

Dual Shield II 80-Ni1 H4

Dual Shield II 80-Ni1H4 produces diffusible Hydrogen levels of <4mL/100g over a wide range of welding parameters. Applications include petrochemical equipment, bridge fabrication, offshore oil construction, ship fabrication railcar, and heavy machinery.

Specifications

Classifications	AWS A5.36 : E81T1-M21A6-Ni1-H4 AWS A5.29 : E81T1-Ni1MJDH4
Approvals	ABS : 3YSA(H5) CWB : AWS A5.29 DNV : IV YMS(H5) LR : 4Y40S(H10) MIL-E-24403/1 : MIL-81T1-Ni1M BV VdTUV
Industry	Mobile Equipment Railcars Ship/Barge Building Bridge Construction Civil Construction Industrial and General Fabrication

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

Typical Tensile Properties

Condition	Yield Strength	Tensile Strength	Elongation	Reduction in Area
75% Ar - 25% CO₂				
Stress Relieved 2 hour(s) 621 °C (1150 °F)	505 MPa (73 ksi)	570 MPa (84 ksi)	28 %	71 %

Typical Charpy V-Notch Properties

Condition	Testing Temperature	Impact Value
75% Ar - 25% CO₂		
Stress Relieved 2 hour(s) 620 °C (1150 °F)	-29 °C (-20 °F)	122 J (90 ft-lb)
Stress Relieved 2 hour(s) 620 °C (1150 °F)	-40 °C (-40 °F)	68 J (50 ft-lb)

Typical Weld Metal Analysis %

S	P
75% Ar - 25% CO₂	
0.009	0.014

Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Efficiency (%)	Deposition Rate
75% Ar - 25% CO₂					
1.6 mm (1/16 in.)	410 A	33 V	889 cm/min (350 in./min)	88 %	6.35 kg/h (14 lbs/h)
1.2 mm (.045 in.)	150 A	28 V	508 cm/min (200 in./min)	86 %	1.91 kg/h (4.2 lbs/h)
1.4 mm (.052 in.)	245 A	28 V	635 cm/min (250 in./min)	86 %	3.31 kg/h (7.3 lbs/h)
1.2 mm (.045 in.)	210 A	29 V	762 cm/min (300 in./min)	86 %	2.86 kg/h (6.3 lbs/h)

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Deposition Data

Diameter	Current	Voltage	Wire Feed Speed	Deposition Efficiency (%)	Deposition Rate
2.0 mm (5/64 in.)	450 A	31 V	655 cm/min (258 in./min)	85 %	6.71 kg/h (14.8 lbs/h)
1.2 mm (.045 in.)	290 A	33 V	1270 cm/min (500 in./min)	87 %	4.85 kg/h (10.7 lbs/h)
2.0 mm (5/64 in.)	250 A	26 V	284 cm/min (112 in./min)	85 %	2.9 kg/h (6.4 lbs/h)
1.4 mm (.052 in.)	155 A	25 V	381 cm/min (150 in./min)	87 %	2 kg/h (4.4 lbs/h)
1.2 mm (.045 in.)	250 A	30 V	1016 cm/min (400 in./min)	87 %	3.86 kg/h (8.5 lbs/h)
2.0 mm (5/64 in.)	350 A	28 V	447 cm/min (176 in./min)	85 %	4.76 kg/h (10.5 lbs/h)
1.4 mm (.052 in.)	310 A	33 V	889 cm/min (350 in./min)	85 %	4.63 kg/h (10.2 lbs/h)
1.6 mm (1/16 in.)	365 A	33 V	762 cm/min (300 in./min)	86 %	5.58 kg/h (12.3 lbs/h)
1.6 mm (1/16 in.)	300 A	30 V	635 cm/min (250 in./min)	87 %	4.63 kg/h (10.2 lbs/h)
1.6 mm (1/16 in.)	190 A	27 V	381 cm/min (150 in./min)	87 %	2.77 kg/h (6.1 lbs/h)
1.4 mm (.052 in.)	360 A	36 V	1143 cm/min (450 in./min)	85 %	6.03 kg/h (13.3 lbs/h)

Recommended Welding Parameters

Wire Diameter	Current	TTW Dist.	Voltage	Wire Feed Speed
75% Ar - 25% CO2				
1.6 mm (1/16 in.)	340-400 A	25.4-31.75 mm (1-1.25 in.)	28-32 V	762-1067 mm/min (300-420 in./min)
1.6 mm (1/16 in.)	285-340 A	19-25.4 mm (3/4-1 in.)	27-30 V	508-762 mm/min (200-300 in./min)
1.6 mm (1/16 in.)	185-285 A	15.9-19 mm (5/8-3/4 in.)	24-28 V	279-508 mm/min (110-200 in./min)
1.4 mm (.052 in.)	340-470 A	19-25.4 mm (3/4-1 in.)	27-31 V	864-1194 mm/min (340-470 in./min)
1.4 mm (.052 in.)	230-340 A	15.9-19 mm (5/8-3/4 in.)	25-29 V	584-864 mm/min (230-340 in./min)
1.4 mm (.052 in.)	110-230 A	12.7-15.9 mm (1/2-5/8 in.)	22-26 V	279-584 mm/min (110-230 in./min)
1.2 mm (.045 in.)	225-265 A	19-25.4 mm (3/4-1 in.)	27-29 V	965-1321 mm/min (380-520 in./min)
1.2 mm (.045 in.)	200-225 A	12.7-19 mm (1/2-3/4 in.)	24-27 V	660-965 mm/min (260-380 in./min)
1.2 mm (.045 in.)	130-200 A	9.5-12.7 mm (3/8-1/2 in.)	22-26 V	381-660 mm/min (150-260 in./min)
1.6 mm (1/16 in.)	290-350 A	19-25.4 mm (3/4-1 in.)	26-30 V	559-838 mm/min (220-330 in./min)
1.6 mm (1/16 in.)	185-290 A	15.9-25.4 mm (5/8-1 in.)	24-28 V	279-559 mm/min (110-220 in./min)
1.4 mm (.052 in.)	280-320 A	19-25.4 mm (3/4-1 in.)	26-31 V	762-1016 mm/min (300-400 in./min)

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Recommended Welding Parameters

Wire Diameter	Current	TTW Dist.	Voltage	Wire Feed Speed
1.4 mm (.052 in.)	220-280 A	15.9-19 mm (5/8-3/4 in.)	25-29 V	508-762 mm/min (200-300 in./min)
1.4 mm (.052 in.)	130-220 A	12.7-15.9 mm (1/2-5/8 in.)	22-26 V	279-508 mm/min (110-200 in./min)