

Dual Shield II 101H4M

Dual Shield II 101H4M is one of a series of low hydrogen flux cored electrodes introduced by ESAB. Each of the new Dual Shield II H4 wires is an all-position flux cored electrode that provides excellent low temperature toughness in both the as welded and/or stress relieved conditions (as applicable) when used with 75% Ar /25% CO₂. Each can produce diffusible hydrogen levels of < 4mL/100g deposited over a wide range of welding parameters. Dual Shield II 101H4M is especially designed to weld HY-80 and HSLA-100 steels typically used in shipbuilding. Suitable for single or multi-pass welding applications. This wire was developed to meet the stringent requirements of MIL-E-24403/2 and offshore welding, and it is an ideal choice for HSLA steels.

Specifications

Classifications	ASME SFA 5.36 ASME SFA 5.29 AWS A5.36 : E91T-M21A6-K2H4 AWS A5.29 : E91T1-GM-H4
Approvals	ABS QPL-24403/2 : MIL-101TM
Industry	Ship/Barge Building Pipeline 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	Reduction in Area
75% Ar - 25% CO₂					
As Welded	AWS A5.29 Requirement	640 MPa (93 ksi)	705 MPa (102 ksi)	23 %	67 %
As Welded	MIL-E-24403/2 Vertical-Up HY-80 Base Plate	598 MPa (86 ksi)	680 MPa (101 ksi)	27 %	68 %

Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
75% Ar - 25% CO₂		
As Welded	-18 °C (0 °F)	95 J (70 ft-lb)
As Welded	-50 °C (-60 °F)	66 J (50 ft-lb)

Typical Weld Metal Analysis %

C	Mn	Si	S	P	Ni
75% Ar - 25% CO₂					
0.059	1.37	0.36	0.010	0.012	2.09

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Efficiency (%)	Deposition Type	TTW Dist.	Deposition Rate
1.6 mm (1/16 in.)	365 A	33 V	762 cm/min (300 in./min)	86 %			5.6 kg/h (12.3 lbs/h)
1.4 mm (.052 in.)	135-250 A	22-26 V	279-584 cm/min (110-230 in./min)		Full Range	12.7-16 mm (1/2-5/8 in.)	
1.6 mm (1/16 in.)	285-340 A	27-30 V	508-762 cm/min (200-300 in./min)		Full Range	19-25.4 mm (3/4-1 in.)	
1.4 mm (.052 in.)	310 A	33 V	889 cm/min (350 in./min)	85 %			4.6 kg/h (10.2 lbs/h)

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Diameter	Current	Voltage	Wire Feed Speed	Deposition Efficiency (%)	Deposition Type	TTW Dist.	Deposition Rate
1.2 mm (.045 in.)	290 A	33 V	1270 cm/min (500 in./min)	87 %			4.8 kg/h (10.7 lbs/h)
1.2 mm (.045 in.)	210 A	29 V	762 cm/min (300 in./min)	86 %			2.8 kg/h (6.3 lbs/h)
1.6 mm (1/16 in.)	185-285 A	24-28 V	279-508 cm/min (110-200 in./min)		Full Range	16-19 mm (5/8-3/4 in.)	
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.)	190 A	27 V	38 cm/min (150 in./min)	87 %			2.8 kg/h (6.1 lbs/h)
1.6 mm (1/16 in.)	340-400 A	28-32 V	762-1067 cm/min (300-420 in./min)		Full Range	25.4-31.75 mm (1-1.25 in.)	
1.4 mm (.052 in.)	295-355 A	27-31 V	864-1194 cm/min (340-470 in./min)		Full Range	19-25.4 mm (3/4-1 in.)	
1.4 mm (.052 in.)	360 A	36 V	1143 cm/min (450 in./min)	85 %			6.0 kg/h (13.3 lbs/h)
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)
1.4 mm (.052 in.)	155 A	25 V	381 cm/min (150 in./min)	87 %			2.0 kg/h (4.4 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)
1.2 mm (.045 in.)	200-225 A	24-27 V	660-965 cm/min (260-380 in./min)		Full Range	12.7-19 mm (1/2-3/4 in.)	
1.6 mm (1/16 in.)	410 A	33 V	889 cm/min (350 in./min)	88 %			6.4 kg/h (14.0 lbs/h)
1.2 mm (.045 in.)	130-200 A	22-26 V	381-660 cm/min (150-260 in./min)		Full Range	9.5-12.7 mm (3/8-1/2 in.)	
1.2 mm (.045 in.)	225-265 A	27-29 V	965-1321 cm/min (380-520 in./min)		Full Range	19-25.4 mm (3/4-1 in.)	
1.4 mm (.052 in.)	250-295 A	25-29 V	584-864 cm/min (230-340 in./min)		Full Range	16-19 mm (5/8-3/4 in.)	
1.2 mm (.045 in.)	250 A	30 V	1016 cm/min (400 in./min)	87 %			3.9 kg/h (8.5 lbs/h)
75% Ar - 25% CO₂							
1.6 mm (1/16 in.)	365 A	33 V	762 cm/min (300 in./min)	86 %			5.6 kg/h (12.3 lbs/h)
1.4 mm (.052 in.)	135-250 A	22-26 V	279-584 cm/min (110-230 in./min)		Full Range	12.7-16 mm (1/2-5/8 in.)	

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Diameter	Current	Voltage	Wire Feed Speed	Deposition Efficiency (%)	Deposition Type	TTW Dist.	Deposition Rate
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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.)	290 A	33 V	1270 cm/min (500 in./min)	87 %			4.8 kg/h (10.7 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)
1.6 mm (1/16 in.)	185-285 A	24-28 V	279-508 cm/min (110-200 in. /min)		Full Range	16-19 mm (5/8-3/4 in.)	
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.)	190 A	27 V	38 cm/min (150 in./min)	87 %			2.8 kg/h (6.1 lbs/h)
1.6 mm (1/16 in.)	340-400 A	28-32 V	762-1067 cm /min (300-420 in. /min)		Full Range	25.4-31.75 mm (1-1.25 in.)	
1.4 mm (.052 in.)	295-355 A	27-31 V	864-1194 cm /min (340-470 in. /min)		Full Range	19-25.4 mm (3/4-1 in.)	
1.4 mm (.052 in.)	360 A	36 V	1143 cm/min (450 in./min)	85 %			6.0 kg/h (13.3 lbs/h)
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)
1.4 mm (.052 in.)	155 A	25 V	381 cm/min (150 in./min)	87 %			2.0 kg/h (4.4 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)
1.2 mm (.045 in.)	200-225 A	24-27 V	660-965 cm/min (260-380 in. /min)		Full Range	12.7-19 mm (1/2-3/4 in.)	
1.6 mm (1/16 in.)	410 A	33 V	889 cm/min (350 in./min)	88 %			6.4 kg/h (14.0 lbs/h)
1.2 mm (.045 in.)	130-200 A	22-26 V	381-660 cm/min (150-260 in. /min)		Full Range	9.5-12.7 mm (3/8-1/2 in.)	
1.2 mm (.045 in.)	225-265 A	27-29 V	965-1321 cm /min (380-520 in. /min)		Full Range	19-25.4 mm (3/4-1 in.)	
1.4 mm (.052 in.)	250-295 A	25-29 V	584-864 cm/min (230-340 in. /min)		Full Range	16-19 mm (5/8-3/4 in.)	
1.2 mm (.045 in.)	250 A	30 V	1016 cm/min (400 in./min)	87 %			3.9 kg/h (8.5 lbs/h)

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Recommended Welding Parameters				
Current	Wire Diameter	TTW Dist.	Voltage	Wire Feed Speed
75% Ar - 25% CO₂				
130-200 A	1.2 mm (.045 in.)	9.5-12.7 mm (3/8-1/2 in.)	22-26 V	381-660 cm/min (150-260 in./min)
285-340 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)
340-400 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.)	27-29 V	965-1321 cm/min (380-520 in./min)
250-295 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)
295-355 A	1.4 mm (.052 in.)	19-25.4 mm (3/4-1 in.)	27-31 V	864-1194 cm/min (340-470 in./min)
200-225 A	1.2 mm (.045 in.)	12.7-19 mm (1/2-3/4 in.)	24-27 V	660-965 cm/min (260-380 in./min)
135-250 A	1.4 mm (.052 in.)	12.7-16 mm (1/2-5/8 in.)	22-26 V	279-584 cm/min (110-230 in./min)
185-285 A	1.6 mm (1/16 in.)	16-19 mm (5/8-3/4 in.)	24-28 V	279-508 cm/min (110-200 in./min)