

# CERTIFICATE OF CONFORMANCE



Electrode: **Metalshield® MC-70 XLS®**  
 Electrode Size: **.045" (1.1 mm)**  
 Specification: **AWS D1.8:2021**  
 Date: **February 13, 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			17542077	17542077
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)			1143 (450)	1016 (400)
Nominal Voltage, V			30	28
Nominal Current, A			265	245
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	2.4 (60)	1.1 (28.7)
Travel Speed, cm/min (in/min)			20 (8)	37 (14.4)
Contact Tip to Work Distance, mm (in)			22 (7/8)	22 (7/8)
Pass/Layers			10/6	17/8
Preheat Temperature, °C (°F)	(250 min.)	(120 max.)	120 (250)	25 (75)
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
Shielding Gas	Not Specified	Not Specified	75% Ar, 25% CO2	75% Ar, 25% CO2

**Mechanical properties of weld deposits**

Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	510 (74)	580 (84)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	410 (59)	490 (70)
Elongation %	22 min.	22 min.	34	29
Average Impact Energy	(40 min.)	(40 min.)	166 (122)	148 (110)
Joules @ 21 °C (ft-lbs @ 70 °F)			164,165,167 (121,122,123)	147,148,151 (108,109,111)

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Operating Settings	High Heat Input Requirements	Low Heat Input Requirements	High Heat Input Results	Low Heat Input Results
Electrode Lot			17679979	17679979
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)			1143 (450)	1016 (400)
Nominal Voltage, V			30	28
Nominal Current, A			270	240
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	2.3 (59.3)	1.3 (32.7)
Travel Speed, cm/min (in/min)			21 (8.2)	31 (12.4)
Contact Tip to Work Distance, mm (in)			22 (7/8)	22 (7/8)
Pass/Layers			8/5	15/7
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
Shielding Gas	Not Specified	Not Specified	75% Ar, 25% CO2	75% Ar, 25% CO2

**Mechanical properties of weld deposits**

Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	520 (75)	560 (82)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	420 (61)	470 (68)
Elongation %	22 min.	22 min.	33	29
Average Impact Energy Joules @ 21 °C (ft-lbs @ 70 °F)	(40 min.)	(40 min.)	176 (130) 172,176,179 (127,130,132)	143 (106) 141,143,145 (104,106,107)

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Operating Settings	High Heat Input Requirements	Low Heat Input Requirements	High Heat Input Results	Low Heat Input Results
Electrode Lot			17892876	17892876
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)			1143 (450)	1016 (400)
Nominal Voltage, V			30	28
Nominal Current, A			270	250
Average Heat Input, kJ/mm (kJ/in)	Not Specified	Not Specified	2.4 (60.3)	1.2 (29.9)
Travel Speed, cm/min (in/min)			21 (8.1)	36 (14.2)
Contact Tip to Work Distance, mm (in)			22 (7/8)	22 (7/8)
Pass/Layers			8/5	15/7
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
Shielding Gas	Not Specified	Not Specified	75% Ar, 25% CO2	75% Ar, 25% CO2
<b>Mechanical properties of weld deposits</b>				
Tensile Strength, MPa (ksi)	(70 min.)	(70 min.)	520 (76)	570 (83)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	(58 min.)	430 (62)	480 (70)
Elongation %	22 min.	22 min.	33	28
Average Impact Energy	(40 min.)	(40 min.)	163 (121)	141 (104)
Joules @ 21 °C (ft-lbs @ 70 °F)			158,162,170 (117,119,126)	139,142,142 (102,104,105)

1. This product satisfies the requirements of AWS D1.8:2021, Annex E, after exposure for 7 days 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 21 °C (70 °F) are required when the Lowest Anticipated Service Temperature (LAST) is 10 °C (50 °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.

  
 Daniel Gaul, Certification Supervisor February 13, 2023  
Date

  
 Regis Geisler, Manager, Consumable Compliance February 13, 2023  
Date