

## Spoolarc 29S

Spoolarc 29S is a general purpose copper-coated solid wire suitable for many carbon steel welding applications using the MIG/Gas Metal Arc Welding (GMAW). Spoolarc 29S contains moderate amounts of manganese and silicon to provide sufficient deoxidation over light mill scale. Shielding gas choices for Spoolarc 29S in the GMAW mode are 100% carbon dioxide, argon/carbon dioxide mixtures, argon/oxygen mixtures, and other argon based mixed gas blends. Spoolarc 29S is used in a wide variety of applications including heavy equipment, automotive parts, railcars, agricultural equipment, and sheet metal welding.

<b>Classifications</b>	AWS A5.18 : ER70S-3
<b>Approvals</b>	ABS 3SA 3YSA CWB CAN/CSA-ISO14341 B-G 49A 2C G3 (ER49S-3) CWB CSA W48
<b>Industry</b>	Automotive Civil Construction Industrial and General Fabrication Mobile Equipment

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

### Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation
<b>90% Ar - 10% CO<sub>2</sub></b>			
As Welded	496 MPa (72 ksi)	586 MPa (85 ksi)	22 %
<b>75% Ar - 25% CO<sub>2</sub></b>			
As Welded	489.5 MPa (71 ksi)	586 MPa (85 ksi)	21 %

### Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
<b>90% Ar - 10% CO<sub>2</sub></b>		
As Welded	-45 °C (-50 °F)	88 J (65 ft-lb)
As Welded	-40 °C (-40 °F)	114 J (84 ft-lb)
As Welded	-29 °C (-20 °F)	130 J (96 ft-lb)
<b>75% Ar - 25% CO<sub>2</sub></b>		
As Welded	-45 °C (-50 °F)	79 J (58 ft-lb)
As Welded	-40 °C (-40 °F)	81 J (60 ft-lb)
As Welded	-29 °C (-20 °F)	99 J (73 ft-lb)

### Typical Wire Composition %

C	Mn	Si	S	P	Ni	Cr	Mo	V	Cu
0.09	1.18	0.54	0.007	0.015	0.04	0.04	0.01	0.004	0.04

### Deposition Data

Diameter	Current	Deposition Rate	Deposition Efficiency %
0.8 mm (.030 in.)	100 A	1.13 kg/h (2.5 lb/h)	93 %
0.8 mm (.030 in.)	150 A	1.77 kg/h (3.9 lb/h)	93 %
0.8 mm (.030 in.)	200 A	2.95 kg/h (6.5 lb/h)	93 %
0.8 mm (.030 in.)	75 A	0.82 kg/h (1.8 lb/h)	93 %
<b>100% CO<sub>2</sub></b>			
0.9 mm (.035 in.)	100 A	1.18 kg/h (2.6 lb/h)	93 %
0.9 mm (.035 in.)	150 A	1.81 kg/h (4.0 lb/h)	93 %
0.9 mm (.035 in.)	200 A	2.68 kg/h (5.9 lb/h)	93 %
0.9 mm (.035 in.)	250 A	3.90 kg/h (8.6 lb/h)	93 %
0.9 mm (.035 in.)	80 A	0.91 kg/h (2.0 lb/h)	93 %

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Deposition Data			
Diameter	Current	Deposition Rate	Deposition Efficiency %
1.2 mm (.045 in.)	100 A	0.86 kg/h (1.9 lb/h)	93 %
1.2 mm (.045 in.)	125 A	1.22 kg/h (2.7 lb/h)	93 %
1.2 mm (.045 in.)	150 A	1.54 kg/h (3.4 lb/h)	93 %
1.2 mm (.045 in.)	200 A	2.40 kg/h (5.3 lb/h)	93 %
1.2 mm (.045 in.)	250 A	3.36 kg/h (7.4 lb/h)	93 %
1.2 mm (.045 in.)	300 A	4.40 kg/h (9.7 lb/h)	93 %
1.2 mm (.045 in.)	350 A	5.67 kg/h (12.5 lb/h)	93 %
1.6 mm (1/16 in.)	250 A	2.81 kg/h (6.2 lb/h)	93 %
1.6 mm (1/16 in.)	275 A	3.31 kg/h (7.3 lb/h)	93 %
1.6 mm (1/16 in.)	300 A	3.86 kg/h (8.5 lb/h)	93 %
1.6 mm (1/16 in.)	350 A	4.85 kg/h (10.7 lb/h)	93 %
1.6 mm (1/16 in.)	400 A	6.03 kg/h (13.3 lb/h)	93 %
1.6 mm (1/16 in.)	450 A	7.48 kg/h (16.5 lb/h)	93 %
<b>75% Ar - 25% CO<sub>2</sub></b>			
0.8 mm (.030 in.)	100 A	1.18 kg/h (2.6 lb/h)	96 %
0.8 mm (.030 in.)	150 A	1.81 kg/h (4.0 lb/h)	96 %
0.8 mm (.030 in.)	200 A	3.04 kg/h (6.7 lb/h)	96 %
0.8 mm (.030 in.)	75 A	0.86 kg/h (1.9 lb/h)	96 %
0.9 mm (.035 in.)	100 A	1.22 kg/h (2.7 lb/h)	96 %
0.9 mm (.035 in.)	150 A	1.86 kg/h (4.1 lb/h)	96 %
0.9 mm (.035 in.)	200 A	2.72 kg/h (6.0 lb/h)	96 %
0.9 mm (.035 in.)	250 A	3.09 kg/h (8.8 lb/h)	96 %
0.9 mm (.035 in.)	80 A	0.95 kg/h (2.1 lb/h)	96 %
1.2 mm (.045 in.)	100 A	0.91 kg/h (2.0 lb/h)	96 %
1.2 mm (.045 in.)	125 A	1.27 kg/h (2.8 lb/h)	96 %
1.2 mm (.045 in.)	150 A	1.59 kg/h (3.5 lb/h)	96 %
1.2 mm (.045 in.)	200 A	2.49 kg/h (5.5 lb/h)	96 %
1.2 mm (.045 in.)	250 A	3.45 kg/h (7.6 lb/h)	96 %
1.2 mm (.045 in.)	300 A	4.53 kg/h (10.0 lb/h)	96 %
1.2 mm (.045 in.)	350 A	5.85 kg/h (12.9 lb/h)	96 %
1.6 mm (1/16 in.)	250 A	2.90 kg/h (6.4 lb/h)	96 %
1.6 mm (1/16 in.)	275 A	3.45 kg/h (7.6 lb/h)	96 %
1.6 mm (1/16 in.)	300 A	3.99 kg/h (8.8 lb/h)	96 %

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Deposition Data			
Diameter	Current	Deposition Rate	Deposition Efficiency %
1.6 mm (1/16 in.)	350 A	6.21 kg/h (11.0 lb/h)	96 %
1.6 mm (1/16 in.)	400 A	6.21 kg/h (13.7 lb/h)	96 %
1.6 mm (1/16 in.)	450 A	7.76 kg/h (17.1 lb/h)	96 %
<b>92% Ar - 8% CO2</b>			
0.8 mm (.030 in.)	100 A	1.18 kg/h (2.6 lb/h)	98 %
0.8 mm (.030 in.)	150 A	1.86 kg/h (4.1 lb/h)	98 %
0.8 mm (.030 in.)	200 A	3.08 kg/h (6.8 lb/h)	98 %
0.8 mm (.030 in.)	75 A	0.91 kg/h (2.0 lb/h)	98 %
0.9 mm (.035 in.)	100 A	1.22 kg/h (2.7 lb/h)	98 %
0.9 mm (.035 in.)	150 A	1.90 kg/h (4.2 lb/h)	98 %
0.9 mm (.035 in.)	200 A	2.81 kg/h (6.2 lb/h)	98 %
0.9 mm (.035 in.)	250 A	4.08 kg/h (9.0 lb/h)	98 %
0.9 mm (.035 in.)	80 A	1.00 kg/h (2.2 lb/h)	98 %
1.2 mm (.045 in.)	100 A	0.95 kg/h (2.1 lb/h)	98 %
1.2 mm (.045 in.)	125 A	1.27 kg/h (2.8 lb/h)	98 %
1.2 mm (.045 in.)	150 A	1.63 kg/h (3.6 lb/h)	98 %
1.2 mm (.045 in.)	200 A	2.54 kg/h (5.6 lb/h)	98 %
1.2 mm (.045 in.)	250 A	3.58 kg/h (7.8 lb/h)	98 %
1.2 mm (.045 in.)	300 A	4.63 kg/h (10.2 lb/h)	98 %
1.2 mm (.045 in.)	350 A	5.99 kg/h (13.2 lb/h)	98 %
1.6 mm (1/16 in.)	250 A	2.95 kg/h (6.5 lb/h)	98 %
1.6 mm (1/16 in.)	275 A	3.49 kg/h (7.7 lb/h)	98 %
1.6 mm (1/16 in.)	300 A	4.08 kg/h (9.0 lb/h)	98 %
1.6 mm (1/16 in.)	350 A	5.13 kg/h (11.3 lb/h)	98 %
1.6 mm (1/16 in.)	400 A	6.35 kg/h (14.0 lb/h)	98 %
1.6 mm (1/16 in.)	450 A	7.89 kg/h (17.4 lb/h)	98 %

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)

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Wire Diameter	Current	Voltage	Wire Feed Speed
0.6 mm (.023 in.)	100-125 A	23-25 V	1016-1575 cm/min (400-620 in./min)
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)
<b>Short Arc Transfer Optimum</b>			
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)
<b>Spray Transfer Optimum</b>			
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)
<b>Short Arc Transfer</b>			
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)