

Spoolarc 86

Spoolarc 86 is a copper-coated solid wire containing high levels of manganese and silicon. Spoolarc 86 is suitable for many carbon steel welding applications using the MIG/Gas Metal Arc Welding (GMAW) process. The high levels of deoxidizers in Spoolarc 86 provide excellent tolerance of rust and mill scale. The high levels of manganese and silicon also provide excellent wetting action and a highly fluid weld puddle. Shielding gas choices for Spoolarc 86 in the GMAW mode are 100% carbon dioxide, argon/carbon dioxide mixtures, argon/oxygen mixtures, and other argon based mixed gas blends. Spoolarc 86 excels in HVAC duct work, heavy equipment fabrication, structural, and other general steel fabrication.

Specifications	
Classifications	EN ISO 14341-A : G 3Si1 ASME SFA-A5.18 : ER70S-6 AWS A5.18 : ER70S-6 H4
Approvals	ABS : AWS A5.18: ER70S-6 H4 CWB : CAN/CSA-ISO14341,B-G 49A 3C G6 (ER49S-6) CWB : CSA W48 LR : 3S, 3YS (H15) MIL-E-23765/1 : MIL-70S-6
Industry	Mobile Equipment Automotive Ship/Barge Building Industrial and General Fabrication

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

Typical Tensile Properties			
Condition	Yield Strength	Tensile Strength	Elongation
100% CO₂			
As Welded	470 MPa (68 ksi)	565 MPa (82 ksi)	30 %
75% Ar - 25% CO₂			
As Welded	497 MPa (72 ksi)	593 MPa (86 ksi)	27 %
90% Ar - 10% CO₂			
As Welded	503 MPa (73 ksi)	593 MPa (86 ksi)	29 %

Typical Charpy V-Notch Properties		
Condition	Testing Temperature	Impact Value
100% CO₂		
As Welded	-29 °C (-20 °F)	60 J (44 ft-lb)
90% Ar - 10% CO₂		
As Welded	-29 °C (-20 °F)	156 J (115 ft-lb)
As Welded	-40 °C (-40 °F)	123 J (91 ft-lb)
As Welded	-45 °C (-50 °F)	130 J (96 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	Cr	Mo	Cu
0.08	1.51	0.85	0.01	0.008	0.01	0.02	0.01	0.11

Deposition Data			
Diameter	Current	Deposition Efficiency (%)	Deposition Rate
100% CO₂			
1.2 mm (.045 in.)	300 A	93 %	4.40 kg/h (9.7 lbs/h)
1.6 mm (1/16 in.)	250 A	93 %	2.81 kg/h (6.2 lbs/h)
1.6 mm (1/16 in.)	350 A	93 %	4.85 kg/h (10.7 lbs/h)

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Diameter	Current	Deposition Efficiency (%)	Deposition Rate
0.9 mm (.035 in.)	200 A	93 %	2.68 kg/h (5.9 lbs/h)
1.2 mm (.045 in.)	150 A	93 %	1.54 kg/h (3.4 lbs/h)
1.2 mm (.045 in.)	200 A	93 %	2.40 kg/h (5.3 lbs/h)
1.2 mm (.045 in.)	350 A	93 %	5.67 kg/h (12.5 lbs/h)
1.6 mm (1/16 in.)	450 A	93 %	7.48 kg/h (16.5 lbs/h)
1.2 mm (.045 in.)	250 A	93 %	3.36 kg/h (7.4 lbs/h)
1.6 mm (1/16 in.)	275 A	93 %	3.31 kg/h (7.3 lbs/h)
1.2 mm (.045 in.)	125 A	93 %	1.22 kg/h (2.7 lbs/h)
0.8 mm (.030 in.)	200 A	93 %	2.95 kg/h (6.5 lbs/h)
1.6 mm (1/16 in.)	400 A	93 %	6.03 kg/h (13.3 lbs/h)
1.2 mm (.045 in.)	100 A	93 %	0.86 kg/h (1.9 lbs/h)
0.9 mm (.035 in.)	100 A	93 %	1.18 kg/h (2.6 lbs/h)
0.9 mm (.035 in.)	150 A	93 %	1.81 kg/h (4.0 lbs/h)
0.8 mm (.030 in.)	100 A	93 %	1.13 kg/h (2.5 lbs/h)
0.9 mm (.035 in.)	250 A	93 %	3.90 kg/h (8.6 lbs/h)
0.8 mm (.030 in.)	150 A	93 %	1.77 kg/h (3.9 lbs/h)
0.9 mm (.035 in.)	80 A	93 %	0.91 kg/h (2.0 lbs/h)
0.8 mm (.030 in.)	75 A	93 %	0.82 kg/h (1.8 lbs/h)
1.6 mm (1/16 in.)	300 A	93 %	3.86 kg/h (8.5 lbs/h)
75% Ar - 25% CO₂			
1.2 mm (.045 in.)	350 A	96 %	5.85 kg/h (12.9 lbs/h)
0.8 mm (.030 in.)	100 A	96 %	1.18 kg/h (2.6 lbs/h)
0.9 mm (.035 in.)	250 A	96 %	3.09 kg/h (8.8 lbs/h)
1.6 mm (1/16 in.)	300 A	96 %	3.99 kg/h (8.8 lbs/h)
0.8 mm (.030 in.)	200 A	96 %	3.04 kg/h (6.7 lbs/h)
1.2 mm (.045 in.)	100 A	96 %	0.91 kg/h (2.0 lbs/h)
1.2 mm (.045 in.)	250 A	96 %	3.45 kg/h (7.6 lbs/h)
0.9 mm (.035 in.)	200 A	96 %	2.72 kg/h (6.0 lbs/h)
0.9 mm (.035 in.)	100 A	96 %	1.22 kg/h (2.7 lbs/h)
1.2 mm (.045 in.)	200 A	96 %	2.49 kg/h (5.5 lbs/h)
1.6 mm (1/16 in.)	400 A	96 %	6.21 kg/h (13.7 lbs/h)
0.9 mm (.035 in.)	80 A	96 %	0.95 kg/h (2.1 lbs/h)
1.2 mm (.045 in.)	300 A	96 %	4.53 kg/h (10.0 lbs/h)
1.2 mm (.045 in.)	125 A	96 %	1.27 kg/h (2.8 lbs/h)
0.8 mm (.030 in.)	75 A	96 %	0.86 kg/h (1.9 lbs/h)
1.6 mm (1/16 in.)	275 A	96 %	3.45 kg/h (7.6 lbs/h)
1.2 mm (.045 in.)	150 A	96 %	1.59 kg/h (3.5 lbs/h)
1.6 mm (1/16 in.)	450 A	96 %	7.76 kg/h (17.1 lbs/h)
0.9 mm (.035 in.)	150 A	96 %	1.86 kg/h (4.1 lbs/h)
1.6 mm (1/16 in.)	250 A	96 %	2.90 kg/h (6.4 lbs/h)
1.6 mm (1/16 in.)	350 A	96 %	6.21 kg/h (11.0 lbs/h)
0.8 mm (.030 in.)	150 A	96 %	1.81 kg/h (4.0 lbs/h)
92% Ar - 8% CO₂			
1.2 mm (.045 in.)	150 A	98 %	1.63 kg/h (3.6 lbs/h)
1.2 mm (.045 in.)	100 A	98 %	0.95 kg/h (2.1 lbs/h)
0.8 mm (.030 in.)	200 A	98 %	3.08 kg/h (6.8 lbs/h)
1.6 mm (1/16 in.)	450 A	98 %	7.89 kg/h (17.4 lbs/h)

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Diameter	Current	Deposition Efficiency (%)	Deposition Rate
0.9 mm (.035 in.)	80 A	98 %	1.00 kg/h (2.2 lbs/h)
0.9 mm (.035 in.)	100 A	98 %	1.22 kg/h (2.7 lbs/h)
1.2 mm (.045 in.)	350 A	98 %	5.99 kg/h (13.2 lbs/h)
0.8 mm (.030 in.)	150 A	98 %	1.86 kg/h (4.1 lbs/h)
0.8 mm (.030 in.)	75 A	98 %	0.91 kg/h (2.0 lbs/h)
0.9 mm (.035 in.)	200 A	98 %	2.81 kg/h (6.2 lbs/h)
1.6 mm (1/16 in.)	300 A	98 %	4.08 kg/h (9.0 lbs/h)
1.2 mm (.045 in.)	250 A	98 %	3.58 kg/h (7.8 lbs/h)
1.6 mm (1/16 in.)	275 A	98 %	3.49 kg/h (7.7 lbs/h)
1.6 mm (1/16 in.)	350 A	98 %	5.13 kg/h (11.3 lbs/h)
0.8 mm (.030 in.)	100 A	98 %	1.18 kg/h (2.6 lbs/h)
0.9 mm (.035 in.)	250 A	98 %	4.08 kg/h (9.0 lbs/h)
1.6 mm (1/16 in.)	250 A	98 %	2.95 kg/h (6.5 lbs/h)
0.9 mm (.035 in.)	150 A	98 %	1.90 kg/h (4.2 lbs/h)
1.2 mm (.045 in.)	300 A	98 %	4.63 kg/h (10.2 lbs/h)
1.6 mm (1/16 in.)	400 A	98 %	6.35 kg/h (14.0 lbs/h)
1.2 mm (.045 in.)	125 A	98 %	1.27 kg/h (2.8 lbs/h)
1.2 mm (.045 in.)	200 A	98 %	2.54 kg/h (5.6 lbs/h)

Recommended Welding Parameters

Wire Diameter	Current	Voltage	Wire Feed Speed
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)
1.4 mm (.052 in.)	150-200 A	17-20 V	343-483 cm/min (135-190 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)
Spray Transfer			
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)
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)