

# Dual Shield R-70 Ultra

This flux cored welding wire produces smoother arc characteristics and lower welding fumes than many competitive flux cored wires. Dual Shield R-70 Ultra is also designed to have a greater tolerance of mill scale and surface oxides. The notch toughness in the as welded condition is also improved. Bead contour is flat to slightly convex and slag coverage is complete. Dual Shield R-70 Ultra wire is designed for flat and horizontal single or multi-pass applications on low or medium carbon steels recommended with 100% CO<sub>2</sub> shielding gas. Areas of application include railcar, heavy equipment, and general fabrication.

<b>Classifications:</b>	AWS A5.20:E70T-1C-DH8/E70T-1M/E70T-9C-DH8/E70T-9M, AWS A5.36:E70T1-C1A2-CS1-DH8, AWS A5.36:E70T1-M21A2-CS1-DH8 (= or < 1/16"), AWS A5.36:E70T1-C1A2-CS1-D (> 1/16"), ASME SFA 5.20, ASME SFA 5.36
<b>Approvals:</b>	Seismic Certified "D", ABS, QPL-24403/1 MIL-70T-1C, CWB CSA W48 E492T-9-H8 (= or < 1/16) E492T-9M-H16 (>1/16"), LR, DNV-GL
<b>Industry or Segmentation:</b>	Industrial and General Fabrication, Civil Construction, Ship/Barge Building, Mobile Equipment, Railcars

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

## Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Reduction in Area	Elongation
<b>100% CO<sub>2</sub></b>				
As Welded	485 MPa (70 ksi)	565 MPa (82 ksi)	63 %	26 %

## Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
<b>100% CO<sub>2</sub></b>		
As Welded	-18 °C (0 °F)	38 J (28 ft-lb)
As Welded	-29 °C (-20 °F)	34 J (25 ft-lb)

## Typical Weld Metal Analysis %

C	Mn	Si	S	P
<b>100% CO<sub>2</sub></b>				
0.02	1.40	0.50	0.008	0.014

## Deposition Data

Diameter	Amps	Volts	Wire Feed Speed	Deposition Rate	Efficiency
<b>100% CO<sub>2</sub></b>					
1.2 mm (.045 in.)	145 A	28 V	508 cm/min (200 in./min)	1.7 kg/h (3.7 lb/h)	76 %
1.2 mm (.045 in.)	190 A	29 V	762 cm/min (300 in./min)	2.5 kg/h (5.6 lb/h)	80 %
1.2 mm (.045 in.)	225 A	29 V	1016 cm/min (400 in./min)	3.4 kg/h (7.6 lb/h)	82 %
1.2 mm (.045 in.)	255 A	32 V	1270 cm/min (500 in./min)	4.4 kg/h (9.6 lb/h)	82 %
1.2 mm (.045 in.)	300 A	33 V	1524 cm/min (600 in./min)	5.3 kg/h (11.6 lb/h)	84 %
1.4 mm (.052 in.)	140 A	25 V	381 cm/min (150 in./min)	1.8 kg/h (3.9 lb/h)	79 %
1.4 mm (.052 in.)	180 A	26 V	508 cm/min (200 in./min)	2.3 kg/h (5.1 lb/h)	80 %

# Dual Shield R-70 Ultra

Deposition Data					
Diameter	Amps	Volts	Wire Feed Speed	Deposition Rate	Efficiency
1.4 mm (.052 in.)	250 A	34 V	762 cm/min (300 in./min)	3.4 kg/h (7.4 lb/h)	80 %
1.4 mm (.052 in.)	300 A	35 V	1016 cm/min (400 in./min)	4.7 kg/h (10.3 lb/h)	84 %
1.4 mm (.052 in.)	340 A	36 V	1270 cm/min (500 in./min)	6.1 kg/h (13.4 lb/h)	85 %
1.4 mm (.052 in.)	390 A	35 V	1524 cm/min (600 in./min)	7.3 kg/h (16.1 lb/h)	86 %
1.6 mm (1/16 in.)	195 A	26 V	381 cm/min (150 in./min)	2.3 kg/h (5.0 lb/h)	78 %
1.6 mm (1/16 in.)	265 A	28 V	635 cm/min (250 in./min)	4.0 kg/h (8.7 lb/h)	83 %
1.6 mm (1/16 in.)	325 A	30 V	762 cm/min (300 in./min)	4.8 kg/h (10.6 lb/h)	85 %
1.6 mm (1/16 in.)	365 A	31 V	889 cm/min (350 in./min)	5.6 kg/h (12.4 lb/h)	84 %
1.6 mm (1/16 in.)	385 A	31 V	1016 cm/min (400 in./min)	6.4 kg/h (14.1 lb/h)	84 %
1.6 mm (1/16 in.)	450 A	33 V	1270 cm/min (500 in./min)	8.0 kg/h (17.7 lb/h)	85 %
2.0 mm (5/64 in.)	170 A	27 V	317.5 cm/min (125 in./min)	3.0 kg/h (6.5 lb/h)	80 %
2.0 mm (5/64 in.)	200 A	27 V	381 cm/min (150 in./min)	3.6 kg/h (8.0 lb/h)	83 %
2.0 mm (5/64 in.)	235 A	28 V	508 cm/min (200 in./min)	4.9 kg/h (10.8 lb/h)	84 %
2.0 mm (5/64 in.)	280 A	29 V	635 cm/min (250 in./min)	6.2 kg/h (13.6 lb/h)	85 %
2.0 mm (5/64 in.)	320 A	30 V	762 cm/min (300 in./min)	7.4 kg/h (16.2 lb/h)	84 %
2.4 mm (3/32 in.)	220 A	27 V	254 cm/min (100 in./min)	3.8 kg/h (8.4 lb/h)	88 %
2.4 mm (3/32 in.)	290 A	27 V	381 cm/min (150 in./min)	5.8 kg/h (12.7 lb/h)	87 %
2.4 mm (3/32 in.)	350 A	28 V	508 cm/min (200 in./min)	7.6 kg/h (16.9 lb/h)	86 %
2.4 mm (3/32 in.)	410 A	29 V	635 cm/min (250 in./min)	9.6 kg/h (21.1 lb/h)	86 %
2.4 mm (3/32 in.)	475 A	32 V	762 cm/min (300 in./min)	11.3 kg/h (25.0 lb/h)	85 %

Recommended Welding Parameters				
Diameter	Amps	Volts	Wire Feed Speed	TTW Dist.
<b>100% CO<sub>2</sub></b>				
1.2 mm (.045 in.)	135-205 A	23-26 V	381-660 cm/min (150-260 in./min)	9.5-12.7 mm (3/8-1/2 in.)
1.2 mm (.045 in.)	205-230 A	25-27 V	660-965 cm/min (260-380 in./min)	12.7-19 mm (1/2-3/4 in.)
1.2 mm (.045 in.)	230-265 A	26-30 V	965-1321 cm/min (380-520 in./min)	19-25.4 mm (3/4-1 in.)
1.4 mm (.052 in.)	125-235 A	23-26 V	279-584 cm/min (110-230 in./min)	12.7-16 mm (1/2-5/8 in.)
1.4 mm (.052 in.)	235-290 A	25-29 V	584-864 cm/min (230-340 in./min)	16-19 mm (5/8-3/4 in.)
1.4 mm (.052 in.)	290-350 A	29-31 V	864-1194 cm/min (340-470 in./min)	19-25.4 mm (3/4-1 in.)
1.6 mm (1/16 in.)	165-270 A	25-28 V	279-508 cm/min (110-200 in./min)	16-19 mm (5/8-3/4 in.)
1.6 mm (1/16 in.)	270-345 A	27-30 V	508-762 cm/min (200-300 in./min)	19-25.4 mm (3/4-1 in.)
1.6 mm (1/16 in.)	345-415 A	28-32 V	762-1067 cm/min (300-420 in./min)	25.4-31.75 mm (1-1.25 in.)
2.0 mm (5/64 in.)	285-375 A	27-31 V	317.5-508 cm/min (125-200 in./min)	19-25.4 mm (3/4-1 in.)
2.0 mm (5/64 in.)	375-475 A	28-32 V	508-762 cm/min (200-300 in./min)	25.4-31.75 mm (1-1.25 in.)
2.4 mm (3/32 in.)	235-500 A	27-30 V	178-508 cm/min (70-200 in./min)	25.4-31.75 mm (1-1.25 in.)
2.4 mm (3/32 in.)	500-630 A	30-34 V	508-698.5 cm/min (200-275 in./min)	31.75-38 mm (1.25-1.5 in.)