (grey tip)	HP16332
4.0mm	Ceriated (grey tip)	HP16340
4.8mm	Ceriated (grey tip)	HP16348

Pure

Dia.		Part No
1.0mm	Pure (green tip)	HP16410
1.2mm	Pure (green tip)	HP16412
1.6mm	Pure (green tip)	HP16416
2.4mm	Pure (green tip)	HP16424
3.2mm	Pure (green tip)	HP16432

Lanthanated

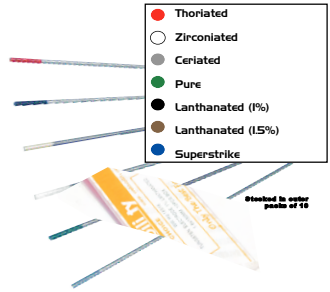
Dia.		Part No
1.6mm	Lanthanated (gold tip)	HP16616
2.4mm	Lanthanated (gold tip)	HP16624
3.2mm	Lanthanated (gold tip)	HP16632

Lanthanated

Dia.		Part No
1.6mm	Lanthanated (black tip)	HP16516
2.4mm	Lanthanated (black tip)	HP16524
3.2mm	Lanthanated (black tip)	HP16532

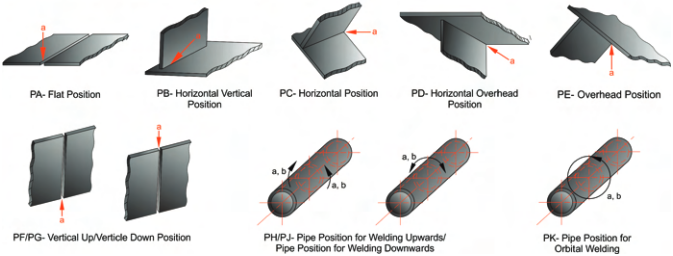
Superstrike

Dia.		Part No
1.6mm	Superstrike (blue tip)	HP16716
2.4mm	Superstrike (blue tip)	HP16724
3.2mm	Superstrike (blue tip)	HP16732



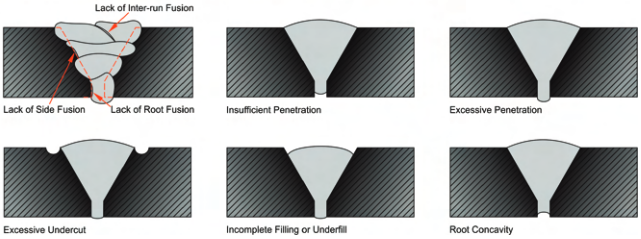
Welding is often done on structures in the position in which they are found. Techniques have been developed to allow welding in any position. Some welding processes have all-position capabilities, while others may be used in only one or two positions. All welding can be classified according to the position of the workpiece or the position of the welded joint on the plates or sections being welded.

WELDING POSITIONS



Any of the common defects illustrated below are potentially disastrous as they can all give rise to high stress intensities which may result in sudden unexpected failure. Welding defects can greatly affect weld performance and longevity. Having an understanding of the various defects, their causes and remedies can help to ensure higher-quality and long lasting welds.

COMMON WELDING DEFECTS



Handling, storage and drying stick electrodes

To ensure satisfactory weld quality, stick must be handled and stored properly before use. Electrode coatings are carefully designed to provide the necessary operating characteristics and weld properties required for each electrode type. Generally stick electrodes should be stored in their original packaging. The storage facilities should have an infrastructure which makes the 'first in - first out' principle possible. Electrodes are manufactured to be within acceptable moisture limits, consistent with the type of covering and strength of the weld metal. It is recommended to facilitate the storage room in such way that the electrodes ares stored dry and safe. Moisturising units should not be stored in the same area. Open packaging should be stored in special conditioned areas.

TYPICAL STORAGE CONDITIONS FOR STICK ELECTRODES
Storage of covered electrodes in cardboard boxes requires in general humidity and temperature controlled storage areas. Recommended storage conditions include: - Temperature 18-25°C, relative humidity max. 60% - Temperature 25-35°C, relative humidity max. 50%

Redrying of stick electrodes is recommended if the electrodes have picked up moisture or is imperiously required for low-hydrogen basic coated electrodes. We advise you to use the electrodes from a quiver after redrying.

TYPICAL REDRYING GUIDELINES FOR STICK ELECTRODES				
Electrodes for	**Coating type**	**Redrying recommended**	**Redry temperature °C**	**Redrying time / h.**
Unalloyed and low alloy structural steel	A, AR, RC, R, RR	No	--	--
	RB, B	Yes	300-350	2 - 10
Pipelines	C	Not allowed!	--	--
Fine grain steel	B	Yes	300-350	2 - 10
High temperature steel	R	No	--	--
	B	Yes	300-350	2 - 10
Stainless and heat resisting steel	R	Yes	120-200	2 - 10
	RB, B	No	--	--
Soft-martensitic steel	B	Yes	300-350	2 - 10
Duplex steel	R, RB	Yes	250-300	2 - 10
Hardfacing	R	No	--	--
	RB, B	Yes	300-350	2 - 10
Ni-base alloys	All types	If necessary	120-300	2 - 10

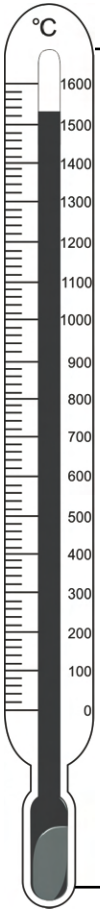
In certain cases it may be reasonable to redry electrodes even when they are not mentioned in the 'redrying electrodes' table (bottom of page 132). Should the coating exhibit an excessively high water content as a result of e.g. improper storage or other adverse influences, which is reflected by the welding behaviour and by increased spattering of formation of pores, the electrodes may be redried at 100-120°C for one hour. Electrodes in special packaging can be used without redrying and holding in a drying oven within a period of 8 hours after operating. After that the electrodes can be redried in accordance with the 'redrying electrodes table'.

Handling, storage, drying cored wires

Unalloyed and low-alloyed cored wires are less sensitive to moisture pick-up since a metal sheath mainly covers the internal core. Nevertheless it is possible that the working environment affects the low hydrogen characteristics. For storage we recommend the same conditions as mentioned for stick electrodes (typical storage conditions for stick electrodes). For redrying we suggest to redry the wires at 150°C/ max. 24 h.

Stainless steel cored wires are more sensitive to moisture pick up. Therefore the spools are vacuum packed. Storage facilities and redry procedures are the same as for unalloyed and low-alloyed cored wires. For stainless steel cored wires we kindly ask you to pay extra attention to removing the spools at the end of the working period and store them in a conditioned area. In case of need you can redry the wires at 150°C / max. 24 h.

Temperature chart - Melting points



Steel Colour Scale	Metals	Alloys	SIFBronze Rods
	Chromium 1520°C Cobalt 1480°C Nickel 1452°C Steel 1450°C		No.11, No.19, No.22, A15 No.20, No.21
	Monel Metal 1360°C		
White	Manganese 1260°C		No.9
Light Yellow	Cast iron 1180°C		
Lemon	Copper 1083°C Gold 1062°C	Brass 850 - 1050°C	No.7 No.968, No.8
	Silver 960°C	Bronze 700 - 1040°C	No.3 No.2 No.10, No.1
Bright Red Cherry or Dull Red			
Dark Cherry	Aluminium Pure 658°C Magnesium 651°C	Aluminium Alloys 450 - 600°C	No.17 No.172AG
Blood Red		Magnesium Alloys 340 - 630°C	No.14, No.23 No.38, No.27, No.15
Faint Red			No.16, No.36
Black Heat	Zinc 419°C		
	Lead 327°C		
	Tin 232°C		

Weldability

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