Innershield® NR®-311 Ni

Low Alloy, Flat & Horizontal • AWS E70T7-K2, E80TG-K2

Key Features

- Designed to provide a nominal 1.5% nickel weld deposit
- High deposition rates and fast travel speeds
- Capable of producing weld deposits with impact properties exceeding 27 J (20 ft•lbf) at -29°C (-20°F)
- Color match on weathering steel applications
- 3/32 in (2.4 mm) diameter meets FEMA 353 and AWS D1.8 seismic lot waiver requirements

Conformances

AWS A5.29/A5.29M: 2005	E70T7-K2-H16, E80TG-K2
ASME SFA-A5.29:	E70T7-K2-H16, E80TG-K2
ABS:	2YSA
Lloyd's Register:	2YS
DNV Grade:	II YMS
GL:	2YS
BV Grade:	SA2YM
DB:	EN 758 T42 2 1, 5Ni W N 5
FEMA 353:	3/32 in (2.4 mm) only
AWS D1.8:	3/32 in (2.4 mm) only

Typical Applications

- Fillet and lap welds
- Horizontal and square edge butt welds, such as column-to-column structural connections
- Deep groove welds
- Structural fabrication
- Weathering steels

Welding Positions

Flat & Horizontal

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(AWS E70T7-K2, E80TG-K2)

DIAMETERS / PACKAGING

Diameter in (mm)	25 lb (11.3 kg) Steel Spool	50 lb (22.7 kg) Coil	50 lb (22.7 kg) Coil (Vacuum Sealed Foil Bag)
5/64 (2.0) 3/32 (2.4) 7/64 (2.8)	ED030650	ED017822 ED017824	ED032530

MECHANICAL PROPERTIES[1] – *As Required per AWS A5.29/A5.29M: 2005*

	Yield Strength[2] MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Hardness Rockwell B	Charpy V-Notch J (ft•lbf) @ -29°C (-20°F)
Requirements AWS E70T7-K2 AWS E80TG-K2	 400 (58) min. 470 (68) min.	 480-620 (70-90) 550-690 (80-100)	 20 min. 19 min.	 –	 27 (20) min. Not Specified
Typical Results[3] As-Welded	 470-515 (68-75)	 575-615 (83-89)	 27-30	 88-93	 41-87 (30-65)

DEPOSIT COMPOSITION[1] – *As Required per AWS A5.29/A5.29M: 2005*

	%C	%Mn	%Si	%S	%P
Requirements - AWS E70T7-K2 / E80TG-K2	0.15 max.	0.50-1.75	0.80 max.	0.030 max.	0.030 max.
Typical Results[3]	0.06-0.08	1.25-1.40	0.18-0.22	≤0.003	0.005-0.008
	%Ni	**%Cr**	**%Mo**	**%V**	**%Al**
Requirements - AWS E70T7-K2 / E80TG-K2	1.00-2.00	0.15 max.	0.35 max.	0.05 max.	1.8 max.
Typical Results[3]	1.29-1.56	0.03-0.04	≤0.03	–	1.0-1.3

TYPICAL OPERATING PROCEDURES

Diameter, Polarity	CTWD 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 (%)
5/64 in (2.0 mm), DC-	32 (1 1/4)	2.5 (100) 3.3 (130) 4.1 (160) 5.1 (200) 6.1 (240)	21-23 24-26 25-27 26-28 27-29	170 205 235 270 295	2.5 (5.5) 3.3 (7.2) 4.0 (8.8) 5.0 (11.0) 6.1 (13.3)	1.8 (3.9) 2.4 (5.2) 2.9 (6.5) 3.8 (8.3) 4.5 (10.0)	70 72 73 75 75
3/32 in (2.4 mm), DC-	38 (1 1/2)	1.9 (75) 2.5 (100) 3.1 (125) 3.8 (150) 4.4 (175) 5.1 (200)	20-22 21-23 23-25 25-27 26-28 27-29	200 245 285 330 365 390	2.8 (6.2) 3.8 (8.3) 4.7 (10.4) 5.7 (12.5) 6.6 (14.5) 7.6 (16.6)	1.9 (4.2) 2.7 (5.9) 3.4 (7.5) 4.1 (9.1) 4.9 (10.8) 5.6 (12.3)	67 71 72 72 74 74
7/64 in (2.8 mm), DC-	44.5 (1 3/4)	2.5 (100) 3.5 (140) 4.3 (170) 5.1 (200) 6.1 (240)	22-24 24-26 26-28 28-30 29-31	310 370 430 470 520	5.2 (11.4) 7.2 (15.8) 8.9 (19.5) 10.4 (22.8) 12.4 (27.2)	3.8 (8.4) 5.4 (11.8) 6.6 (14.5) 7.7 (17.0) 9.2 (20.4)	73 74 74 74 75

[1]Typical all weld metal. [2]Measured with 0.2% offset. [3]See test results disclaimer below.
NOTE: FEMA and AWS D1.8 structural steel seismic supplement test data can be found on this product at www.lincolnelectric.com.

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

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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.

THE LINCOLN ELECTRIC COMPANY
22801 St. Clair Avenue • Cleveland, OH • 44117-1199 • U.S.A.
Phone: +1.216.481.8100 • www.lincolnelectric.com

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