



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

# Nickel 99 Wire and Rod

U.S. ALLOY CO.  
dba Washington Alloy  
7010-G Reames Rd.  
Charlotte, NC 28216  
[www.weldingwire.com](http://www.weldingwire.com)



**American Welding Society**  
Sustaining Company Member



## ALLOY DESCRIPTION AND APPLICATION;

High nickel alloy bare wire for TIG or MIG cast iron welding. Nickel 99T and 99M are the TIG (99T) or MIG (99M) equivalents to Nickel 99 electrode. Developed primarily for automatic and semi-automatic welding of ductile, malleable or gray cast iron to itself or dissimilar metals such as low alloy and carbon steel, stainless steel, iron, copper Monel®, etc. Nickel 99T and 99M are excellent for the buildup of worn parts, repairing machining errors or defective castings where maximum machineability of the deposit is required. Nickel 99T and 99M can be used in any position. Produces high quality welds with a minimal amount of effort. Weld deposits are strong, dense and fully machinable. Color will match that of cast iron.

**PROCEDURES** Clean the joint area. Bevel heavy sections. Preheating is required as it is useful in relieving stresses and to increase machinability of the weld deposit in parts greater than 1/2" thick. 600°F is an acceptable preheat temperature. 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/25Co2

Wire Diameter	Wire Speed (ipm)	Amps	Volts	Electric stick out	75Ar/25Co <sub>2</sub> (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	12-18	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 99 CHEMISTRY (%) for Undiluted WELD METAL & PROPERTIES

	(AWS Requirements)	Typical		(AWS Requirements)	Typical
Carbon	1.0 max	0.038	Tensile Strength (psi)	n/a	45-70 ksi
Manganese	2.5 max	0.24	Yield Strength (psi)	n/a	36-50 ksi
Silicon	0.75 max	0.44	Elongation in 2"	n/a	6-12
Sulfur	0.03 max.	0.009	Reduction of area	n/a	20
Iron	4.0 max.	0.010			
Nickel	90 min.	Balance	Copper	4.0 max.	0.02

**AVAILABLE SIZES:** TN 99= Spools of .030, .035, .045, 1/16  
TN 99/ = Cut lengths of .035, .045, 1/16, 3/32, 1/8,

**SPECIFICATIONS;** AWS A5.15 ERNi-CI  
ASME SFA 5.15 ERNi-CI

**EAST COAST**  
7010-G Reames Rd  
Charlotte, NC 28216  
Tel (888) 522-8296  
Fax (704)598-6673

**GULF COAST**  
4755 Alpine Drive #100A  
Stafford, TX 77477  
Tel (877) 711-9274  
Fax (281)313-6332

**WEST COAST**  
8535 Utica Ave  
Rancho Cucamonga, CA 91730  
Tel (800)830-9033  
Fax (909)291-4586



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Warehouse Distribution Center – Portland, Oregon & Boston, Massachusetts

Head Office – Puyallup, Washington

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