

Spoolarc 83

Spoolarc 83 contains 0.5% Mo to provide higher deposit strength in both the as welded and stress relieved conditions. It contains high levels of Manganese and Silicon to provide good wetting and good rust and scale tolerance. Spoolarc 83 is also used for all-position welding of high tensile pipe and tubing commonly found in earthmoving and construction equipment. It is available in forms suitable for MIG and TIG welding.

Classifications	AWS A5.28 : ER80S-D2/ER90S-D2
Approvals	CWB CAN/CSA-ISO14341,B-G 55A 3 G4M31 (ER80S-D2) CWB CSA W48 MIL-E-23765/2 80S-3
Industry	Automotive Industrial and General Fabrication Mobile Equipment Ship/Barge Building

Approvals are based on factory location. Please contact ESAB for more information.

Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation
98% Ar - 2% O₂			
As Welded	655 MPa (95 ksi)	750 MPa (110 ksi)	22 %
100% CO₂			
As Welded	530 MPa (77 ksi)	635 MPa (92 ksi)	23 %

Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
100% CO₂		
As Welded	-29 °C (-20 °F)	60 J (44 ft-lb)
98% Ar - 2% O₂		
As Welded	-29 °C (-20 °F)	118 J (87 ft-lb)

Typical Wire Composition %

C	Mn	Si	S	P	Ni	Mo	Cu
0.08	1.69	0.63	0.011	0.01	0.09	0.4	0.17

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate
0.8 mm (.030 in.)	160 A	24 V	1270 cm/min (500 in./min)	2.6 kg/h (5.8 lb/h)
0.8 mm (.030 in.)	173 A	25 V	1397 cm/min (550 in./min)	2.9 kg/h (6.4 lb/h)
0.8 mm (.030 in.)	187 A	25 V	1524 cm/min (600 in./min)	3.2 kg/h (7.0 lb/h)
0.8 mm (.030 in.)	200 A	26 V	1651 cm/min (650 in./min)	3.4 kg/h (7.6 lb/h)
0.9 mm (.035 in.)	180 A	25 V	1016 cm/min (400 in./min)	2.9 kg/h (6.3 lb/h)
0.9 mm (.035 in.)	197 A	26 V	1143 cm/min (450 in./min)	3.2 kg/h (7.1 lb/h)
0.9 mm (.035 in.)	213 A	26 V	1270 cm/min (500 in./min)	3.6 kg/h (7.9 lb/h)
0.9 mm (.035 in.)	230 A	27 V	1397 cm/min (550 in./min)	4.0 kg/h (8.7 lb/h)
1.2 mm (.045 in.)	260 A	25 V	762 cm/min (300 in./min)	3.6 kg/h (7.9 lb/h)
1.2 mm (.045 in.)	280 A	26 V	889 cm/min (350 in./min)	4.2 kg/h (9.2 lb/h)
1.2 mm (.045 in.)	300 A	28 V	1016 cm/min (400 in./min)	4.8 kg/h (10.5 lb/h)
1.2 mm (.045 in.)	320 A	29 V	1143 cm/min (450 in./min)	5.4 kg/h (11.8 lb/h)
1.2 mm (.045 in.)	340 A	30 V	1270 cm/min (500 in./min)	6.0 kg/h (13.1 lb/h)

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Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate
1.3 mm (.052 in.)	275 A	26 V	673 cm/min (265 in./min)	4.2 kg/h (9.3 lb/h)
1.3 mm (.052 in.)	310 A	28 V	762 cm/min (300 in./min)	4.8 kg/h (10.5 lb/h)
1.3 mm (.052 in.)	360 A	31 V	889 cm/min (350 in./min)	5.6 kg/h (12.2 lb/h)
1.3 mm (.052 in.)	400 A	33 V	991 cm/min (390 in./min)	5.6 kg/h (12.2 lb/h)
1.6 mm (1/16 in.)	290 A	26 V	457 cm/min (180 in./min)	4.1 kg/h (9.1 lb/h)
1.6 mm (1/16 in.)	310 A	28 V	508 cm/min (200 in./min)	4.6 kg/h (10.1 lb/h)
1.6 mm (1/16 in.)	340 A	31 V	584 cm/min (230 in./min)	5.3 kg/h (11.6 lb/h)
1.6 mm (1/16 in.)	370 A	34 V	660 cm/min (260 in./min)	6.0 kg/h (13.2 lb/h)
1.6 mm (1/16 in.)	390 A	36 V	771 cm/min (280 in./min)	6.4 kg/h (14.2 lb/h)
0.8 mm (.030 in.)	60 A	14 V	381 cm/min (150 in./min)	0.8 kg/h (1.7 lb/h)
0.8 mm (.030 in.)	80 A	15 V	508 cm/min (200 in./min)	1.0 kg/h (2.2 lb/h)
0.8 mm (.030 in.)	100 A	15 V	635 cm/min (250 in./min)	1.3 kg/h (2.8 lb/h)
0.8 mm (.030 in.)	120 A	16 V	762 cm/min (300 in./min)	1.5 kg/h (3.3 lb/h)
0.8 mm (.030 in.)	140 A	16 V	889 cm/min (350 in./min)	1.7 kg/h (3.9 lb/h)
0.8 mm (.030 in.)	144 A	16 V	914 cm/min (360 in./min)	1.8 kg/h (4.0 lb/h)
0.9 mm (.035 in.)	90 A	15 V	457 cm/min (180 in./min)	1.2 kg/h (2.7 lb/h)
0.9 mm (.035 in.)	113 A	16 V	559 cm/min (220 in./min)	1.5 kg/h (3.3 lb/h)
0.9 mm (.035 in.)	137 A	18 V	660 cm/min (260 in./min)	1.8 kg/h (4.0 lb/h)
0.9 mm (.035 in.)	160 A	19 V	762 cm/min (300 in./min)	2.1 kg/h (4.6 lb/h)
1.2 mm (.045 in.)	130 A	17 V	318 cm/min (125 in./min)	1.4 kg/h (3.1 lb/h)
1.2 mm (.045 in.)	163 A	18 V	406 cm/min (160 in./min)	1.8 kg/h (4.0 lb/h)
1.2 mm (.045 in.)	200 A	19 V	508 cm/min (200 in./min)	2.3 kg/h (5.0 lb/h)
1.3 mm (.052 in.)	150 A	17 V	343 cm/min (135 in./min)	2.1 kg/h (4.5 lb/h)
1.3 mm (.052 in.)	173 A	18 V	406 cm/min (160 in./min)	2.4 kg/h (5.4 lb/h)
1.3 mm (.052 in.)	200 A	20 V	483 cm/min (190 in./min)	2.9 kg/h (6.4 lb/h)

Recommended Welding Parameters			
Wire Diameter	Current	Voltage	Wire Feed Speed
0.6 mm (.023 in.)	45-90 A	14-16 V	381-965 cm/min (150-380 in./min)
0.8 mm (.030 in.)	60-140 A	14-16 V	381-889 cm/min (150-350 in./min)
0.9 mm (.035 in.)	90-160 A	15-19 V	457-762 cm/min (180-300 in./min)
1.2 mm (.045 in.)	130-200 A	17-19 V	318-508 cm/min (125-200 in./min)
1.4 mm (.052 in.)	150-200 A	17-20 V	343-483 cm/min (135-190 in./min)
0.6 mm (.023 in.)	100-125 A	23-25 V	1016-1575 cm/min (400-620 in./min)

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