



USA 120S-1 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;

USA 120S-1 is used for a variety of steels where high strength and ductility are critical. It is designed to give high notch toughness, yield strength and impact resistance. USA 120S-1 can be welded at an interpass temperature as low as 300°F while also offering high ductility to -75°F. Typical application may be high yield steels such as T-1, HY-100 and other steels in the 100,000 psi YS class, pressure vessels. Mechanical properties from the weld deposit will vary depending on heat input used. Preheat and interpass of 300°F may be required.

TYPICAL GMAW WELDING PROCEDURES; DCEP Short Circuit

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</i> 0.035	320-600	160-300	23-26	11-22	⁽¹⁾ 25-35
0.045	170-550	170-375	23-29	12-21	⁽¹⁾ 25-35
1/16"	175-350	275-475	25-31	9-19	⁽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.

TYPICAL WIRE CHEMISTRY (%) AND WELD METAL PROPERTIES;

	AWS Spec.	120S-S-1		AWS Spec.	Typical
Carbon	0.10 max	0.070	Tensile Strength (psi)	120,000 min.	125,000
Manganese	1.40-1.80	1.55	Yield Strength (psi)	105,000 min.	110,000
Silicon	0.25-0.60	0.35	Elongation in 2"	14% min.	15%
Phosphorus	0.010 max	0.006	Charpy V-notch at -60°F	50 ft-lbs min.	70 ft-lbs
Sulfur	0.010 max	0.008			
Nickel	2.00-2.80	2.40	AWS maximum as follows : Ti, Zr, Al = 0.10 each &		
Molybdenum	0.30-0.65	0.55	V = 0.03 : Cu = 0.25		
Chromium	0.60 max	0.45			

AVAILABLE SIZES: TC 120S-1 = Spools of .035, .045, 1/16, 3/32
TT 120S-1 = Cut lengths of .035, .045, 1/16, 3/32, 1/8

SPECIFICATIONS; ANSI/AWS A5.28 ER 120S-1
ASME SFA 5.28 ER 120S-1

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