



USA 90S-B9 Welding Wire and Rod

U.S. ALLOY CO.
dba Washington Alloy
7010-G Reames Rd.
Charlotte, NC 28216
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WASHINGTON ALLOY'S Quality
Management System is
Certified to ISO 9001:2008
Cert # 05-R0925



ALLOY DESCRIPTION AND APPLICATION;

ER90S-B9 is a 9% Cr & 1 Mo wire modified with niobium (CB) and vanadium designed to provide creep-rupture strength, toughness, fatigue life, oxidation and corrosion resistance at elevated service temperature and high pressures... This wire is suitable for 9% Chromium steels such as P91, T91, F91 and ASTM A-213, A-335, A-387. Applications include fabrication of turbines, header systems, steam piping, electric generation, and petrochemical equipment.

Controlled preheat, interpass and postheat treatment may be needed to avoid cracking.

TYPICAL GMAW WELDING PROCEDURES; DCEP Short Circuit ⁽¹⁾ 98Ar/2% O₂

Wire Diameter	Wire Speed (ipm)	Amps	Volts	Travel speed (ipm)	75/25 CO ₂ (cfh)
0.035	100-520	60-235	16-25	11-40	20-30
0.045	70-270	90-290	18-23	12-22	25-35
<i>Spray 0.035</i>	<i>320-600</i>	<i>160-300</i>	<i>23-26</i>	<i>11-22</i>	⁽¹⁾ 25-35
<i>0.045</i>	<i>170-550</i>	<i>170-375</i>	<i>23-29</i>	<i>12-21</i>	⁽¹⁾ 25-35
<i>1/16"</i>	<i>175-350</i>	<i>275-475</i>	<i>25-31</i>	<i>9-19</i>	⁽¹⁾ 25-35

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

Filler Wire Size	Tungsten	Amps	Volts	Gas Cup Size	Argon (cfh)	Base thickness
1/16"	1/16"	100-160	12	3/8"	20	1/16-3/32"
1/16-3/32"	3/32"	120-250	12	3/8"	20	1/8- 3/16"
1/8"	1/8"	150-300	12	1/2"	25	1/4-1/2"

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

WIRE CHEMISTRY (%) AND WELD METAL PROPERTIES; * Annealed @ 1400°f 2 hours

	AWS Spec.	90S-B9		AWS Spec	Typical *
Carbon	0.07-0.13	0.09	Tensile Strength (psi)	90,000 min.	110,500
Manganese	1.20 max	0.54	Yield Strength (psi)	60,000 min.	95,500
Silicon	0.15-0.50	0.22	Elongation in 2"	16% min.	17.3%
Phosphorus	0.010 max	0.008	Niobium	0.02-0.10	0.046
Sulfur	0.010 max	0.002	Vanadium	0.15-0.30	0.22
Molybdenum	0.85-1.20	0.90	Nickel	0.80 max	0.46
Chromium	8.00-10.50	8.90	Copper	0.20 max	0.13
Nitrogen	0.03-0.07	0.044	Aluminum	0.04 max	0.016

AVAILABLE SIZES: TC 90S-B9 = Spools of .035, .045, 1/16,
TT 90S-B9= Cut lengths of .035, .045, 1/16, 3/32, 1/8, 5/32

Other sizes available – please inquire

SPECIFICATIONS; ANSI/AWS A5.28 ER 90S-B9
ASME SFA 5.28 ER 90S-B9 ; F-6

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