

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.

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| Classifications | AWS A5.29 : E91T1-GM-H4 AWS A5.36 : E91T-M21A6-K2H4 ASME SFA 5.36 ASME SFA 5.29 |
| Approvals | ABS QPL-24403/2 MIL-101TM |
| Industry | Industrial and General Fabrication Mobile Equipment Pipeline Ship/Barge Building |

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

Typical Tensile Properties

| Condition | Yield Strength | Tensile Strength | Reduction in Area | Elongation |
|---|------------------|-------------------|-------------------|------------|
| 75% Ar - 25% CO₂ | | | | |
| As Welded (AWS A5.29 Requirement) | 640 MPa (93 ksi) | 705 MPa (102 ksi) | 67 % | 23 % |
| As Welded (MIL-E-24403/2 Vertical-Up HY-80 Base Plate) | 598 MPa (86 ksi) | 680 MPa (101 ksi) | 68 % | 27 % |

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 |
|-------|------|------|-------|-------|------|
| 0.059 | 1.37 | 0.36 | 0.010 | 0.012 | 2.09 |

Deposition Data

| Diameter | Current | Voltage | Wire Feed Speed | Deposition Rate | TTW Dist. | Deposition Efficiency % |
|----------------------|---------|---------|------------------------------|-------------------------|-----------|-------------------------|
| 1.2 mm (.045 in.) | 150 A | 28 V | 508 cm/min (200 in./min) | 1.9 kg/h (4.2 lb/h) | - | 86 % |
| 1.2 mm (.045 in.) | 210 A | 29 V | 762 cm/min (300 in./min) | 2.8 kg/h (6.3 lb/h) | - | 86 % |
| 1.2 mm (.045 in.) | 250 A | 30 V | 1016 cm/min (400 in./min) | 3.9 kg/h (8.5 lb/h) | - | 87 % |
| 1.2 mm (.045 in.) | 290 A | 33 V | 1270 cm/min (500 in./min) | 4.8 kg/h (10.7 lb/h) | - | 87 % |
| 1.4 mm (.052 in.) | 155 A | 25 V | 381 cm/min (150 in./min) | 2.0 kg/h (4.4 lb/h) | - | 87 % |
| 1.4 mm (.052 in.) | 245 A | 28 V | 635 cm/min (250 in./min) | 3.3 kg/h (7.3 lb/h) | - | 86 % |
| 1.4 mm (.052 in.) | 310 A | 33 V | 889 cm/min (350 in./min) | 4.6 kg/h (10.2 lb/h) | - | 85 % |
| 1.4 mm (.052 in.) | 360 A | 36 V | 1143 cm/min (450 in./min) | 6.0 kg/h (13.3 lb/h) | - | 85 % |
| 1.6 mm (1/16 in.) | 190 A | 27 V | 38 cm/min (150 in./min) | 2.8 kg/h (6.1 lb/h) | - | 87 % |
| 1.6 mm (1/16 in.) | 300 A | 30 V | 35 cm/min (250 in./min) | 4.6 kg/h (10.2 lb/h) | - | 87 % |
| 1.6 mm (1/16 in.) | 365 A | 33 V | 762 cm/min (300 in./min) | 5.6 kg/h (12.3 lb/h) | - | 86 % |

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| Deposition Data | | | | | | |
|------------------------------------|-----------|---------|--------------------------------------|-------------------------|----------------------------|-------------------------|
| Diameter | Current | Voltage | Wire Feed Speed | Deposition Rate | TTW Dist. | Deposition Efficiency % |
| 1.6 mm (1/16 in.) | 410 A | 33 V | 889 cm/min (350 in./min) | 6.4 kg/h (14.0 lb/h) | - | 88 % |
| 75% Ar - 25% CO₂ | | | | | | |
| 1.2 mm (.045 in.) | 130-200 A | 22-26 V | 381-660 cm/min (150-260 in./min) | - | 9.5-12.7 mm (3/8-1/2 in.) | - |
| 1.2 mm (.045 in.) | 200-225 A | 24-27 V | 660-965 cm/min (260-380 in./min) | - | 12.7-19 mm (1/2-3/4 in.) | - |
| 1.2 mm (.045 in.) | 225-265 A | 27-29 V | 965-1321 cm/min (380-520 in./min) | - | 19-25.4 mm (3/4-1 in.) | - |
| 1.4 mm (.052 in.) | 135-250 A | 22-26 V | 279-584 cm/min (110-230 in./min) | - | 12.7-16 mm (1/2-5/8 in.) | - |
| 1.4 mm (.052 in.) | 250-295 A | 25-29 V | 584-864 cm/min (230-340 in./min) | - | 16-19 mm (5/8-3/4 in.) | - |
| 1.4 mm (.052 in.) | 295-355 A | 27-31 V | 864-1194 cm/min (340-470 in./min) | - | 19-25.4 mm (3/4-1 in.) | - |
| 1.6 mm (1/16 in.) | 185-285 A | 24-28 V | 279-508 cm/min (110-200 in./min) | - | 16-19 mm (5/8-3/4 in.) | - |
| 1.6 mm (1/16 in.) | 285-340 A | 27-30 V | 508-762 cm/min (200-300 in./min) | - | 19-25.4 mm (3/4-1 in.) | - |
| 1.6 mm (1/16 in.) | 340-400 A | 28-32 V | 762-1067 cm/min (300-420 in./min) | - | 25.4-31.75 mm (1-1.25 in.) | - |

| Recommended Welding Parameters | | | | |
|------------------------------------|-----------|---------|-------------------------------|--------------------------------------|
| Wire Diameter | Current | Voltage | TTW Dist. | Wire Feed Speed |
| 75% Ar - 25% CO₂ | | | | |
| 1.2 mm (.045 in.) | 130-200 A | 22-26 V | 9.5-12.7 mm (3/8-1/2 in.) | 381-660 cm/min (150-260 in./min) |
| 1.2 mm (.045 in.) | 200-225 A | 24-27 V | 12.7-19 mm (1/2-3/4 in.) | 660-965 cm/min (260-380 in./min) |
| 1.2 mm (.045 in.) | 225-265 A | 27-29 V | 19-25.4 mm (3/4-1 in.) | 965-1321 cm/min (380-520 in./min) |
| 1.4 mm (.052 in.) | 135-250 A | 22-26 V | 12.7-16 mm (1/2-5/8 in.) | 279-584 cm/min (110-230 in./min) |
| 1.4 mm (.052 in.) | 250-295 A | 25-29 V | 16-19 mm (5/8-3/4 in.) | 584-864 cm/min (230-340 in./min) |
| 1.4 mm (.052 in.) | 295-355 A | 27-31 V | 19-25.4 mm (3/4-1 in.) | 864-1194 cm/min (340-470 in./min) |
| 1.6 mm (1/16 in.) | 185-285 A | 24-28 V | 16-19 mm (5/8-3/4 in.) | 279-508 cm/min (110-200 in./min) |
| 1.6 mm (1/16 in.) | 285-340 A | 27-30 V | 19-25.4 mm (3/4-1 in.) | 508-762 cm/min (200-300 in./min) |
| 1.6 mm (1/16 in.) | 340-400 A | 28-32 V | 25.4-31.75 mm (1-1.25 in.) | 762-1067 cm/min (300-420 in./min) |