

CERTIFICATE OF CONFORMANCE



Electrode: **Outershield® XLH70**
 Electrode Size: **3/32" (2.4 mm)**
 Specification: **AWS D1.8:2016**
 Date: **August 11, 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			16500391	16500391
Base Material			ASTM A36 steel	ASTM A36 steel
Current Type/Polarity			DC+	DC+
Plate Thickness, mm (in)	(3/4)	(3/4)	19 (3/4)	19 (3/4)
Shielding Gas	Not Specified	Not Specified	100% CO2	100% CO2
Nominal Voltage, V			32	23
Wire Feed Speed, cm/min (in/min)			762 (300)	381 (150)
Nominal Current, A			550	345
Average Heat Input, kJ/cm (kJ/in)	Not Specified	Not Specified	2.9 (73.5)	1.3 (31.9)
Travel Speed, cm/min (in/min)			37 (14.7)	38 (14.9)
Contact Tip to Work Distance, mm (in)			32 (1.25)	32 (1.25)
Pass/Layers			8/5	14/5
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	120 (250)	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.)	610 (89)	650 (94)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	510 (73)	570 (82)
Elongation %	22 min.	22 min.	29	26
Average Impact Energy	(40 min.)	(40 min.)	58 (43)	71 (52)
Joules @ -18 °C (ft-lbs @ 0 °F)			57,59,59 (42,43,43)	64,72,77 (48,53,57)

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Operating Settings	High Heat Input Requirements	Low Heat Input Requirements	High Heat Input Results	Low Heat Input Results
Electrode Lot			16712861	16712861
Base Material			ASTM A36 steel	ASTM A36 steel
Current Type/Polarity			DC+	DC+
Plate Thickness, mm (in)	(3/4)	(3/4)	19 (3/4)	19 (3/4)
Shielding Gas	Not Specified	Not Specified	100% CO2	100% CO2
Nominal Voltage, V			32	23
Wire Feed Speed, cm/min (in/min)			762 (300)	381 (150)
Nominal Current, A			550	340
Average Heat Input, kJ/cm (kJ/in)	Not Specified	Not Specified	3.1 (78.6)	1.2 (29.6)
Travel Speed, cm/min (in/min)			34 (13.5)	41 (16)
Contact Tip to Work Distance, mm (in)			32 (1.25)	32 (1.25)
Pass/Layers			6/4	14/5
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	120 (250)	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			1G	1G
Mechanical properties of weld deposits				
Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	600 (88)	650 (95)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	490 (70)	580 (85)
Elongation %	22 min.	22 min.	28	24
Average Impact Energy	(40 min.)	(40 min.)	62 (46)	101 (74)
Joules @ -18 °C (ft-lbs @ 0 °F)			60,61,64 (44,45,47)	93,97,112 (68,72,83)

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Electrode: **Outershield® XLH70**
Electrode Size **3/32" (2.4 mm)**
Specification: **AWS D1.8:2016**
Date: **August 11, 2020**

1. This product satisfies the requirements of AWS D1.8:2016, Annex E, after exposure for 8 weeks at 80°F / 80% relative humidity.
2. 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.
3. 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).
4. The strength and elongation properties reported here were obtained from tensile specimens artificially aged at 105°C (220°F) for 48 hours.
5. 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.

August 11, 2020

Daniel Gaul, Certification Supervisor

Date

August 11, 2020

Jon Ogborn, Manager, Consumable
Compliance

Date

CERTIFICATE OF CONFORMANCE



Electrode: **OUTERSHIELD XLH70**
 Electrode Size **3/32" (2.4 mm)**
 Specification: **AWS D1.8:2016**
 Date: **February 20, 2018**

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			15380146	15380146
Base Material			ASTM A36 steel	ASTM A36 steel
Current Type/Polarity			DC+	DC+
Plate Thickness, mm (in)	(3/4)	(3/4)	19 (3/4)	19 (3/4)
Shielding Gas	Not Specified	Not Specified	100% CO2	100% CO2
Nominal Voltage, V			32	23
Wire Feed Speed, cm/min (in/min)			762 (300)	381 (150)
Nominal Current, A			550	345
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	3.1 (80)	1.2 (30)
Travel Speed, cm/min (in/min)			34 (13.24)	40 (15.74)
Contact Tip to Work Distance, mm (in)			32 (1 1/4)	32 (1 1/4)
Pass/Layers			8/5	18/6
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	120 (250)	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			1G	1G
Mechanical properties of weld deposits				
Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	590 (86)	670 (97)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	480 (70)	610 (88)
Elongation %	22 min.	22 min.	28	26
Average Impact Energy	(40 min.)	(40 min.)	63 (46)	126 (93)
Joules @ -18 °C (ft-lbs @ 0 °F)			59,60,69 (44,45,51)	123,126,128 (91,93,95)

- This product satisfies the requirements of AWS D1.8:2016, Annex E, after exposure for 8 weeks 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.

Toronto Cunningham February 20, 2018
 Toronto Cunningham, Certification Supervisor Date

Jonathan S. Ogborn February 20, 2018
 Jon Ogborn, Manager, Consumable Date
 Compliance