

**USA 80S-B3L**  
 (Previously ER90S-B3L by AWS)  
**Welding Wire and Rod**

U.S. ALLOY CO.  
 dba Washington Alloy  
 7010-G Reames Rd.  
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**American Welding Society**  
 Sustaining Company Member



**ALLOY DESCRIPTION AND APPLICATION;**

80S-B3L 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. This alloy is identical to the ER90S-B3 except it has a lower carbon content maximum that will lower the strength and exhibit greater resistance to cracking and used more often when welds are left in the as-welded condition. 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 <sup>(1)</sup> 98Ar/2% O<sub>2</sub>**

Wire Diameter	Wire Speed (ipm)	Amps	Volts	Travel speed (ipm)	75/25 CO <sub>2</sub> (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>	<i>(1)25-35</i>
<i>0.045</i>	<i>170-550</i>	<i>170-375</i>	<i>23-29</i>	<i>12-21</i>	<i>(1)25-35</i>
<i>1/16"</i>	<i>175-350</i>	<i>275-475</i>	<i>25-31</i>	<i>9-19</i>	<i>(1)25-35</i>

**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; PWHT**

	AWS Spec.		AWS Spec.
Carbon	0.05 max	Tensile Strength (psi)	80,000 min.
Manganese	0.40-0.70	Yield Strength (psi)	68,000 min.
Silicon	0.40-0.70	Elongation in 2"	17% min.
Phosphorus	0.025 max	Chromium	2.30-2.70
Sulfur	0.025 max	Copper	0.35 max
Molybdenum	0.90-1.20	Nickel	0.20 max

**AVAILABLE SIZES:** TC 80S-B3L = Spools and rods of .035, .045, 1/16,

TT 80S-B3L = Cut lengths of 1/16, 3/32, 1/8, 5/32

Other sizes available – please inquire

**SPECIFICATIONS;** ANSI/AWS A5.28 ER 80S-B3L

ASME SFA 5.28 ER 80S-B3L ; A-4, F-6

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