

CERTIFICATE OF CONFORMANCE



Electrode: **Innershield® NR®-233**
 Electrode Size: **5/64" (2.0 mm)**
 Specification: **AWS D1.8:2021**
 Date: **March 03, 2023**

This is to certify that the above listed product was manufactured to meet the Class T4 requirement of AWS A5.01 as required by clause 6.3.1.2 of AWS D1.8:2021.

It was manufactured and supplied according to a Quality System Program that meets the requirements of ISO9001 among others as documented on The Lincoln Electric web page (<http://www.lincolnelectric.com/en-us/company/Pages/certifications.aspx>).

Operating Settings	High Heat Input Requirements	Low Heat Input Requirements	High Heat Input Results	Low Heat Input Results
Electrode Lot			17778633	17778633
Base Material			ASTM A572 steel (Grade 50)	ASTM A572 steel (Grade 50)
Current Type/Polarity			DC-	DC-
Plate Thickness, mm (in)	(3/4)	(3/4)	19 (3/4)	19 (3/4)
Nominal Voltage, V			20	22
Nominal Current, A			250	320
Wire Feed Speed, cm/min (in/min)			318 (125)	483 (190)
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	2.8 (71.8)	1.3 (33.7)
Travel Speed, cm/min (in/min)			11 (4.3)	32 (12.5)
Contact Tip to Work Distance, mm (in)			19 (3/4)	22 (7/8)
Pass/Layers			10/5	17/6
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	135 (275)	20 (70)
Interpass Temperature, °C (°F)	(450 min.)	(250 max.)	230 (450)	120 (250)
Postweld Heat Treatment	As-welded	As-welded	As-welded	As-welded
Weld Position			3G	1G

Mechanical properties of weld deposits

Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	560 (81)	610 (89)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	410 (59)	490 (71)
Elongation %	22 min.	22 min.	30	26
Average Impact Energy	(40 min.)	(40 min.)	91 (67)	76 (56)
Joules @ 0 °C (ft-lbs @ 32 °F)			90,91,91 (66,67,67)	71,76,80 (53,56,59)

- This document meets the requirements of AWS A5.01M/A5.01 Schedule F. When a specific lot number is referenced it also meets the requirements of EN10204, type 2.2. It does not meet the requirements of type 3.1.
- This product satisfies the requirements of AWS D1.8:2021, Annex E, after exposure for 1 week at 80°F / 80% relative humidity.
- The Charpy V-notch impact values reported at 0 °C (32 °F) are required when the Lowest Anticipated Service Temperature (LAST) is -11 °C (12 °F).
- Lot testing exemption as defined in AWS D1.8/D1.8M: 6.3.3 by testing a minimum of 3 lots for approval has been completed. For further questions please contact customer service. <https://www.lincolnelectric.com/en/Ask-the-Experts/Contact-Us>
- The strength and elongation properties reported here were obtained from tensile specimens artificially aged at 105°C (220°F) for 48 hours.
- Strength values in SI units are reported to the nearest 10 MPa converted from actual data. Preheat and interpass temperature values in SI units are reported to the nearest 5 degrees.

March 03, 2023

Daniel Gaul, Certification Supervisor

Date

March 04, 2023

Regis Geisler, Manager, Consumable Compliance

Date