

# CERTIFICATE OF CONFORMANCE



Electrode: **Innershield® NR®-311 Ni**  
 Electrode Size: **3/32" (2.4 mm)**  
 Specification: **AWS D1.8:2021**  
 Date: **March 07, 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			17298315	17298315
Base Material			ASTM A572 steel (Grade 50)	ASTM A36 steel
Current Type/Polarity			DC-	DC-
Plate Thickness, mm (in)	(3/4)	(3/4)	19 (3/4)	19 (3/4)
Nominal Voltage, V			25	25
Nominal Current, A			340	330
Wire Feed Speed, cm/min (in/min)			381 (150)	381 (150)
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	2.7 (67.4)	1.8 (45.2)
Travel Speed, cm/min (in/min)			20 (7.7)	27 (10.8)
Contact Tip to Work Distance, mm (in)			35 (1.375)	35 (1.375)
Pass/Layers			9/5	13/6
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	135 (275)	20 (72)
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			1G	1G

**Mechanical properties of weld deposits**

Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	570 (83)	600 (87)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	470 (69)	510 (74)
Elongation %	22 min.	22 min.	28	27
Average Impact Energy Joules @ 0 °C (ft-lbs @ 32 °F)	(40 min.)	(40 min.)	174 (129) 157,178,188 (116,131,139)	145 (107) 131,151,153 (97,111,113)

- This document meets the requirements of AWS A5.01/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 2 weeks 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 07, 2023

Daniel Gaul, Certification Supervisor

Date

March 07, 2023

Regis Geisler, Manager, Consumable Compliance

Date