

INNERSHIELD® NR®-212

Low Alloy, All Position ■ AWS E71TG-G, E71TG-AZ-G-H16

KEY FEATURES

- Accommodates a wide range of mild steels
- Fast freeze characteristics accommodate poor fit-up
- Smooth arc performance and ease of use

WELDING POSITIONS

All

MAXIMUM PLATE THICKNESS

Diameter - in (mm)	Maximum Plate Thickness - in (mm)
0.045 (1.1)	3/4 (19.1)
0.068 (1.7)	3/4 (19.1)
5/64 (2.0)	3/4 (19.1)

CONFORMANCES

AWS A5.29:	E71TG-G
AWS A5.36:	E71TG-AZ-G-H16
ASME SFA-A5.29:	E71TG-G
CWB/CSA W48-06:	E491TG-G-H16 (E71TG-G H16)
ISO 17632-B	T49ZT11-1NAG-H15

TYPICAL APPLICATIONS

- Single or multiple pass welding on up to 19 mm (3/4 in) thicknesses
- General fabrication
- Robotics
- Truck bodies, tanks, hoppers, racks and scaffolding
- Welding on galvanized steel or zinc coated carbon steel

DIAMETERS / PACKAGING

Diameter in (mm)	10 lb (4.5 kg) Plastic Spool	14 lb (6.4 kg) Coil 56 lb (25.4 kg) Master Carton	25 lb (11.3 kg) Steel Spool	50 lb (22.7 kg) Coil
0.045 (1.1)	ED026090		ED030639	
0.068 (1.7)		ED027803	ED030642	
5/64 (2.0)		ED027794	ED030646	ED026858

MECHANICAL PROPERTIES⁽¹⁾

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Hardness Rockwell B
Requirements - AWS E71TG-G	400 (58) min	480-655 (70-95)	20 min	—
Typical Results ⁽³⁾	440-505 (64-74)	575-605 (84-88)	24-28	89-92

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer

DEPOSIT COMPOSITION⁽¹⁾

	%C	%Mn ⁽⁴⁾	%Si	%S	%P
Requirements - AWS E71TG-G	Not Specified	0.50 min	1.00 max	0.030 max	0.030 max
Typical Results⁽³⁾	0.06-0.11	0.84-1.55	0.20-0.33	≤0.003	0.006-0.009
	%Ni ⁽⁴⁾	%Cr ⁽⁴⁾	%Mo ⁽⁴⁾	%V ⁽⁴⁾	%Al
Requirements - AWS E71TG-G	0.50 min	0.30 min	0.20 min	0.10 min	1.8 max
Typical Results⁽³⁾	1.02-1.15	0.02-0.04	≤0.02	—	1.3-1.6

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 (%)
0.045 in (1.1 mm), DC-	16 (5/8)	1.4 (55)	14-15	75	0.5 (1.3)	0.5 (1.1)	84
		1.8 (70)	15-16	90	0.7 (1.6)	0.6 (1.4)	87
		2.3 (90)	16-17	115	1.0 (2.1)	0.8 (1.8)	85
		2.8 (110)	17-18	135	1.2 (2.6)	1.0 (2.2)	84
		3.3 (130)	18-19	155	1.4 (3.1)	1.2 (2.6)	83
		4.1 (160)	19-20	170	1.6 (3.5)	1.4 (3.0)	85
0.068 in (1.7 mm), DC-	25 (1)	1.5 (60)	16-17	145	1.4 (3.1)	1.1 (2.4)	77
		1.9 (75)	17-18	180	1.7 (3.8)	1.4 (3.2)	84
		2.3 (90)	18-19	200	2.0 (4.5)	1.7 (3.8)	84
		3.0 (120)	19-20	230	2.7 (6.0)	2.3 (5.2)	86
		3.8 (150)	20-21	255	3.3 (7.4)	2.9 (6.4)	86
		4.4 (175)	22-23	275	3.9 (8.7)	3.4 (7.5)	86
5/64 in (2.0 mm), DC-	25 (1)	1.5 (60)	16-17	200	1.7 (3.8)	1.5 (3.3)	86
		1.9 (75)	18-19	225	2.1 (4.7)	1.8 (4.1)	87
		2.3 (90)	19-20	245	2.6 (5.7)	2.3 (5.0)	87
		2.8 (110)	20-21	275	3.2 (7.1)	2.8 (6.2)	87
		3.3 (130)	21-23	300	3.7 (8.3)	3.3 (7.3)	87
		3.8 (150)	22-23	325	4.3 (9.6)	3.8 (8.4)	87

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾In order to meet the alloy AWS requirements of the G group, the weld deposit needs to have the minimum, as specified in the table, of only one of these elements.

Safety Data Sheets (SDS) 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.

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