



WA. ALLOY CO.

WASHINGTON ALLOY'S Quality
Management System is
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Cert # 05-R0925

USA 90S-B3 Welding Wire and Rod



American Welding Society

Sustaining Company Member



ALLOY DESCRIPTION AND APPLICATION;

90S-B3 is a low alloy filler designed to produce high strengths on 2 1/4 & Cr -1 Mo steels found in high temperature/high pressure piping and vessels. May also be used on carbon steels to Cr-Mo base metals. 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)
0.023	80-350	30-85	14-19	10-15	20-25
0.030	110-340	40-130	15-20	12-24	20-25
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;

	AWS Spec.	90S-B3		AWS Spec	Typical
Carbon	0.07-0.12	0.10	Tensile Strength (psi)	90,000 min.	94,500
Manganese	0.40-0.70	0.63	Yield Strength (psi)	78,000 min.	80,500
Silicon	0.40-0.70	0.46	Elongation in 2"	17% min.	19%
Phosphorus	0.025 max	0.012			
Sulfur	0.025 max	0.012			
Molybdenum	0.90-1.20	1.06	Nickel	0.20 max	0.10
Chromium	2.30-2.70	2.55	Copper	0.35 max	0.11

AVAILABLE SIZES: TC = Spools and rods of .030, .035, .045, 1/16,
TT = Cut lengths of .045, 1/16, 3/32, 1/8, 5/32

Other sizes available – please inquire

SPECIFICATIONS; ANSI/AWS A5.28 ER 90S-B3
ASME SFA 5.28 ER 90S-B3 ; A-4, F-6



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