Technical Data Sheet

UGIALLOY® 55

Chemical composition (%)

C	Si	Mn	Ni	Cu	Fe
≤ 0.05	≤ 0.3	0.5 – 1.0	54.0 – 56.0	≤ 0.5	(Bal)

01-10-2021 – REV 02

General presentation

UGIALLOY®55 filler wire is mainly used for welding and repairing grey cast-iron components (containing graphite). It can be used on most grey cast iron, but is particularly suitable for welding and repairing GS (spheroidal graphite) grey cast-iron components. It makes it possible to obtain Weld Metal Zones (WMZ) that are sufficiently ductile to compensate for the low tenacity of Heat-Affected Zones (HAZ) in cast iron that has been welded or repaired by this method. The welded areas then offer a good compromise between mechanical properties / ductility / tenacity.

UGIALLOY®55 filler wire can also be used to weld austenitic cast iron (with Nickel). FG (flake graphite) austenitic cast iron is generally welded with preheating at 300 – 350°C, whereas GS austenitic cast iron is welded without preheating and at low welding energy to avoid the problems of thermal cracking in Heat-Affected Zones.

Martensitic cast iron (with Nickel) and white cast iron (without graphite) are, in fact, considered to be unweldable, as they are not sufficiently ductile and are too sensitive to cracking during post-weld cooling.

UGIALLOY®55 filler wire can also be used to obtain joints between cast iron and cast steel or between cast iron and low or medium-alloy steel.

Classification

Nickel iron grade

Designation

Material No.

Europe – EN ISO 14343-A	USA – AWS A5.15	Europe – WNr.
NiFe-1 & NiFe-Cl	ENiFe-C1 - UNS W82002	2.4472 & 2.4560

Mechanical properties on as weld deposit (typical values)

Temperature (°C)	Room Temperature
Tensile strength (MPa)	400
Yield strength (MPa)	230
Elongation (%)	24
Striction (%)	
Hardness Vickers (HV)	150

Swiss Steel Group

Production sites: Ugitech SA
www.swisssteel-group.com

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Welding

UGIALLOY® 55 filler wire can be used for conventional MIG welding or submerged arc welding. In MIG welding, a neutral shielding gas (for example 100%Ar or 75%Ar/25%He) will be used. Direct current reverse-polarity welding generally gives the best results, but a pulsed current can also be used.

As grey cast iron contains large quantities of graphite, the welds produced contain large quantities of carbon that are liable to make them brittle. That is why it is recommended to use a high base metal dilution with UGIALLOY® 55 filler wire. As shrinkage stresses during post-weld cooling are often significant, the use of UGIALLOY® 55, which is highly ductile, prevents the weld from cracking during cooling without too greatly compromising the mechanical properties of the welded areas thus obtained.

Grey cast iron is often susceptible to the formation of porosity in Weld Metal Zones. This disadvantage can be limited by maximizing the dilution rate of the cast iron through the use of UGIALLOY® 55 and by reducing the welding cooling rates (high linear welding energy) to allow the gases formed to escape before solidification. Preheating at a minimum temperature of 200°C (315°C / 600°F commonly used) generally tends to reduce the formation of porosities and the appearance of cracks during cooling.

Available products

Process	Shape	Diameter Range	Packaging	Weight
TIG	Rods	1.0 – 4.0 mm	Cardboard tubes	5 kg
MIG	Wire	0.8 – 1.6 mm	Metallic spools – BS 300	15 – 18 kg
		0.8 – 1.2 mm	Plastic spools – D 200	5 kg
			Plastic spools – D 300	15 kg
		1.0 – 1.6 mm	Plastic spools – D 350	25 – 27 kg
		0.8 – 1.2 mm	Pay off pack - Drums	250 – 500 kg
SAW	Wire	1.6 – 3.2 mm	Rims K415 / 300 / 94	20 – 25 kg
			Rims K435 / 300 / 70	

Contact us for dimensions

Applications

Repairing and welding parts in grey cast iron and austenitic cast iron (with Nickel)

Making welded joints between cast iron and cast steel or between cast iron and low or medium-alloy steel.