

Dual Shield II 101-TC

Dual Shield II 101-TC is an all-position flux cored electrode developed to meet the U.S. Navy qualification tests for hydrogen levels of less than 0.05 ml/g of deposited weld metal. This unique formulation designed for CO₂ shielding optimizes performance and reduces post-weld cleanup cost. Dual Shield II 101-TC produces exceptional mechanical properties and low temperature impact toughness. It is intended for use on HY-80, ASTM A710, A514, and A517 or other similar HSLA steels.

Specifications

Classifications	ASME SFA 5.36 ASME SFA 5.29 AWS A5.36 : E91T1-C1A6-K2-H4 AWS A5.29 : E91T1-K2C-H4
Approvals	DNV-GL QPL-24403/2 : MIL-101TC
Industry	Ship/Barge Building Mobile Equipment Industrial and General Fabrication

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

Typical Tensile Properties

Condition	Conditional Statement	Yield Strength	Tensile Strength	Elongation
100% CO₂				
As Welded	AWS A5.29 Requirement Flat Mild Steel Plate	600 MPa (87 ksi)	640 MPa (94 ksi)	25 %
As Welded	MIL-E-24403/2 Vertical-Up HY-80 Base Plate	640 MPa (93 ksi)	710 MPa (103 ksi)	23 %

Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
100% CO₂		
As Welded	-18 °C (0 °F)	104 J (77 ft-lb)
As Welded	-51 °C (-60 °F)	58 J (43 ft-lb)

Typical Weld Metal Analysis %

C	Mn	Si	S	P	Ni
100% CO₂					
0.03	1.32	0.35	0.01	0.014	1.64

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Efficiency (%)	Deposition Rate
100% CO₂					
1.2 mm (.045 in.)	290 A	33 V	1270 cm/min (500 in./min)	87 %	4.8 kg/h (10.7 lbs/h)
1.4 mm (.052 in.)	245 A	28 V	635 cm/min (250 in./min)	86 %	3.3 kg/h (7.3 lbs/h)
1.4 mm (.052 in.)	310 A	33 V	889 cm/min (350 in./min)	85 %	4.6 kg/h (10.2 lbs/h)
1.2 mm (.045 in.)	210 A	29 V	762 cm/min (300 in./min)	86 %	2.8 kg/h (6.3 lbs/h)
1.4 mm (.052 in.)	155 A	25 V	381 cm/min (150 in./min)	87 %	2.0 kg/h (4.4 lbs/h)
1.6 mm (1/16 in.)	190 A	27 V	38 cm/min (150 in./min)	87 %	2.7 kg/h (6.1 lbs/h)

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Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Efficiency (%)	Deposition Rate
1.6 mm (1/16 in.)	300 A	30 V	35 cm/min (250 in./min)	87 %	4.6 kg/h (10.2 lbs/h)
1.2 mm (.045 in.)	250 A	30 V	1016 cm/min (400 in./min)	87 %	3.9 kg/h (8.5 lbs/h)
1.6 mm (1/16 in.)	365 A	33 V	762 cm/min (300 in./min)	86 %	5.5 kg/h (12.3 lbs/h)
1.2 mm (.045 in.)	150 A	28 V	508 cm/min (200 in./min)	86 %	1.9 kg/h (4.2 lbs/h)
1.6 mm (1/16 in.)	410 A	33 V	889 cm/min (350 in./min)	88 %	6.3 kg/h (14.0 lbs/h)
1.4 mm (.052 in.)	360 A	36 V	1143 cm/min (450 in./min)	85 %	6.0 kg/h (13.3 lbs/h)

Recommended Welding Parameters

Current	Wire Diameter	TTW Dist.	Voltage	Wire Feed Speed
100% CO₂				
125-235 A	1.4 mm (.052 in.)	12.7-16 mm (1/2-5/8 in.)	23-26 V	279-584 cm/min (110-230 in./min)
165-270 A	1.6 mm (1/16 in.)	16-19 mm (5/8-3/4 in.)	25-28 V	279-508 cm/min (110-200 in./min)
200-225 A	1.2 mm (.045 in.)	12.7-19 mm (1/2-3/4 in.)	25-27 V	660-965 cm/min (260-380 in./min)
290-350 A	1.4 mm (.052 in.)	19-25.4 mm (3/4-1 in.)	29-31 V	864-1194 cm/min (340-470 in./min)
235-290 A	1.4 mm (.052 in.)	16-19 mm (5/8-3/4 in.)	25-29 V	584-864 cm/min (230-340 in./min)
345-415 A	1.6 mm (1/16 in.)	25.4-31.75 mm (1-1.25 in.)	28-32 V	762-1067 cm/min (300-420 in./min)
225-265 A	1.2 mm (.045 in.)	19-25.4 mm (3/4-1 in.)	26-30 V	965-1321 cm/min (380-520 in./min)
270-345 A	1.6 mm (1/16 in.)	19-25.4 mm (3/4-1 in.)	27-30 V	508-762 cm/min (200-300 in./min)
130-200 A	1.2 mm (.045 in.)	9.5-12.7 mm (3/8-1/2 in.)	23-26 V	381-660 cm/min (150-260 in./min)