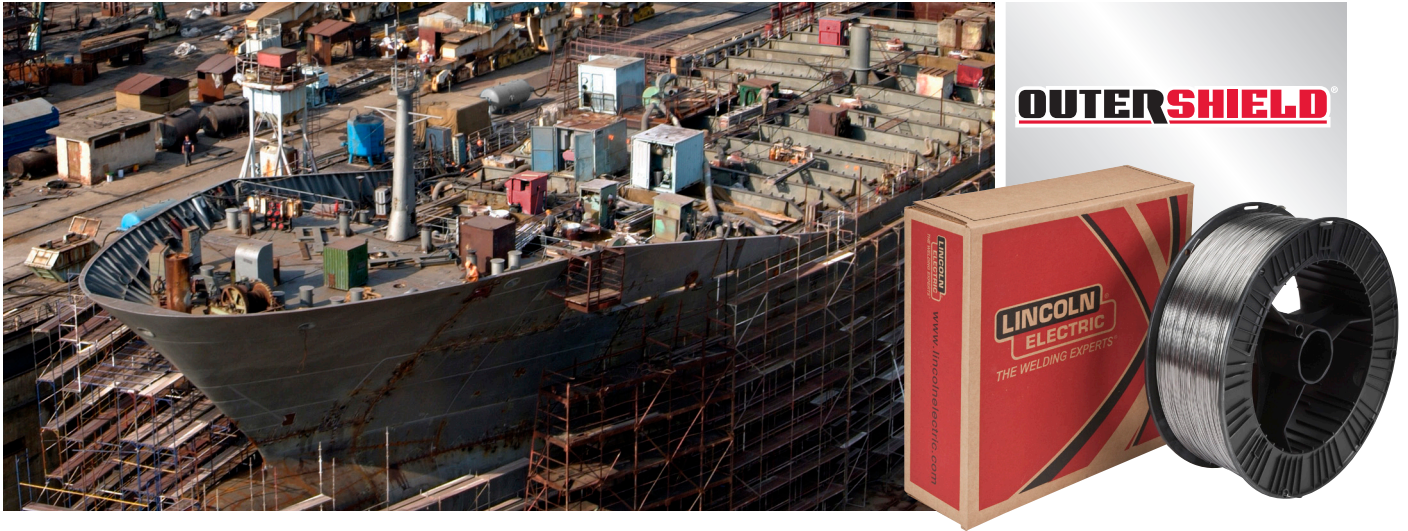


Outershield® 71M

AWS E71T-1C-J, E71T-1M-J, E71T-9C-J, E71T-9M-J



KEY FEATURES

- NEW!** Dual classified for both 100% CO₂ and 75% Argon / 25% CO₂ mixed gas
- NEW!** Charpy V-Notch impact toughness tested to -40°C (-40°F)
 - ▶ High travel speeds
 - ▶ Spray like transfer with minimal spatter
 - ▶ Rod based manufacturing for industry leading wire stiffness and feedability
 - ▶ Increased rigidity allows for easy manual break-off

CONFORMANCE

AWS A5.20/A5.20M: 2005
& ASME SFA-A5.20:

ABS*:
Lloyd's Register:
DNV Grade:
BV Grade:
CWB/CSA W48-06:
MIL-E-24403/1:

*Only for 0.045, 0.052 and 1/16 in. diameters

E71T-1C-J, E71T-9C-J
E71T-1M-J, E71T-9M-J
3YSA H15
3YS H15
III YMS H10
SA3YH (CO₂ only)
E491T-9, E491T-9M
MIL-71T-1C, MIL-71T-1M

APPLICATIONS

- ▶ Bridge, ship, and barge
- ▶ General fabrication
- ▶ Machinery fabrication
- ▶ Structural fabrication
- ▶ Offshore applications

WELDING POSITIONS

All, except vertical down

SHIELDING GAS

100% CO₂
75% Argon / 25% CO₂
Flow Rate: 40 - 50 CFH

DIAMETERS / PACKAGING

| Diameter in (mm) | 10 lb (4.5 kg) Plastic Spool | 25 lb (11 kg) Plastic Spool | 33 lb (15 kg) Steel Spool |
|---------------------|-------------------------------------|-------------------------------------|------------------------------------|
| 0.035 (0.9) | ED026804 | ED026805 | |
| 0.045 (1.1) | ED020836 | ED022659 | ED030007 |
| 0.052 (1.3) | | ED022660 | ED030008 |
| 1/16 (1.6) | | ED022661 | ED030009 |
| Diameter in (mm) | 50 lb (23 kg) Coil | 300 lb (136 kg) Speed-Feed® Reel | 500 lb (227 kg) Accu-Trak® Drum |
| 0.045 (1.1) | ED020844 | | ED027364 |
| 0.052 (1.3) | ED020845 | | ED029778 |
| 1/16 (1.6) | ED020846 | ED020848 | ED029779 |
| Diameter in (mm) | 600 lb (272 kg) Speed-Feed® Reel | | |
| 1/16 (1.6) | ED020851 | | |

THE LINCOLN ELECTRIC COMPANY

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.20/A5.20M: 2005

| Requirements | Yield Strength ⁽²⁾ MPa (ksi) | Tensile Strength MPa (ksi) | Elongation % | Charpy V-Notch - J (ft•lbf) | | |
|--|--|-------------------------------|-----------------|-----------------------------|-------------------|-----------------------------|
| | | | | @ -18°C (0°F) | @ -29°C (-20°F) | @ -40°C (-40°F) |
| AWS E71T-1C-J / E71T-1M-J AWS E71T-9C-J / E71T-9M-J | 400 (58) min. | 480 - 655 (70 - 95) | 22 min. | 27 (20) min. | – | 27 (20) min. ⁽⁶⁾ |
| Test Results⁽³⁾ As-Welded with 100% CO ₂ and 75% Argon/25% CO ₂ | 500-570 (72-83) | 560-630 (81-91) | 27-29 | 176-190 (130-140) | 176-190 (130-140) | 130-163 (96-120) |

⁽⁶⁾Electrodes with the optional supplemental designator "J" shall meet the minimum Charpy V-Notch impact energy requirement for its classification at a test temperature of 10°C lower than the test temperature for its classification.

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.20/A5.20M: 2005

| Requirements | %C | %Mn | %Si | %S | %P |
|--|--------------|--------------|--------------|--------------|--------------|
| AWS E71T-1C-J / E71T-1M-J AWS E71T-9C-J / E71T-9M-J | 0.12 max. | 1.75 max. | 0.90 max. | 0.03 max. | 0.03 max. |
| Test Results⁽³⁾ As-Welded with 100% CO ₂ and 75% Argon/25% CO ₂ | 0.05-0.07 | 1.04-1.60 | 0.25-0.50 | ≤ 0.01 | < 0.01 |

NOTE: This product contains micro-alloying elements.

TYPICAL OPERATING PROCEDURES

| Diameter, Polarity Shielding Gas ⁽⁴⁾ | CTWD ⁽⁵⁾ mm (in) | Wire Feed Speed m/min (in/min) | Voltage (volts) | Approx. Current (amps) | Melt-Off Rate kg/hr (lb/hr) | Deposition Rate kg/hr (lb/hr) | Efficiency (%) |
|--|--------------------------------|-----------------------------------|--------------------|---------------------------|--------------------------------|----------------------------------|-------------------|
| 0.035 in (0.9 mm) DC+ 100% CO ₂ | 19-25 (3/4-1) | 5.1 (200) | 20-23 | 95 | 1.3 (2.8) | 1.1 (2.8) | 85 |
| | | 6.4 (250) | 21-24 | 115 | 1.6 (3.5) | 1.4 (3.5) | 85 |
| | | 7.6 (300) | 22-25 | 130 | 1.9 (4.2) | 1.6 (4.2) | 86 |
| | | 8.9 (350) | 23-26 | 150 | 2.2 (4.9) | 1.9 (4.9) | 86 |
| | | 10.2 (400) | 24-27 | 160 | 2.6 (5.6) | 2.2 (5.6) | 86 |
| | | 12.7 (500) | 26-29 | 185 | 3.2 (7.) | 2.7 (7.0) | 86 |
| | | 15.2 (600) | 28-31 | 200 | 3.8 (8.4) | 3.3 (8.4) | 86 |
| 17.8 (700) | 30-33 | 215 | 4.4 (9.8) | 3.8 (9.8) | 86 | | |
| 0.045 in (1.1 mm) DC+ 100% CO ₂ | 19-25 (3/4-1) | 5.1 (200) | 23-26 | 165 | 2.1 (4.6) | 1.8 (3.9) | 83 |
| | | 6.4 (250) | 24-27 | 190 | 2.6 (5.8) | 2.2 (4.8) | 84 |
| | | 7.6 (300) | 25-28 | 220 | 3.1 (6.9) | 2.6 (5.8) | 84 |
| | | 8.9 (350) | 26-29 | 245 | 3.7 (8.1) | 3.1 (6.8) | 84 |
| | | 10.2 (400) | 26-29 | 265 | 4.2 (9.2) | 3.5 (7.8) | 84 |
| | | 12.7 (500) | 28-31 | 295 | 5.2 (11.5) | 4.4 (9.7) | 84 |
| | | 15.2 (600) | 30-33 | 315 | 6.3 (13.8) | 5.3 (11.7) | 85 |
| 17.8 (700) | 32-35 | 325 | 7.3 (16.1) | 6.2 (13.7) | 85 | | |
| 0.052 in (1.3 mm) DC+ 100% CO ₂ | 19-25 (3/4-1) | 3.8 (150) | 22-25 | 150 | 2.1 (4.7) | 1.7 (3.8) | 81 |
| | | 5.1 (200) | 23-26 | 180 | 2.8 (6.2) | 2.3 (5.1) | 83 |
| | | 6.4 (250) | 24-27 | 210 | 3.5 (7.7) | 2.9 (6.5) | 83 |
| | | 7.6 (300) | 25-28 | 235 | 4.2 (9.3) | 3.5 (7.8) | 84 |
| | | 8.9 (350) | 27-30 | 265 | 4.9 (10.8) | 4.2 (9.1) | 84 |
| | | 11.4 (450) | 29-32 | 305 | 6.3 (13.9) | 5.4 (11.8) | 85 |
| | | 12.7 (500) | 30-33 | 325 | 7.0 (15.5) | 6.0 (13.2) | 85 |
| 15.2 (600) | 33-36 | 360 | 8.4 (18.6) | 7.2 (15.8) | 85 | | |
| 1/16 in (1.6 mm) DC+ 100% CO ₂ | 19-25 (3/4-1) | 3.2 (125) | 23-26 | 205 | 2.5 (5.4) | 2.0 (4.5) | 82 |
| | | 3.8 (150) | 24-27 | 225 | 3.0 (6.5) | 2.4 (5.4) | 82 |
| | | 5.1 (200) | 25-28 | 260 | 4.0 (8.7) | 3.3 (7.2) | 83 |
| | | 6.4 (250) | 26-29 | 295 | 4.9 (10.9) | 4.1 (9.1) | 83 |
| | | 7.6 (300) | 28-31 | 330 | 5.9 (13.0) | 5.0 (10.9) | 84 |
| | | 10.2 (400) | 30-33 | 395 | 7.9 (17.4) | 6.6 (14.6) | 84 |
| | | 12.7 (500) | 33-36 | 445 | 9.9 (21.7) | 8.3 (18.3) | 84 |

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer below. ⁽⁴⁾When welding under mixed gas, decrease voltage. ⁽⁵⁾To estimate ESO, subtract 1/4 in (6.0 mm) from CTWD.

Material Safety Data Sheets (MSDS) and Certificates of Conformance are available on our website at www.lincolnelectric.com

TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

CUSTOMER ASSISTANCE POLICY

The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or advice about their use of our products. Our employees respond to inquiries to the best of their ability based on information provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or advice. Moreover, the provision of such information or advice does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or advice, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose is specifically disclaimed.

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Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

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