

Spoolarc 120

Spoolarc 120 is designed for welding high strength quenched and tempered steels. Weld metal mechanical properties produce high tensile strengths, in excess of 120 ksi (825 MPa). Applications for Spoolarc 120 include military tanks, ships, submarines and other similar fabrication.

Specifications

Classifications	ASME SFA 5.28 ASME SFA 5.23 AWS A5.23 : EM4 AWS A5.28 : ER120S-1
Industry	Mobile Equipment Industrial and General Fabrication Ship/Barge Building

Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation
As Welded	775 MPa (112 ksi)	840 MPa (123 ksi)	19 %

Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
98% Ar - 2% O₂		
As Welded	-18 °C (0 °F)	136 J (100 ft-lb)
As Welded	-51 °C (-60 °F)	102 J (75 ft-lb)

Typical Wire Composition %

C	Mn	Si	S	P	Ni	Cr	Mo	Al	Cu
0.070	1.690	0.350	0.004	0.004	2.490	0.270	0.510	0.005	0.030

Typical Wire Composition %

Ti	Zr
0.018	0.002

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Type	Deposition Rate
0.9 mm (.035 in.)	180 A	25 V	1016 cm/min (400 in./min)	Spray Transfer	2.9 kg/h (6.3 lbs/h)
0.9 mm (.035 in.)	197 A	26 V	1143 cm/min (450 in./min)	Spray Transfer	3.2 kg/h (7.1 lbs/h)
0.9 mm (.035 in.)	213 A	26 V	1270 cm/min (500 in./min)	Spray Transfer	3.6 kg/h (7.9 lbs/h)
0.9 mm (.035 in.)	230 A	27 V	1397 cm/min (550 in./min)	Spray Transfer	4.0 kg/h (8.7 lbs/h)
1.2 mm (.045 in.)	260 A	25 V	762 cm/min (300 in./min)	Spray Transfer	3.6 kg/h (7.9 lbs/h)
1.2 mm (.045 in.)	280 A	26 V	889 cm/min (350 in./min)	Spray Transfer	4.2 kg/h (9.2 lbs/h)
1.2 mm (.045 in.)	300 A	28 V	1016 cm/min (400 in./min)	Spray Transfer	4.8 kg/h (10.5 lbs/h)
1.2 mm (.045 in.)	320 A	29 V	1143 cm/min (450 in./min)	Spray Transfer	5.4 kg/h (11.8 lbs/h)
1.2 mm (.045 in.)	340 A	30 V	1270 cm/min (500 in./min)	Spray Transfer	6.0 kg/h (13.1 lbs/h)

Spoolarc 120

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Type	Deposition Rate
1.6 mm (1/16 in.)	290 A	26 V	457 cm/min (180 in./min)	Spray Transfer	4.1 kg/h (9.1 lbs/h)
1.6 mm (1/16 in.)	310 A	28 V	508 cm/min (200 in./min)	Spray Transfer	4.6 kg/h (10.1 lbs/h)
1.6 mm (1/16 in.)	340 A	31 V	584 cm/min (230 in./min)	Spray Transfer	5.3 kg/h (11.6 lbs/h)
1.6 mm (1/16 in.)	370 A	34 V	660 cm/min (260 in./min)	Spray Transfer	6.0 kg/h (13.2 lbs/h)
1.6 mm (1/16 in.)	390 A	36 V	711 cm/min (280 in./min)	Spray Transfer	6.4 kg/h (14.2 lbs/h)
0.9 mm (.035 in.)	90 A	15 V	457 cm/min (180 in./min)	Short Arc Transfer	1.2 kg/h (2.7 lbs/h)
0.9 mm (.035 in.)	113 A	16 V	559 cm/min (220 in./min)	Short Arc Transfer	1.5 kg/h (3.3 lbs/h)
0.9 mm (.035 in.)	137 A	18 V	660 cm/min (260 in./min)	Short Arc Transfer	1.8 kg/h (4.0 lbs/h)
0.9 mm (.035 in.)	160 A	19 V	762 cm/min (300 in./min)	Short Arc Transfer	2.1 kg/h (4.6 lbs/h)
1.2 mm (.045 in.)	130 A	17 V	318 cm/min (125 in./min)	Short Arc Transfer	1.4 kg/h (3.1 lbs/h)
1.2 mm (.045 in.)	163 A	18 V	406 cm/min (160 in./min)	Short Arc Transfer	1.8 kg/h (4.0 lbs/h)
1.2 mm (.045 in.)	200 A	19 V	508 cm/min (200 in./min)	Short Arc Transfer	2.3 kg/h (5.0 lbs/h)

Recommended Welding Parameters

Current	Wire Diameter	Voltage	Wire Feed Speed
Short Arc Transfer			
45-90 A	0.6 mm (.023 in.)	14-16 V	381-965 cm/min (150-380 in./min)
70 A	0.6 mm (.023 in.)	15 V	762 cm/min (300 in./min)
110 A	0.6 mm (.023 in.)	23 V	1143 cm/min (450 in./min)
100-125 A	0.6 mm (.023 in.)	23-25 V	1016-1575 cm/min (400-620 in./min)
160-200 A	0.8 mm (.030 in.)	24-26 V	1270-1651 cm/min (500-650 in./min)
60-140 A	0.8 mm (.030 in.)	14-16 V	381-889 cm/min (150-350 in./min)
100 A	0.8 mm (.030 in.)	15 V	559 cm/min (220 in./min)
180 A	0.8 mm (.030 in.)	25 V	1321 cm/min (520 in./min)
90-160 A	0.9 mm (.035 in.)	15-19 V	457-762 cm/min (180-300 in./min)
200 A	0.9 mm (.035 in.)	26 V	1219 cm/min (480 in./min)
180-230 A	0.9 mm (.035 in.)	25-27 V	1016-1397 cm/min (400-550 in./min)

Spoolarc 120

Recommended Welding Parameters

Current	Wire Diameter	Voltage	Wire Feed Speed
130 A	0.9 mm (.035 in.)	17 V	635 cm/min (250 in./min)
260-340 A	1.2 mm (.045 in.)	25-30 V	762-1270 cm/min (300-500 in./min)
130-200 A	1.2 mm (.045 in.)	17-19 V	318-508 cm/min (125-200 in./min)
160 A	1.2 mm (.045 in.)	18 V	381 cm/min (150 in./min)
300 A	1.2 mm (.045 in.)	27 V	889 cm/min (350 in./min)
160 A	1.4 mm (.052 in.)	18 V	356 cm/min (140 in./min)
150-200 A	1.4 mm (.052 in.)	17-20 V	343-483 cm/min (135-190 in./min)
275-400 A	1.4 mm (.052 in.)	26-33 V	673-991 cm/min (265-390 in./min)
325 A	1.4 mm (.052 in.)	28 V	787 cm/min (310 in./min)
290-400 A	1.6 mm (1/16 in.)	26-36 V	457-711 cm/min (180-280 in./min)
340 A	1.6 mm (1/16 in.)	27 V	508 cm/min (200 in./min)
Spray Transfer Optimum			
45-90 A	0.6 mm (.023 in.)	14-16 V	381-965 cm/min (150-380 in./min)
70 A	0.6 mm (.023 in.)	15 V	762 cm/min (300 in./min)
110 A	0.6 mm (.023 in.)	23 V	1143 cm/min (450 in./min)
100-125 A	0.6 mm (.023 in.)	23-25 V	1016-1575 cm/min (400-620 in./min)
160-200 A	0.8 mm (.030 in.)	24-26 V	1270-1651 cm/min (500-650 in./min)
60-140 A	0.8 mm (.030 in.)	14-16 V	381-889 cm/min (150-350 in./min)
100 A	0.8 mm (.030 in.)	15 V	559 cm/min (220 in./min)
180 A	0.8 mm (.030 in.)	25 V	1321 cm/min (520 in./min)
90-160 A	0.9 mm (.035 in.)	15-19 V	457-762 cm/min (180-300 in./min)
200 A	0.9 mm (.035 in.)	26 V	1219 cm/min (480 in./min)
180-230 A	0.9 mm (.035 in.)	25-27 V	1016-1397 cm/min (400-550 in./min)
130 A	0.9 mm (.035 in.)	17 V	635 cm/min (250 in./min)
260-340 A	1.2 mm (.045 in.)	25-30 V	762-1270 cm/min (300-500 in./min)
130-200 A	1.2 mm (.045 in.)	17-19 V	318-508 cm/min (125-200 in./min)

Spoolarc 120

Recommended Welding Parameters

Current	Wire Diameter	Voltage	Wire Feed Speed
160 A	1.2 mm (.045 in.)	18 V	381 cm/min (150 in./min)
300 A	1.2 mm (.045 in.)	27 V	889 cm/min (350 in./min)
160 A	1.4 mm (.052 in.)	18 V	356 cm/min (140 in./min)
150-200 A	1.4 mm (.052 in.)	17-20 V	343-483 cm/min (135-190 in./min)
275-400 A	1.4 mm (.052 in.)	26-33 V	673-991 cm/min (265-390 in./min)
325 A	1.4 mm (.052 in.)	28 V	787 cm/min (310 in./min)
290-400 A	1.6 mm (1/16 in.)	26-36 V	457-711 cm/min (180-280 in./min)
340 A	1.6 mm (1/16 in.)	27 V	508 cm/min (200 in./min)
Spray Transfer			
45-90 A	0.6 mm (.023 in.)	14-16 V	381-965 cm/min (150-380 in./min)
70 A	0.6 mm (.023 in.)	15 V	762 cm/min (300 in./min)
110 A	0.6 mm (.023 in.)	23 V	1143 cm/min (450 in./min)
100-125 A	0.6 mm (.023 in.)	23-25 V	1016-1575 cm/min (400-620 in./min)
160-200 A	0.8 mm (.030 in.)	24-26 V	1270-1651 cm/min (500-650 in./min)
60-140 A	0.8 mm (.030 in.)	14-16 V	381-889 cm/min (150-350 in./min)
100 A	0.8 mm (.030 in.)	15 V	559 cm/min (220 in./min)
180 A	0.8 mm (.030 in.)	25 V	1321 cm/min (520 in./min)
90-160 A	0.9 mm (.035 in.)	15-19 V	457-762 cm/min (180-300 in./min)
200 A	0.9 mm (.035 in.)	26 V	1219 cm/min (480 in./min)
180-230 A	0.9 mm (.035 in.)	25-27 V	1016-1397 cm/min (400-550 in./min)
130 A	0.9 mm (.035 in.)	17 V	635 cm/min (250 in./min)
260-340 A	1.2 mm (.045 in.)	25-30 V	762-1270 cm/min (300-500 in./min)
130-200 A	1.2 mm (.045 in.)	17-19 V	318-508 cm/min (125-200 in./min)
160 A	1.2 mm (.045 in.)	18 V	381 cm/min (150 in./min)
300 A	1.2 mm (.045 in.)	27 V	889 cm/min (350 in./min)
160 A	1.4 mm (.052 in.)	18 V	356 cm/min (140 in./min)

Spoolarc 120

Recommended Welding Parameters

Current	Wire Diameter	Voltage	Wire Feed Speed
150-200 A	1.4 mm (.052 in.)	17-20 V	343-483 cm/min (135-190 in./min)
275-400 A	1.4 mm (.052 in.)	26-33 V	673-991 cm/min (265-390 in./min)
325 A	1.4 mm (.052 in.)	28 V	787 cm/min (310 in./min)
290-400 A	1.6 mm (1/16 in.)	26-36 V	457-711 cm/min (180-280 in./min)
340 A	1.6 mm (1/16 in.)	27 V	508 cm/min (200 in./min)
Short Arc Transfer Optimum			
45-90 A	0.6 mm (.023 in.)	14-16 V	381-965 cm/min (150-380 in./min)
70 A	0.6 mm (.023 in.)	15 V	762 cm/min (300 in./min)
110 A	0.6 mm (.023 in.)	23 V	1143 cm/min (450 in./min)
100-125 A	0.6 mm (.023 in.)	23-25 V	1016-1575 cm/min (400-620 in./min)
160-200 A	0.8 mm (.030 in.)	24-26 V	1270-1651 cm/min (500-650 in./min)
60-140 A	0.8 mm (.030 in.)	14-16 V	381-889 cm/min (150-350 in./min)
100 A	0.8 mm (.030 in.)	15 V	559 cm/min (220 in./min)
180 A	0.8 mm (.030 in.)	25 V	1321 cm/min (520 in./min)
90-160 A	0.9 mm (.035 in.)	15-19 V	457-762 cm/min (180-300 in./min)
200 A	0.9 mm (.035 in.)	26 V	1219 cm/min (480 in./min)
180-230 A	0.9 mm (.035 in.)	25-27 V	1016-1397 cm/min (400-550 in./min)
130 A	0.9 mm (.035 in.)	17 V	635 cm/min (250 in./min)
260-340 A	1.2 mm (.045 in.)	25-30 V	762-1270 cm/min (300-500 in./min)
130-200 A	1.2 mm (.045 in.)	17-19 V	318-508 cm/min (125-200 in./min)
160 A	1.2 mm (.045 in.)	18 V	381 cm/min (150 in./min)
300 A	1.2 mm (.045 in.)	27 V	889 cm/min (350 in./min)
160 A	1.4 mm (.052 in.)	18 V	356 cm/min (140 in./min)
150-200 A	1.4 mm (.052 in.)	17-20 V	343-483 cm/min (135-190 in./min)
275-400 A	1.4 mm (.052 in.)	26-33 V	673-991 cm/min (265-390 in./min)
325 A	1.4 mm (.052 in.)	28 V	787 cm/min (310 in./min)

Spoolarc 120

Recommended Welding Parameters

Current	Wire Diameter	Voltage	Wire Feed Speed
290-400 A	1.6 mm (1/16 in.)	26-36 V	457-711 cm/min (180-280 in./min)
340 A	1.6 mm (1/16 in.)	27 V	508 cm/min (200 in./min)