



Dual Shield R-70 Ultra is a low-fuming, high-deposition E70T-9 flux cored wire. 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/horizontal single or multi-pass applications on low or medium carbon steels using 100% CO2 shielding gas. Areas of application include railcar, heavy equipment, and general fabrication.

Dual Shield R-70 Ultra is tested and certified to meet the new AWS A5.20 'D' designation requirements, making this gas-shielded wire an excellent choice for demand critical welds when FEMA 353, D1.1 or D1.8 Seismic Supplement is utilized.

**Maximize Your Productivity & Minimize Your Cost**  
**Certified Performance**

- Meets demand critical requirements
- Meets most lowest anticipated service temperature applications
- Improved performance over existing products
- Surpasses Extended Exposure requirements
- Crack resistant in critical applications

**Improved Productivity**

- Higher deposition rate
- Wider operating range
- Faster travel speeds
- Meet construction time-tables
- Better Cost Efficiency

**Improved Welder Appeal**

- More forgiving than traditional wires
- Simplifies training and qualification
- Better Arc Control
- Self-releasing slag
- Limited clean-up

**Outstanding Inspection Results**

- Minimal Post Weld Work
- Lowers reject & repair rates

**AWS 5.20 "D" Designator Testing Results**

Size (in.)	1/16"		3/32"	
Shielding Gas	100% CO2		100% CO2	
Heat Input Range (kJ/in)	High 78-85	Low 25-32	High 78-85	Low 35-42
Position	1G	1G	1G	1G
Heat Input (kJ/in)	81.6	29.0	79.6	40.2
Current (amps)	320	240	270	325
WFS (in/min)	310	210	220	150
Voltage (volts)	28.5	27.5	27.0	27.0
Travel Speed (in/min)	6.7	13.6	9.6	13.1
Pass / Layer	1F, 3S	1F, 2S, 2S, 2Q	2F, 2S	1F, 2S, 3T
Tensile Strength (ksi)	85.5	93.1	79.9	85.2
Yield Strength (ksi)	71.5	84.5	64.7	75.7
Elongation (%)	27	24	30	26
Impact Temperature (°F)	70	70	70	70
Impact Results (ft-lbs)	53, 61, 57, 60, 68	61, 58, 47, 51, 51	72, 79, 66, 70, 66	57, 51, 54, 41, 62
Minimum Required (ft-lbs)	40	40	40	40
Average Impact (ft-lbs)	60	54	71	53

**Typical Mechanical Properties**

Shielding Gas : 100% CO2	As Welded
Yield Strength, ksi (MPa)	70 (485)
Tensile Strength, ksi (MPa)	82 (565)
Elongation % in 2"	26

**Typical Charpy V-Notch Impact Properties**

Testing Temperature	Ft.-lbs (J)
-0°F (-18°C)	28 (38)
-20°F (-29°C)	25 (34)

**Typical Undiluted Weld Metal Analysis**

Shielding Gas : 100% CO2	%
Carbon (C)	0.02
Manganese (Mn)	1.4
Silicon (Si)	0.5
Phosphorus (P)	0.014
Sulfur (S)	0.008

Product Data Sheet .....	COR-1038
Seismic Certification - 100% CO2 1/16 .....	CERT-1010
Seismic Certification - 100% CO2 3/32 .....	CERT-1011
Seismic Brochure .....	COR-1029

### Typical Welding Parameters

Diameter	Amperage (amps)	Voltage (volts)	WFS (ipm)	Dep. Rate (lbs/hr)	Efficiency Rate %	ESO
0.045"	145	28	200	3.7	76.1%	5/8 in.
	190	29	300	5.6	7.7%	5/8 in.
	225	29	400	7.6	82.1%	5/8 in.
	255	32	500	9.6	81.5%	5/8 in.
	300	33	600	11.6	83.9%	5/8 in.
0.052"	140	25	150	3.9	78.5%	3/4 in.
	180	26	200	5.1	78.9%	3/4 in.
	250	34	300	7.4	78.9%	3/4 in.
	300	35	400	10.3	84.3%	3/4 in.
	340	36	500	13.4	85.0%	3/4 in.
1/16"	390	35	600	16.1	85.6%	3/4 in.
	195	26	150	5.0	77.9%	3/4 in.
	265	28	250	8.7	82.5%	3/4 in.
	325	30	300	10.6	84.5%	3/4 in.
	365	31	350	12.4	84.2%	3/4 in.
5/64"	385	31	400	14.1	84.4%	3/4 in.
	450	33	500	17.7	84.7%	3/4 in.
	170	27	125	6.5	79.9%	1 in.
	200	27	150	8.0	82.5%	1 in.
	235	28	200	10.8	83.8%	1 in.
3/32"	280	29	250	13.6	84.5%	1 in.
	320	30	300	16.2	84.4%	1 in.
	220	27	100	8.4	87.7%	1 in.
	290	27	150	12.7	86.9%	1 in.
	350	28	200	16.9	86.3%	1 in.
3/32"	410	29	250	21.1	86.0%	1 in.
	475	32	300	25.0	84.8%	1 in.

### Extended Exposure Results

Product	Diameter	Shielding Gas	Test Conditions	Exposure Time	Hydrogen
Dual Shield R-70 Ultra	3/32"	100% CO2	80°F at 80% humidity	5 days (120 hrs)	10.9
Dual Shield R-70 Ultra	5/64"	100% CO2	80°F at 80% humidity	5 days (120 hrs)	6.4
Dual Shield R-70 Ultra	1/16"	100% CO2	80°F at 80% humidity	3 days (72 hrs)	6.2
Dual Shield R-70 Ultra	0.045"	100% CO2	80°F at 80% humidity	3 days (72 hrs)	8.5

AWS D1.8/D1.8M:2005, Annex D requirement: <16 ml/100g after 72 hour exposure at 80°F, 80% humidity

### Recommended Storage and Reconditioning

ESAB cartons and plastic bags are proven acceptable protection for standard Dual Shield R-70 Ultra welding wires when stored under proper conditions. The recommended conditions are temperatures below 75°F and atmospheric humidity levels below 60%. Recondition coils and metal spools at 300°F for 6-8 hours; re-bake plastic spools at 125°F for 48 hours minimum. Storage temperatures should not exceed the reconditioning temperatures. The plastic bags should always be removed when storing or reconditioning at elevated temperatures.

For more information on Recommended Storage and Reconditioning for this product and more, please refer to page 35.