Dual Shield 7100 Ultra is an all-position E71T-9 flux cored welding wire developed for higher deposition rates and improved welding productivity. Like many other Dual Shield products, Dual Shield 7100 Ultra operates in a wider parameter range and generates less welding fumes than many similar welding wires. The low spatter levels and easy slag removal minimizes post weld cleanup. Dual Shield 7100 Ultra can be used with either 100% CO2 or 75% Ar/25% CO2. This versatility in gas selection provides the fabricator greater flexibility in choosing both wire and gas. Applications include railcar and earth moving equipment, as well as general structural steel fabrication.

Dual Shield 7100 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.

AWS 5.20 "D" Designator Testing Results

Size (in.)	1/16"		1/16"	
Shielding Gas	100% CO2		75% Ar / 25% CO2	
Heat Input Range (kJ/in)	High 78-85	Low 25-32	High 78-85	Low 25-32
Position	3G	1G	3G	1G
Heat Input (kJ/in)	85.0	29.3	81.2	28.0
Current (amps)	200	270	212	290
WFS (in/min)	150	210	160	240
Voltage (volts)	24.0	27.5	25.1	26.0
Travel Speed (in/min)	3.4	15.2	3.9	16.1
Pass / Layer	2F, 2S	1F, 2S, 2T, 2Q	2F, 2S	1F, 3S, 4T
Tensile Strength (ksi)	77.4	88.0	88.6	101.3
Yield Strength (ksi)	67.0	80.4	81.6	94.4
Elongation (%)	30.5	27	28	22
Impact Temperature (ºF)	70	70	70	70
Impact Results (ft-lbs)	155, 127, 139, 127, 124	119, 113, 107, 111, 105	114, 122, 125, 124, 127	100, 99, 91, 72, 82
Minimum Required (ft-lbs)	40	40	40	40
Average Impact (ft-lbs)	134	111	122	89

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*

Typical Mechanical Properties

Shielding Gas : 100% CO2	As Welded
Yield Strength, ksi (MPa)	75 (515)
Tensile Strength, ksi (MPa)	85 (585)
Elongation % in 2”	26

Typical Charpy V-Notch Impact Properties

Testing Temperature	Ft.-lbs (J)
-0ºF (-18ºC)	43 (58)
-20ºF (-29ºC)	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)	0.010
Sulfur (S)	0.013

Shielding Gas : 75% Ar / 25% CO2	As Welded
Yield Strength, ksi (MPa)	78 (540)
Tensile Strength, ksi (MPa)	88 (605)
Elongation % in 2”	26

Typical Charpy V-Notch Impact Properties

Testing Temperature	Ft.-lbs (J)
-0ºF (-18ºC)	42 (57)
-20ºF (-29ºC)	35 (47)

Typical Undiluted Weld Metal Analysis

Shielding Gas : 75% Ar / 25% CO2	%
Carbon (C)	0.03
Manganese (Mn)	1.6
Silicon (Si)	0.6
Phosphorus	0.010
Sulfur (S)	0.012

Typical Welding Parameters

Diameter	Amperage (amps)	Voltage (volts)	WFS (ipm)	Dep. Rate (lbs/hr)	Efficiency Rate %	ESO
0.045”	140	24	200	3.6	77.8%	5/8 in.
	192	25	300	5.5	79.3%	5/8 in.
	230	27	400	7.4	81.8%	3/4 in.
	275	28	500	9.6	83.1%	3/4 in.
	308	30	600	11.8	84.5%	3/4 in.
0.052”	150	23	150	3.6	75.8%	3/4 in.
	190	24	200	4.9	77.8%	3/4 in.
	250	25	300	7.7	81.7%	3/4 in.
	300	27	400	10.3	82.5%	3/4 in.
	345	28	500	13.3	84.7%	3/4 in.
	375	30	600	16.2	88.5%	3/4 in.
1/16”	195	24	150	5.5	85.0%	3/4 in.
	290	25	250	9.2	86.5%	3/4 in.
	325	26	300	10.9	85.9%	3/4 in.
	352	27	350	13.1	88.1%	3/4 in.
	382	28	400	14.7	86.8%	3/4 in.
	455	30	500	18.3	87.1%	3/4 in.

Size 0.035” is available however is not currently certified for seismic or critical demand applications.

Extended Exposure Results

Product	Diameter	Shielding Gas	Test Conditions	Exposure Time	Hydrogen
Dual Shield 7100 Ultra	0.045”	100% CO2	80ºF at 80% humidity	5 days (120 hrs)	7.6 ml/100g
Dual Shield 7100 Ultra	0.052”	100% CO2	80ºF at 80% humidity	5 days (120 hrs)	8.0 ml/100g
Dual Shield 7100 Ultra	1/16”	100% CO2	80ºF at 80% humidity	7 days (168 hrs)	7.6 ml/100g
Dual Shield 7100 Ultra	0.045”	75%Ar/25% CO2	80ºF at 80% humidity	5 days (120 hrs)	7.0 ml/100g
Dual Shield 7100 Ultra	0.052”	75%Ar/25% CO2	80ºF at 80% humidity	5 days (120 hrs)	10.5 ml/100g
Dual Shield 7100 Ultra	1/16”	75%Ar/25% CO2	80ºF at 80% humidity	7 days (168 hrs)	8.8 ml/100g
AWS D1.8/D1.8M:2005, Annex D requirement: <16 ml/100g after 72 hour exposure at 80ºF, 80% humidity					

Recommended Storage and Reconditioning

ESAB cartons and plastic bags are proven acceptable protection for standard Dual Shield 7100 Ultra welding wires when stored under proper conditions. The recommended conditions are temperatures below 75ºF and atmospheric humidity levels below 60%. Recondition coils and metal spools at 300ºF for 6-8 hours; re-bake plastic spools at 125ºF 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.