



Quality Management System
in accordance with
ISO 9001
Cert # 05-R0925

Nickel 55 Wire and Rod

U.S. ALLOY CO.
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ALLOY DESCRIPTION AND APPLICATION;

A premium quality 55% Nickel-45% Iron bare wire for TIG or MIG welding of cast iron components to themselves or to steel. NICKEL 55T and 55M are the TIG and MIG equivalents of NICKEL 55 (coated electrodes). Developed for high deposition and greater welding efficiency using automatic or semi-automatic equipment. NICKEL 55T/55M is excellent when doing large scale production welding of ductile (nodular) cast iron, malleable cast iron or gray cast iron to themselves or to carbon and low alloy steel. Preheating is generally needed and very important when welding heavier and thicker castings. More common uses include the repair of thick and highly restrained weldments, worn or broken parts and for salvaging defective castings that require the higher tensile strength of steel, such as found in castings containing phosphorus levels greater than 0.20%. NICKEL 55T and 55M contain sufficient levels of carbon which promote the formation of graphite in the weld deposit, thereby reducing shrinkage stresses and in turn, reducing the possibility of heat-affected zone cracking. Weld deposits are machinable using normal methods but can be made easier by stress relieving the part at approximately 1100°F. **PROCEDURES** ; Clean the work area. Preheating is not required, although It may be useful in relieving stresses and to Increase the machinability of weld deposits in castings 1/2" or thicker. 600°F is an acceptable preheat temperature when welding gray cast Iron, but 1100 to 1200°F may be needed for very thick sections or high hardness cast Irons. Use DC- (straight polarity) in TIG applications with the oscillating technique and DC+ (reverse polarity) In MIG applications with the stringer bead technique. The oscillating technique will produce the lowest weld metal dilution. When using the stringer bead technique, be sure to strike the arc on the edge of previously deposited weld metal. This will reduce dilution Do not let the part become too hot during welding. Gradual cooling of the weld metal is recommended.

TYPICAL GMAW WELDING PROCEDURES; DCEP 75Ar/25He

Wire Diameter	Wire Speed (ipm)	Amps	Volts	Electric stick out	75Ar/25He (cfh)
0.035	275-450-570	125-175-200	23-25-27	1/2-3/4"	35-45
0.045	240-450-500	175-230-295	22-29-33	1/2-1"	35-45
1/16"	150-330-490	150-330-475	23-30-38	1/2-1"	40-50

TYPICAL GTAW WELDING PROCEDURES; DCEN with EWTh-2 truncated conical tip

Filler Wire Size	Tungsten	Amps	Volts	Gas Cup Size	Argon (cfh)	Base thickness
.045	.040	45-110	10-14	3/8"	20	.035-1/16"
1/16"	1/16"	50-160	10-15	3/8"	20	.045-3/32"
1/16-3/32"	3/32"	75-200	12-55	3/8"	20	1/8- 3/16"
1/8"	1/8"	110-280	12-19	1/2"	25	1/4-1/2"

Procedures may vary with change in position, base metals, filler metals, equipment and other changes.

Nickel 55 CHEMISTRY (%) for Undiluted WELD METAL & PROPERTIES

	(AWS Requirements)	Typical		(AWS Requirements)	Typical
Carbon	2.0 max	0.032	Tensile Strength (psi)	n/a	47-78 ksi
Manganese	2.5 max	0.69	Yield Strength (psi)	n/a	38-60 ksi
Silicon	4.0 max	0.14	Elongation in 2"	n/a	5-10
Sulfur	0.03 max.	0.009			
Iron	Rem.	42.8	Aluminum	1.0 max	0.01
Nickel	45-60	56.25	Copper	2.5 max.	0.19

AVAILABLE SIZES: TN 55= Spools of .035,.045, 1/16

TN 55/ = Cut lengths of .035, .045, 1/16, 3/32, 1/8

SPECIFICATIONS; Washington Alloy Internal

Similar chemistry to AWS A5.15 ENiFe-CI

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