

# Steel 'An Introduction & guide to Welding'



Technical advice in the original SifTips style which started in 1932

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 application.

For Mild Steels the carbon content is generally the first consideration, followed by silicon and manganese.

For other alloyed-steels other elements such as chromium or molybdenum would usually take priority over carbon.

## MIG Welding

MIG Welding is the most popular process with the major part of fabrication work requiring the use of SifMig SG2 wire. Other applications requiring a higher UTS would usually use SifMig SG3. Applications requiring a high deposition rate should consider flux cored wires with the most popular being Sifcored E71T-1.

Steel may also be successfully MIG brazed, as in the automotive industry on manganese boron steel with SIFMIG 968. Our other copper alloy wires SIFMIG 8, 328 and 967 are also suitable for MIG brazing.



## TIG Welding

TIG Welding filler rods are available for a range of mild and alloy steels.

A frequently asked question is 'what do we use on 4130 (0.3C, 0.3Si, 0.5Mn, 1.0Cr, 0.2Mo)'; the answer is Sifsteel A32. (See Sif Tips No 15)

Spring and high carbon steels can be successfully welding using SifSteel Stainless 312 and for dissimilar joints (steel to stainless) Sifsteel Stainless 309LSi would be a suitable consumable.

TIG brazing with Sifphosphor Bronze No 8, Sifalbronz No 32 or Sifsilcopper No 968 can be very useful with difficult steel applications, dissimilar joints or where heat must be kept to a minimum.

## MMA Welding

MMA Welding electrodes come with three different types of coating.

For the most common applications the most popular electrode have a 'rutile' coating, which is predominantly titanium oxide to decrease spatter and improve slag removal. Sif consumables for this are SifTrode 6013, Hilco Red Extra, Velveta and Velora.

Cracking in steels is often due to the formation of minute quantities of steam from hydrogen in the electrode combining with oxygen from the air. This can be overcome by using 'basic' coated electrodes, also known as 'low hydrogen'. Sif consumables for this are SifTrode 7018, Hilco Basic Super and Basic 55.

Finally, for high deposition rates, iron powder is added to the coating to substantially increase the amount of material deposited compared with a rutile type electrode. They are referred to as 'high recovery', such as Hilco Regina 160.

Sifbronzing is an almost universally recognised way of describing the low temperature bronze welding of sheet steel, cast iron and other metals. The reason behind this fact summarises why Sifbronz, the company which first developed and promoted the technique, is generally considered to be a supplier of top-quality welding rods, wires, fluxes and equipment.

'Will The Welder' was a Siftips magazine that was produced in the early 1930's. The aim was to provide users with ideas and tips as to how to get the most out of their welding equipment.

In 2007, Weldability-Sif acquired Sifbronz, the welding consumables division of the Suffolk Iron Foundry, known internationally as Sif. Sif is renowned for its manufacturing heritage and for its complete range of quality welding consumables for MIG/GMAW, TIG/GTAW, Arc/SMAW, Oxy/Fuel Welding and Brazing, which have been used globally for almost a century.



## Gas Welding

From a gas welding point of view, the filler rod is Sifsteel No 11, which is also referred to as CCMS.

The Sifbronz business developed due to the ability of Sifbronz No 1, No 101 and No 2 to 'bronze weld' and braze steel, with minimum of distortion and producing a neat fillet joint, especially on tubular structures.

For joining steel to copper or copper alloys a silver solder should be selected.

**Weldability Sif**

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