



DUAL SHIELD[®] X-SERIES FLUX-CORED WIRES



BETTER. FASTER. EASIER.



DUAL SHIELD® X-SERIES

MAKING LESS EXPERIENCED WELDERS BETTER. MAKING BETTER WELDERS GREAT.

ESAB's Dual Shield® X-Series family of flux cored wires represents the culmination of over 50 years of industry-leading innovation and advancements to make this series easier to use and more forgiving than traditional flux cored wires, ideal for novice or occasional welders.

Dual Shield X-Series wires offer broader operating ranges and higher top-end current levels with higher deposition rates in out-of-position applications. The X-Series also retains many of the properties that make Dual Shield the flux cored wire brand of choice including low spatter levels, exceptional slag removal and excellent bead profiles.



- More forgiving than traditional flux cored wires
- Higher top-end current levels for out-of-position welding
- Broader operating ranges
- Higher deposition rates in out-of-position applications
- Low spatter levels
- Exceptional slag removal
- Excellent bead profiles



DUAL SHIELD 700X

Mild Steel Flux Cored Wire

Dual Shield 700X is a high deposition, deep penetration wire for joining heavy structural steel components. Designed for flat and horizontal position welding using CO₂ shielding gas, this X-Series wire provides high deposition rates, high efficiency and excellent performance. The bead contour, smooth ripple and slag chemistry allow easy slag removal even in narrow grooves.

Classifications:	AWS A5.20:E70T-1CH8/E70T-9CH8, AWS A5.36:E70T1-C1A2-CS1-H8, ASME SFA 5.20, ASME SFA 5.36
Approvals:	ABS, CWB CSA W48 E492T-1, DNV-GL, LR
Industry or Segmentation:	Heavy Equipment, Large Components, Mobile Equipment, Agricultural Equipment

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	545 MPa (79 ksi)	600 MPa (87 ksi)	29 %

Typical Charpy V-Notch Properties		
Condition	Testing Temperature	Impact Value
100% CO₂		
As Welded	-18 °C (0 °F)	66 J (49 ft-lb)
As Welded	-29 °C (-20 °F)	45 J (33 ft-lb)

Typical Weld Metal Analysis %				
C	Mn	Si	S	P
100% CO₂				
0.035	1.50	0.55	0.015	0.011

Deposition Data						
Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	TTW Dist.	Efficiency (%)
100% CO₂						
1.6 mm (1/16 in.)	149 A	23 V	254 cm/min (100 in./min)	1.3 kg/h (2.8 lb/h)	19 mm (3/4 in.)	80 %
1.6 mm (1/16 in.)	168 A	24 V	305 cm/min (120 in./min)	1.6 kg/h (3.5 lb/h)	19 mm (3/4 in.)	80 %
1.6 mm (1/16 in.)	187 A	24 V	356 cm/min (140 in./min)	1.9 kg/h (4.2 lb/h)	19 mm (3/4 in.)	80 %
1.6 mm (1/16 in.)	205 A	25 V	406 cm/min (160 in./min)	2.2 kg/h (4.9 lb/h)	19 mm (3/4 in.)	80 %
1.6 mm (1/16 in.)	223 A	25 V	457 cm/min (180 in./min)	2.5 kg/h (5.6 lb/h)	19 mm (3/4 in.)	80 %
1.6 mm (1/16 in.)	240 A	25 V	508 cm/min (200 in./min)	2.9 kg/h (6.3 lb/h)	19 mm (3/4 in.)	80 %
1.6 mm (1/16 in.)	257 A	26 V	559 cm/min (220 in./min)	3.2 kg/h (7.0 lb/h)	19 mm (3/4 in.)	81 %
1.6 mm (1/16 in.)	273 A	26 V	610 cm/min (240 in./min)	3.5 kg/h (7.7 lb/h)	19 mm (3/4 in.)	81 %
1.6 mm (1/16 in.)	289 A	26 V	660 cm/min (260 in./min)	3.8 kg/h (8.4 lb/h)	19 mm (3/4 in.)	81 %



DUAL SHIELD 700X

Mild Steel Flux Cored Wire

Deposition Data						
Diameter	Amps	Volts	Wire Feed Speed	Deposition Rate	TTW Dist.	Efficiency
2.4 mm (3/32 in.)	290 A	27 V	381 cm/min (150 in./min)	5.8 kg/h (12.7 lb/h)	25.4 mm (1 in.)	86.9 %
2.4 mm (3/32 in.)	350 A	28 V	508 cm/min (200 in./min)	7.7 kg/h (16.9 lb/h)	25.4 mm (1 in.)	86.3 %
2.4 mm (3/32 in.)	410 A	29 V	635 cm/min (250 in./min)	9.6 kg/h (21.1 lb/h)	25.4 mm (1 in.)	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)	25.4 mm (1 in.)	84.8 %

Recommended Welding Parameters				
Diameter	Current	Voltage	Wire Feed Speed	TTW Dist.
Full Range 100% CO₂				
1.6 mm (1/16 in.)	180-460 A	25-34 V	343-1270 cm/min (135-500 in./min)	19-25.4 mm (3/4-1 in.)
2.4 mm (3/32 in.)	290-610 A	26-34 V	254-825.5 cm/min (100-325 in./min)	25.4-38 mm (1-1.5 in.)



DUAL SHIELD 710X

Mild Steel Flux Cored Wire

Dual Shield 710X is an all-position flux cored wire for general purpose welding. It provides outstanding operator appeal with an easily controlled arc, improved operation at both lower and higher current levels, minimal spatter and easily removed slag. Dual Shield 710X can be used with 100% CO₂, recommended in applications where weld joint restraint is high. Applications include railcar, barges, civil construction, light equipment and general fabrication.

Classifications:	AWS A5.20: E71T-1C-DH8, AWS A5.20: E71T T-1M, AWS A5.20: E71T-9C-DH8, AWS A5.20: E71T T-9M, AWS A5.36: E71T1-C1A2-CS1-DH8
Approvals:	Seismic Certified "D", LR, DNV-GL, CWB CSA W48 E491T-9-H8, ABS
Industry or Segmentation:	Civil Construction, Light Equipment, Barges, Industrial and General Fabrication, Ship/Barge Building, Railcars

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	520 MPa (75 ksi)	625 MPa (87 ksi)	28 %
75% Ar - 25% CO₂			
As Welded	570 MPa (83 ksi)	640 MPa (93 ksi)	27 %

Typical Charpy V-Notch Properties		
Condition	Testing Temperature	Impact Value
100% CO₂		
As Welded	-18 °C (0 °F)	77 J (57 ft-lb)
As Welded	-29 °C (-20 °F)	66 J (49 ft-lb)
75% Ar - 25% CO₂		
As Welded	-18 °C (0 °F)	102 J (75 ft-lb)
As Welded	-29 °C (-20 °F)	68 J (50 ft-lb)

Typical Weld Metal Analysis %					
C	Mn	Si	S	P	Ni
100% CO₂					
0.03	1.4	0.5	0.009	0.007	0.4
75% Ar - 25% CO₂					
0.03	1.5	0.6	0.009	0.005	0.4

Deposition Data					
Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	Efficiency (%)
Vertical Up 100% CO₂					
1.2 mm (.045 in.)	140 A	23 V	483 cm/min (190 in./min)	1.5 kg/h (3.3 lb/h)	81 %
1.2 mm (.045 in.)	154 A	23 V	559 cm/min (220 in./min)	1.77 kg/h (3.9 lb/h)	81 %
1.2 mm (.045 in.)	167 A	24 V	635 cm/min (250 in./min)	2.04 kg/h (4.5 lb/h)	82 %
1.2 mm (.045 in.)	180 A	24 V	711 cm/min (280 in./min)	2.31 kg/h (5.1 lb/h)	82 %
1.2 mm (.045 in.)	193 A	25 V	787 cm/min (310 in./min)	2.54 kg/h (5.6 lb/h)	82 %
1.2 mm (.045 in.)	205 A	26 V	864 cm/min (340 in./min)	2.81 kg/h (6.2 lb/h)	83 %
1.2 mm (.045 in.)	217 A	26 V	940 cm/min (370 in./min)	3.08 kg/h (6.8 lb/h)	83 %



DUAL SHIELD 710X

Mild Steel Flux Cored Wire

Deposition Data					
Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	Efficiency (%)
Vertical Up 100% CO₂					
1.4 mm (.052 in.)	153 A	24 V	406 cm/min (160 in./min)	1.81 kg/h (4.0 lb/h)	81 %
1.4 mm (.052 in.)	159 A	24 V	432 cm/min (170 in./min)	1.81 kg/h (4.0 lb/h)	81 %
1.4 mm (.052 in.)	166 A	25 V	457 cm/min (180 in./min)	2.04 kg/h (4.5 lb/h)	81 %
1.4 mm (.052 in.)	172 A	25 V	483 cm/min (190 in./min)	2.17 kg/h (4.8 lb/h)	81 %
1.4 mm (.052 in.)	178 A	25 V	508 cm/min (200 in./min)	2.27 kg/h (5.0 lb/h)	81 %
1.4 mm (.052 in.)	184 A	25 V	533 cm/min (210 in./min)	2.4 kg/h (5.3 lb/h)	81 %
1.4 mm (.052 in.)	190 A	26 V	559 cm/min (220 in./min)	2.5 kg/h (5.5 lb/h)	81 %
1.4 mm (.052 in.)	196 A	26 V	584 cm/min (230 in./min)	2.63 kg/h (5.8 lb/h)	82 %
1.4 mm (.052 in.)	201 A	26 V	610 cm/min (240 in./min)	2.72 kg/h (6.0 lb/h)	82 %
1.4 mm (.052 in.)	207 A	26 V	635 cm/min (250 in./min)	2.86 kg/h (6.3 lb/h)	82 %
1.6 mm (1/16 in.)	187 A	24 V	356 cm/min (140 in./min)	1.9 kg/h (4.2 lb/h)	80 %
1.6 mm (1/16 in.)	205 A	25 V	406 cm/min (160 in./min)	2.22 kg/h (4.9 lb/h)	80 %
1.6 mm (1/16 in.)	223 A	25 V	457 cm/min (180 in./min)	2.54 kg/h (5.6 lb/h)	80 %
1.6 mm (1/16 in.)	240 A	25 V	508 cm/min (200 in./min)	2.86 kg/h (6.3 lb/h)	80 %
1.6 mm (1/16 in.)	257 A	26 V	559 cm/min (220 in./min)	3.17 kg/h (7.0 lb/h)	81 %
1.6 mm (1/16 in.)	273 A	26 V	610 cm/min (240 in./min)	3.49 kg/h (7.7 lb/h)	81 %
1.6 mm (1/16 in.)	289 A	26 V	660 cm/min (260 in./min)	3.81 kg/h (8.4 lb/h)	81 %

Recommended Welding Parameters				
Diameter	Current	Voltage	Wire Feed Speed	TTW Dist.
Full Range 100% CO₂				
1.2 mm (.045 in.)	135-205 A	23-26 V	432-737 cm/min (170-290 in./min)	9.5-12.7 mm (3/8-1/2 in.)
1.2 mm (.045 in.)	175-230 A	25-27 V	737-889 cm/min (290-350 in./min)	12.7-19 mm (1/2-3/4 in.)
1.2 mm (.045 in.)	180-265 A	26-30 V	889-1397 cm/min (350-550 in./min)	19-25.4 mm (3/4-1 in.)
1.4 mm (.052 in.)	125-235 A	23-26 V	330-711 cm/min (130-280 in./min)	12.7-15.8 mm (1/2-5/8 in.)
1.4 mm (.052 in.)	215-290 A	25-29 V	711-1016 cm/min (280-400 in./min)	15.8-19 mm (5/8-3/4 in.)
1.4 mm (.052 in.)	250-350 A	29-31 V	1016-1524 cm/min (400-600 in./min)	19-25.4 mm (3/4-1 in.)
1.6 mm (1/16 in.)	165-270 A	25-28 V	343-673 cm/min (135-265 in./min)	15.8-19 mm (5/8-3/4 in.)
1.6 mm (1/16 in.)	245-345 A	27-30 V	673-1016 cm/min (265-400 in./min)	19-25.4 mm (3/4-1 in.)
1.6 mm (1/16 in.)	290-415 A	28-32 V	1016-1270 cm/min (400-500 in./min)	25.4-31.75 mm (1-1.25 in.)
Full Range 75% Ar - 25% CO₂				
1.2 mm (.045 in.)	130-200 A	22-26 V	356-610 cm/min (140-240 in./min)	9.5-12.7 mm (3/8-1/2 in.)
1.2 mm (.045 in.)	165-225 A	24-27 V	240-305 cm/min (610-775 in./min)	12.7-19 mm (1/2-3/4 in.)
1.2 mm (.045 in.)	185-265 A	27-29 V	775-1194 cm/min (305-470 in./min)	19-25.4 mm (3/4-1 in.)
1.4 mm (.052 in.)	135-250 A	24-28 V	317.5-686 cm/min (125-270 in./min)	12.7-15.8 mm (1/2-5/8 in.)
1.4 mm (.052 in.)	225-295 A	27-30 V	686-940 cm/min (270-370 in./min)	15.8-19 mm (5/8-3/4 in.)
1.4 mm (.052 in.)	245-355 A	245-355 V	940-1372 cm/min (370-540 in./min)	19-25.4 mm (3/4-1 in.)
1.6 mm (1/16 in.)	185-285 A	24-28 V	356-610 cm/min (140-240 in./min)	15.8-19 mm (5/8-3/4 in.)
1.6 mm (1/16 in.)	250-340 A	27-30 V	610-813 cm/min (240-320 in./min)	19-25.4 mm (3/4-1 in.)
1.6 mm (1/16 in.)	285-400 A	28-32 V	813-1168 cm/min (320-460 in./min)	25.4-31.75 mm (1-1.25 in.)



DUAL SHIELD 710X-M

Mild Steel Flux Cored Wire

Dual Shield 710X-M provides outstanding operator appeal with an easily controlled arc, improved operation at both lower and higher current levels, minimal spatter and easily removed slag. Dual Shield 710X-M is designed to be used with 75/25 Argon CO₂ gas mix.

Classifications:	AWS A5.20:E71T-1MD-H8/T-9MD-H8, AWS A5.36:E71T1-M21A4-CS1-DH8, ASME SFA 5.20, ASME SFA 5.36
Approvals:	Seismic Certified "D", ABS, CWB CSA W48 E491T-9M-H8, DNV-GL, LR, MIL-E-24403A 71T-1M
Industry or Segmentation:	Barges, Industrial and General Fabrication, Light Equipment, Railcars, Civil Construction, Ship/Barge Building

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

Typical Tensile Properties			
Condition	Yield Strength	Tensile Strength	Elongation
75% Ar - 25% CO₂			
As Welded	510 MPa (74 ksi)	570 MPa (83 ksi)	29 %

Typical Charpy V-Notch Properties		
Condition	Testing Temperature	Impact Value
75% Ar - 25% CO₂		
As Welded	-18 °C (0 °F)	97 J (72 ft-lb)
As Welded	-29 °C (-20 °F)	76 J (56 ft-lb)

Typical Weld Metal Analysis %				
C	Mn	Si	S	P
75% Ar - 25% CO₂				
0.04	1.3	0.5	0.008	0.012

Deposition Data						
Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	TTW Dist.	Efficiency (%)
75% Ar - 25% CO₂						
1.2 mm (.045 in.)	150 A	26 V	381 cm/min (150 in./min)	1.28 kg/h (2.82 lb/h)	12.7 mm (1/2 in.)	79 %
1.2 mm (.045 in.)	190 A	26 V	508 cm/min (200 in./min)	1.75 kg/h (3.85 lb/h)	12.7 mm (1/2 in.)	85.5 %
1.2 mm (.045 in.)	210 A	27 V	635 cm/min (250 in./min)	2.22 kg/h (4.90 lb/h)	19 mm (3/4 in.)	86 %
1.2 mm (.045 in.)	230 A	27 V	762 cm/min (300 in./min)	2.66 kg/h (5.86 lb/h)	19 mm (3/4 in.)	84 %
1.2 mm (.045 in.)	250 A	29 V	889 cm/min (350 in./min)	3.21 kg/h (7.08 lb/h)	25.4 mm (1 in.)	86 %
1.2 mm (.045 in.)	270 A	29 V	1016 cm/min (400 in./min)	3.70 kg/h (8.17 lb/h)	25.4 mm (1 in.)	87 %



DUAL SHIELD 710X-M

Mild Steel Flux Cored Wire

Deposition Data						
Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	TTW Dist.	Efficiency (%)
1.2 mm (.045 in.)	290 A	-	1143 cm/min (450 in./min)	4.05 kg/h (8.92 lb/h)	25.4 mm (1 in.)	87 %
1.4 mm (.052 in.)	190 A	28 V	381 cm/min (150 in./min)	1.66 kg/h (3.66 lb/h)	15.8 mm (5/8 in.)	83 %
1.4 mm (.052 in.)	220 A	28 V	508 cm/min (200 in./min)	2.20 kg/h (4.86 lb/h)	15.8 mm (5/8 in.)	84.5 %
1.4 mm (.052 in.)	260 A	30 V	635 cm/min (250 in./min)	2.72 kg/h (6.00 lb/h)	19 mm (3/4 in.)	86 %
1.4 mm (.052 in.)	310 A	30 V	762 cm/min (300 in./min)	3.33 kg/h (7.35 lb/h)	19 mm (3/4 in.)	86 %
1.4 mm (.052 in.)	340 A	30 V	889 cm/min (350 in./min)	3.92 kg/h (8.65 lb/h)	19 mm (3/4 in.)	86 %
1.4 mm (.052 in.)	350 A	32 V	1016 cm/min (400 in./min)	4.44 kg/h (9.80 lb/h)	25.4 mm (1 in.)	86 %
1.4 mm (.052 in.)	360 A	32 V	1143 cm/min (450 in./min)	5.01 kg/h (11.05 lb/h)	25.4 mm (1 in.)	87 %
1.4 mm (.052 in.)	370 A	32 V	1270 cm/min (500 in./min)	5.55 kg/h (12.23 lb/h)	25.4 mm (1 in.)	86 %
1.6 mm (1/16 in.)	250 A	28 V	381 cm/min (150 in./min)	2.37 kg/h (5.23 lb/h)	19 mm (3/4 in.)	85 %
1.6 mm (1/16 in.)	300 A	28 V	508 cm/min (200 in./min)	3.21 kg/h (7.08 lb/h)	19 mm (3/4 in.)	85.5 %
1.6 mm (1/16 in.)	360 A	30 V	635 cm/min (250 in./min)	4.85 kg/h (10.70 lb/h)	25.4 mm (1 in.)	86 %
1.6 mm (1/16 in.)	360 A	30 V	635 cm/min (250 in./min)	4.04 kg/h (8.90 lb/h)	25.4 mm (1 in.)	86 %
1.6 mm (1/16 in.)	420 A	32 V	889 cm/min (350 in./min)	5.72 kg/h (12.63 lb/h)	31.75 mm (1 1/4 in.)	86.5 %
1.6 mm (1/16 in.)	430 A	32 V	1016 cm/min (400 in./min)	6.49 kg/h (14.33 lb/h)	31.75 mm (1 1/4 in.)	87 %
1.6 mm (1/16 in.)	480 A	32 V	1143 cm/min (450 in./min)	7.33 kg/h (16.17 lb/h)	31.75 mm (1 1/4 in.)	87 %



DUAL SHIELD II 711X

Mild Steel Flux Cored Wire

Dual Shield II 711X is an all-position flux cored wire that displays exceptional impact properties in combination with CO₂ shielding gas. This flux cored wire was developed to join low and medium carbon steels where higher impacts and toughness are required. As with all X-Series wires, Dual Shield II 711X offers higher top-end current levels for out-of-position welding, broader operating ranges and higher deposition rates in out-of-position applications. Applications include construction, shipbuilding, railcar, light and heavy equipment, and general fabrication where exceptional impacts are required. Weld metal analysis is similar to Atom Arc 7018 and Atom Arc 7018-1.

Classifications:	AWS A5.20:E71T-CJ-DH8/T-9CJ-DH8/T-12CJ-DH8, AWS A5.36:E71T1-C1A4-CS2-DH8, ASME SFA 5.20, ASME SFA 5.36
Approvals:	ABS , CWB CSA W48 E491T-12-H8, DNV-GL , LR
Industry or Segmentation:	Railcars, Civil Construction, Industrial and General Fabrication, Ship/Barge Building

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	540 MPa (78 ksi)	595 MPa (86 ksi)	29 %

Typical Charpy V-Notch Properties		
Condition	Testing Temperature	Impact Value
100% CO₂		
As Welded	-18 °C (0 °F)	130 J (96 ft-lb)
As Welded	-29 °C (-20 °F)	107 J (79 ft-lb)
As Welded	-40 °C (-40 °F)	49 J (36 ft-lb)

Typical Weld Metal Analysis %					
C	Mn	Si	S	P	Ni
100% CO₂					
0.04	1.4	0.4	0.010	0.012	0.4



DUAL SHIELD II 711X

Mild Steel Flux Cored Wire

Deposition Data						
Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	TTW Dist.	Efficiency (%)
100% CO₂						
1.2 mm (.045 in.)	112 A	20.5 V	444.5 cm/min (175 in./min)	1.46 kg/h (3.22 lb/h)	15.8 mm (5/8 in.)	86 %
1.2 mm (.045 in.)	140 A	22 V	571.5 cm/min (225 in./min)	2.20 kg/h (4.85 lb/h)	15.8 mm (5/8 in.)	84 %
1.2 mm (.045 in.)	184 A	24 V	800 cm/min (315 in./min)	3.10 kg/h (6.84 lb/h)	15.8 mm (5/8 in.)	84 %
1.2 mm (.045 in.)	235 A	26.5 V	1079.5 cm/min (425 in./min)	3.58 kg/h (7.89 lb/h)	15.8 mm (5/8 in.)	85 %
1.4 mm (.052 in.)	172 A	22 V	559 cm/min (220 in./min)	2.32 kg/h (5.11 lb/h)	15.8 mm (5/8 in.)	83 %
1.4 mm (.052 in.)	220 A	24 V	762 cm/min (300 in./min)	3.20 kg/h (7.06 lb/h)	15.8 mm (5/8 in.)	83 %
1.4 mm (.052 in.)	260 A	26.5 V	952.5 cm/min (375 in./min)	4.11 kg/h (9.06 lb/h)	15.8 mm (5/8 in.)	84 %
1.6 mm (1/16 in.)	162 A	22.5 V	356 cm/min (140 in./min)	2.04 kg/h (4.50 lb/h)	19 mm (3/4 in.)	84 %
1.6 mm (1/16 in.)	210 A	24 V	444.5 cm/min (175 in./min)	2.58 kg/h (5.68 lb/h)	19 mm (3/4 in.)	83 %
1.6 mm (1/16 in.)	245 A	25 V	546 cm/min (215 in./min)	3.19 kg/h (7.03 lb/h)	19 mm (3/4 in.)	84 %
1.6 mm (1/16 in.)	270 A	27 V	635 cm/min (250 in./min)	3.77 kg/h (8.32 lb/h)	19 mm (3/4 in.)	84 %



DUAL SHIELD II 712X

Mild Steel Flux Cored Wire

Dual Shield II 712X is an all-position flux cored wire intended for applications requiring outstanding weld metal toughness. This X-Series wire, in combination with 75% Argon/25% CO₂ shielding gas, can produce Charpy V-Notch impact results of more than 40 ft-lb (68 J) at -60°F (-51°C) and Crack Tip Opening Displacement (CTOD) results of more than 20 mils (0.5 mm) at -40°F (-40°C). Dual Shield II 712X also provides the smooth arc and low spatter levels characteristic of Dual Shield flux cored wires. Applications include off-shore oil components, shipbuilding and heavy equipment where exceptional Charpy impact/low temperature toughness is required.

Classifications:	AWS A5.20:E71T-1MJH8/T-9MJH8/T-12MJH8, AWS A5.36:E71T1-M21A6-CS2-H8, ASME SFA 5.20, ASME SFA 5.36
Approvals:	ABS, LR, DNV-GL, CWB CSA W48 491T-9MJ-H8
Industry or Segmentation:	Heavy Equipment, Ship/Barge Building, Offshore Oil

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

Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation
75% Ar - 25% CO₂			
As Welded	540 MPa (78 ksi)	570 MPa (83 ksi)	28 %

Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
75% Ar - 25% CO₂		
As Welded	0°F (-18 °C)	175 J (129 ft-lb)
As Welded	-40°F (-40 °C)	93 ft-lb (125 J)
As Welded	-51 °C (-60 °F)	46 ft-lb (62 J)

Typical Weld Metal Analysis %

C	Mn	Si	S	P
75% Ar - 25% CO₂				
0.05	1.1	0.3	0.010	0.009

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	TTW Dist.	Efficiency (%)
75% Ar - 25% CO₂						
1.2 mm (.045 in.)	100 A	19.5 V	406 cm/min (160 in./min)	1.21 kg/h (2.67 lb/h)	15.8 mm (5/8 in.)	86 %
1.2 mm (.045 in.)	150 A	22 V	635 cm/min (250 in./min)	1.87 kg/h (4.13 lb/h)	15.8 mm (5/8 in.)	85 %
1.2 mm (.045 in.)	192 A	24 V	889 cm/min (350 in./min)	2.68 kg/h (5.90 lb/h)	15.8 mm (5/8 in.)	85 %
1.2 mm (.045 in.)	240 A	27 V	1143 cm/min (450 in./min)	3.45 kg/h (7.60 lb/h)	15.8 mm (5/8 in.)	86 %



DUAL SHIELD II 712X

Mild Steel Flux Cored Wire

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Rate	TTW Dist.	Efficiency (%)
1.4 mm (.052 in.)	116 A	20 V	330 cm/min (130 in./min)	1.34 kg/h (2.95 lb/h)	15.8 mm (5/8 in.)	84.5 %
1.4 mm (.052 in.)	175 A	22 V	508 cm/min (200 in./min)	2.17 kg/h (4.79 lb/h)	15.8 mm (5/8 in.)	85 %
1.4 mm (.052 in.)	235 A	24 V	762 cm/min (300 in./min)	3.39 kg/h (7.47 lb/h)	15.8 mm (5/8 in.)	85 %
1.4 mm (.052 in.)	280 A	26 V	1016 cm/min (400 in./min)	4.58 kg/h (10.10 lb/h)	15.8 mm (5/8 in.)	86 %
1.6 mm (1/16 in.)	196 A	24 V	381 cm/min (150 in./min)	2.29 kg/h (5.05 lb/h)	19 mm (3/4 in.)	84.5 %
1.6 mm (1/16 in.)	240 A	24.5 V	508 cm/min (200 in./min)	3.04 kg/h (6.71 lb/h)	19 mm (3/4 in.)	85 %
1.6 mm (1/16 in.)	270 A	25.5 V	571.5 cm/min (225 in./min)	3.51 kg/h (7.74 lb/h)	19 mm (3/4 in.)	86 %
1.6 mm (1/16 in.)	290 A	26 V	635 cm/min (250 in./min)	3.89 kg/h (8.58 lb/h)	19 mm (3/4 in.)	85.5 %



DUAL SHIELD 810X-Ni1

Mild Steel Flux Cored Wire

Dual Shield 810X-Ni1 provides outstanding operator appeal with an easily controlled arc, improved operation at both lower and higher current levels, minimal spatter and easily removed slag. Dual Shield 810X-Ni1 is designed for use with 100% CO₂. It is an excellent choice for welding on COR-TEN® steel in applications where weathering grade wires are not desirable.

Classifications:	AWS A5.29:E81T1-Ni1CD-JH8, AWS A5.36:E81T1-C1A4-Ni1-H8 ASME SFA 5.29, ASME SFA 5.36
Approvals:	Seismic Certified "D" , CWB CSA W48 E551T1-Ni1C-H8
Industry or Segmentation:	Railcars, Barges, Power Generation, Industrial and General Fabrication, Light Equipment, Heavy Equipment, Civil Construction, Bridge Construction, Ship/Barge Building

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	86 ksi (590 MPa)	92 ksi (635 MPa)	29 %

Typical Charpy V-Notch Properties		
Condition	Testing Temperature	Impact Value
100% CO₂		
As Welded	-29°C (-20°F)	60 ft-lb (81 J)
As Welded	-40°C (-40°F)	45 ft-lb (61 J)

Typical Weld Metal Analysis %					
C	Mn	Si	S	P	Ni
100% CO₂					
0.04	1.30	0.60	0.009	0.010	1.00

Deposition Data					
Diameter	Amps	Volts	Wire Feed Speed	Deposition Rate	Efficiency
Vertical Up 100% CO₂					
1.2 mm (.045 in.)	140 A	23 V	483 cm/min (190 in./min)	1.5 kg/h (3.3 lb/h)	81 %
1.2 mm (.045 in.)	154 A	23 V	559 cm/min (220 in./min)	1.8 kg/h (3.9 lb/h)	81 %
1.2 mm (.045 in.)	167 A	24 V	635 cm/min (250 in./min)	2.0 kg/h (4.5 lb/h)	82 %
1.2 mm (.045 in.)	180 A	24 V	711 cm/min (280 in./min)	2.3 kg/h (5.1 lb/h)	82 %
1.2 mm (.045 in.)	193 A	25 V	787 cm/min (310 in./min)	2.5 kg/h (5.6 lb/h)	82 %
1.2 mm (.045 in.)	205 A	26 V	864 cm/min (340 in./min)	2.8 kg/h (6.2 lb/h)	83 %
1.2 mm (.045 in.)	217 A	26 V	940 cm/min (370 in./min)	3.1 kg/h (6.8 lb/h)	83 %
1.4 mm (.052 in.)	153 A	24 V	406 cm/min (160 in./min)	1.8 kg/h (4.0 lb/h)	81 %
1.4 mm (.052 in.)	159 A	24 V	432 cm/min (170 in./min)	1.8 kg/h (4.0 lb/h)	81 %
1.4 mm (.052 in.)	166 A	25 V	457 cm/min (180 in./min)	2.0 kg/h (4.5 lb/h)	81 %



DUAL SHIELD 810X-Ni1

Mild Steel Flux Cored Wire

Deposition Data					
Diameter	Amps	Volts	Wire Feed Speed	Deposition Rate	Efficiency
1.4 mm (.052 in.)	172 A	25 V	483 cm/min (190 in./min)	2.2 kg/h (4.8 lb/h)	81 %
1.4 mm (.052 in.)	178 A	25 V	508 cm/min (200 in./min)	2.3 kg/h (5.0 lb/h)	81 %
1.4 mm (.052 in.)	184 A	25 V	533 cm/min (210 in./min)	2.4 kg/h (5.3 lb/h)	81 %
1.4 mm (.052 in.)	190 A	26 V	559 cm/min (220 in./min)	2.5 kg/h (5.5 lb/h)	81 %
1.4 mm (.052 in.)	196 A	26 V	584 cm/min (230 in./min)	2.6 kg/h (5.8 lb/h)	82 %
1.4 mm (.052 in.)	201 A	26 V	610 cm/min (240 in./min)	2.7 kg/h (6.0 lb/h)	82 %
1.4 mm (.052 in.)	207 A	26 V	635 cm/min (250 in./min)	2.9 kg/h (6.3 lb/h)	82 %
1.6 mm (1/16 in.)	187 A	24 V	356 cm/min (140 in./min)	1.9 kg/h (4.2 lb/h)	80 %
1.6 mm (1/16 in.)	205 A	25 V	406 cm/min (160 in./min)	2.2 kg/h (4.9 lb/h)	80 %
1.6 mm (1/16 in.)	223 A	25 V	457 cm/min (180 in./min)	2.5 kg/h (5.6 lb/h)	80 %
1.6 mm (1/16 in.)	240 A	25 V	508 cm/min (200 in./min)	2.9 kg/h (6.3 lb/h)	80 %
1.6 mm (1/16 in.)	257 A	26 V	559 cm/min (220 in./min)	3.2 kg/h (7.0 lb/h)	81 %
1.6 mm (1/16 in.)	273 A	26 V	610 cm/min (240 in./min)	3.5 kg/h (7.7 lb/h)	81 %
1.6 mm (1/16 in.)	289 A	26 V	660 cm/min (260 in./min)	3.8 kg/h (8.4 lb/h)	81 %

Recommended Welding Parameters				
Diameter	Amps	Volts	Wire Feed Speed	TTW Dist.
100% CO₂				
1.2 mm (.045 in.)	135-205 A	23-26 V	432-737 cm/min (170-290 in./min)	9.5-12.7 mm (3/8-1/2 in.)
1.2 mm (.045 in.)	175-230 A	25-27 V	737-889 cm/min (290-350 in./min)	12.7-19 mm (1/2-3/4 in.)
1.2 mm (.045 in.)	180-265 A	26-30 V	889-1397 cm/min (350-550 in./min)	19-25.4 mm (3/4-1 in.)
1.4 mm (.052 in.)	125-235 A	23-26 V	330-711 cm/min (130-280 in./min)	12.7-15.8 mm (1/2-5/8 in.)
1.4 mm (.052 in.)	215-290 A	25-29 V	711-1016 cm/min (280-400 in./min)	15.8-19 mm (5/8-3/4 in.)
1.4 mm (.052 in.)	250-350 A	29-31 V	1016-1524 cm/min (400-600 in./min)	19-25.4 mm (3/4-1 in.)
1.6 mm (1/16 in.)	165-270 A	25-28 V	343-673 cm/min (135-265 in./min)	15.8-19 mm (5/8-3/4 in.)
1.6 mm (1/16 in.)	245-345 A	27-30 V	673-1016 cm/min (265-400 in./min)	19-25.4 mm (3/4-1 in.)
1.6 mm (1/16 in.)	290-415 A	28-32 V	1016-1270 cm/min (400-500 in./min)	25.4-31.75 mm (1-1.25 in.)



BETTER. FASTER. EASIER.



UNRIVALED SERVICE AND SUPPORT.

Dual Shield X-Series cored wires, like all ESAB products, are backed by our commitment to superior customer service and support. Our skilled customer service department is prepared to quickly answer any questions, address problems, and help with the maintenance and upgrading of your machines.

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