

CERTIFICATE OF CONFORMANCE



Electrode: **Metalshield® MC-70 XLS™**
 Electrode Size: **1/16" (1.6 mm)**
 Specification: **AWS D1.8:2016**
 Date: **December 19, 2019**

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			16193458	16193458
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)
Wire Feed Speed, cm/min (in/min)			762 (300)	673 (265)
Nominal Voltage, V			27	28
Nominal Current, A			355	335
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	2.4 (60.3)	1.3 (32.8)
Travel Speed, cm/min (in/min)			24 (9.6)	44 (17.2)
Contact Tip to Work Distance, mm (in)			25 (1)	25 (1)
Pass/Layers			8/5	17/7
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	120 (250)	50 (120)
Interpass Temperature, °C (°F)	(450 min.)	(250 max.)	260 (500)	120 (250)
Postweld Heat Treatment	As-welded	As-welded	As-welded	As-welded
Weld Position			1G	1G
Shielding Gas	Not Specified	Not Specified	90% Ar, 10% CO2	90% Ar, 10% CO2

Mechanical properties of weld deposits

Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	550 (80)	580 (85)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	430 (63)	500 (73)
Elongation %	22 min.	22 min.	31	28
Average Impact Energy	(40 min.)	(40 min.)	148 (110)	164 (121)
Joules @ 21 °C (ft-lbs @ 70 °F)			145,150,151 (107,110,111)	161,162,168 (118,120,124)

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Operating Settings	High Heat Input Requirements	Low Heat Input Requirements	High Heat Input Results	Low Heat Input Results
Electrode Lot			16258193	16258193
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)
Wire Feed Speed, cm/min (in/min)			762 (300)	673 (265)
Nominal Voltage, V			27	28
Nominal Current, A			350	310
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	2.4 (61.9)	1.3 (32.8)
Travel Speed, cm/min (in/min)			23 (9.2)	40 (15.9)
Contact Tip to Work Distance, mm (in)			25 (1)	25 (1)
Pass/Layers			8/5	14/6
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	120 (250)	50 (120)
Interpass Temperature, °C (°F)	(450 min.)	(250 max.)	260 (500)	120 (250)
Postweld Heat Treatment	As-welded	As-welded	As-welded	As-welded
Weld Position			1G	1G
Shielding Gas	Not Specified	Not Specified	90% Ar, 10% CO2	90% Ar, 10% CO2

Mechanical properties of weld deposits

Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	590 (86)	650 (94)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	460 (67)	560 (81)
Elongation %	22 min.	22 min.	28	25
Average Impact Energy Joules @ 21 °C (ft-lbs @ 70 °F)	(40 min.)	(40 min.)	94 (69) 91,94,97 (67,69,71)	115 (85) 112,113,119 (83,84,87)

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Operating Settings	High Heat Input Requirements	Low Heat Input Requirements	High Heat Input Results	Low Heat Input Results
Electrode Lot			IPN CL-627	IPN CL-627
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)
Wire Feed Speed, cm/min (in/min)			826 (325)	673 (265)
Nominal Voltage, V			29	28
Nominal Current, A			360	330
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	2.5 (62.7)	1.3 (32.4)
Travel Speed, cm/min (in/min)			25 (10)	43 (17.1)
Contact Tip to Work Distance, mm (in)			25 (1)	25 (1)
Pass/Layers			8/5	17/7
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	120 (250)	50 (120)
Interpass Temperature, °C (°F)	(450 min.)	(250 max.)	260 (500)	120 (250)
Postweld Heat Treatment	As-welded	As-welded	As-welded	As-welded
Weld Position			1G	1G
Shielding Gas	Not Specified	Not Specified	90% Ar, 10% CO2	90% Ar, 10% CO2
Mechanical properties of weld deposits				
Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	530 (76)	610 (88)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	420 (61)	520 (76)
Elongation %	22 min.	22 min.	33	27
Average Impact Energy	(40 min.)	(40 min.)	194 (143)	146 (108)
Joules @ 21 °C (ft-lbs @ 70 °F)			184,195,203 (136,144,150)	140,148,150 (103,109,110)

- This product satisfies the requirements of AWS D1.8:2016, Annex E, after exposure for 1 week at 80°F / 80% relative humidity.
- 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.
- The Charpy V-notch impact values reported at 21 °C (70 °F) are required when the Lowest Anticipated Service Temperature (LAST) is 10 °C (50 °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.


 Daniel Gaul, Certification Supervisor December 19, 2019

Date


 Jonathan S. Ogborn, Manager, Consumable December 19, 2019

 Compliance Date