

CERTIFICATE OF CONFORMANCE



Electrode: **Innershield® NR®-232**
 Electrode Size: **.068" (1.7 mm)**
 Specification: **AWS D1.8:2016**
 Date: **January 02, 2020**

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 D1.8:2016.

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 | | | 16359095 | 16359095 |
| 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 |
| Wire Feed Speed, cm/min (in/min) | | | 381 (150) | 508 (200) |
| Nominal Current, A | | | 230 | 280 |
| Average Heat Input, kJ/mm (kJ/in) | Not Specified | Not Specified | 2.9 (73.1) | 1.2 (30) |
| Travel Speed, cm/min (in/min) | | | 10 (3.8) | 31 (12.3) |
| Contact Tip to Work Distance, mm (in) | | | 25 (1) | 25 (1) |
| Pass/Layers | | | 8/5 | 19/6 |
| 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.) | 570 (82) | 610 (89) |
| Yield Strength, 0.2% Offset, MPa (ksi) | (58 min.) | (58 min.) | 430 (62) | 490 (71) |
| Elongation % | 22 min. | 22 min. | 28 | 28 |
| Average Impact Energy | (40 min.) | (40 min.) | 68 (50) | 64 (47) |
| Joules @ -18 °C (ft-lbs @ 0 °F) | | | 63,69,72 (47,51,53) | 61,65,67 (45,48,49) |

- 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 D1.8:2016, Annex E, after exposure for 1 week at 80°F / 80% relative humidity.
- The Charpy V-notch impact values reported at -18 °C (0 °F) are required when the Lowest Anticipated Service Temperature (LAST) is -29 °C (-20 °F).
- 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.

January 02, 2020

Daniel Gaul, Certification Supervisor

Date

January 03, 2020

Jon Ogborn, Manager, Consumable Compliance

Date