The Lincoln Electric Company
22801 St. Clair Avenue
Cleveland, Ohio 44117-1199

CERTIFICATE OF CONFORMANCE

(APPLIES ONLY TO U.S. PRODUCTS)

LINCOLN ELECTRIC
THE WELDING EXPERTS®

Product: **UltraCore® 71A85**
Electrode Lot Number: **13897448**
Classification: **E71T-1M-H8, E71T-9M-H8**
Specification: **AWS D1.8:2009**
Date **August 28, 2014**

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 6.3.8.1 of AWS D1.8:2009.

The product stated herein was manufactured and supplied in accordance with the Quality System Program of The Lincoln Eletric Co., Cleveland, Ohio, U.S.A. as outlined in our Quality Assurance Manual. The Quality System Program of The Lincoln Electric Co. has been accepted by ASME, ABS and approved by VdTUV, and is certified to ISO 9001:2013

Operating Settings	AWS D1.8 Requirements	High Heat Input Results	Low Heat Input Results
Electrode Size		0.045 inch	0.045 inch
Polarity		DC+	DC+
Shielding Gas (per AWS A5.32)		25% CO2, 75% Ar (M21-ArC-75/25)	25% CO2, 75% Ar (M21-ArC-75/25)
Voltage, V		24	27
Wire Feed Speed, cm/min (in/min)		699 (275)	826 (325)
Current, A		155	185
Average Heat Input, kJ/mm (kJ/in)		3.2 (81)	1.1 (29)
Contact Tip to Work Distance, mm (in)		25 (1)	25 (1)
Travel Speed, cm/min (in/min)		8 (3)	25 (10)
Pass/Layers		6/4	19/7
Preheat Temperature, °C (°F)		150 (300)	20 (71)
Interpass Temperature, °C (°F)		260 (500)	95 (200)
Weld Position		3G	1G
Mechanical properties of weld deposits			
Tensile Strength, MPa (ksi)	(70 min.)	570 (83)	650 (95)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	480 (70)	610 (89)
Elongation %	22 min.	28	25
Average Impact Energy Joules @ 21 °C (ft-lbs @ 70 °F)	(40 min.)	197 (145) 193,197,200 (142,145,147)	184 (136) 178,187,187 (132,138,138)
Average Impact Energy Joules @ -29 °C (ft-lbs @ -20 °F)	(40 min.)	140 (103) 130,144,145 (96,106,107)	92 (68) 75,91,110 (55,67,81)

1. This product satisfies the requirements of AWS D1.8:2009, Annex E, after exposure for 8 weeks at 80°F / 80% relative humidity.
2. The Charpy V-notch impact values reported at -29 °C (-20 °F) are required when the Lowest Anticipated Service Temperature (LAST) is -40 °C (-40 °F).
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. Test assembly constructed of ASTM A36 steel.
5. The strength and elongation properties reported here were obtained from tensile specimens artificially aged at 105°C (220°F) for 48 hours.
6. 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 — August 28, 2014
Toronto Cunningham, Certification Supervisor — Date

David A Fink — August 28, 2014
Dave Fink, Manager, Compliance Engineering, Consumable R&D — Date

Cert. No. 17350

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CERTIFICATE OF CONFORMANCE

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LINCOLN ELECTRIC
THE WELDING EXPERTS®

Product: **UltraCore® 71A85**
Lot Number: **13772071**
Classification: **E71T-1M-H8, E71T-9M-H8**
Specification: **AWS D1.8:2009**
Date **April 17, 2014**

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 6.3.8.1 of AWS D1.8:2009.

The product stated herein was manufactured and supplied in accordance with the Quality System Program of The Lincoln Eletric Co., Cleveland, Ohio, U.S.A. as outlined in our Quality Assurance Manual. The Quality System Program of The Lincoln Electric Co. has been accepted by ASME, ABS and approved by VdTUV, and is certified to ISO 9001:2013

Operating Settings	AWS D1.8 Requirements	High Heat Input Results	Low Heat Input Results
Electrode Size		0.045 inch	0.045 inch
Polarity		DC+	DC+
Shielding Gas (per AWS A5.32)		25% CO2, 75% Ar (M21-ArC-75/25)	25% CO2, 75% Ar (M21-ArC-75/25)
Voltage, V		24	26
Wire Feed Speed, cm/min (in/min)		711 (280)	826 (325)
Current, A		170	185
Average Heat Input, kJ/mm (kJ/in)		3.2 (82)	1.1 (28)
Contact Tip to Work Distance, mm (in)		25 (1)	25 (1)
Travel Speed, cm/min (in/min)		8 (3)	25 (10)
Pass/Layers		6/4	20/8
Preheat Temperature, °C (°F)		150 (300)	20 (72)
Interpass Temperature, °C (°F)		260 (500)	95 (200)
Weld Position		3G	1G
Mechanical properties of weld deposits			
Tensile Strength, MPa (ksi)	(70 min.)	600 (88)	710 (103)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	510 (74)	660 (96)
Elongation %	22 min.	27	24
Average Impact Energy	(40 min.)	159 (117)	163 (120)
Joules @ 21 °C (ft-lbs @ 70 °F)		156,157,164 (115,116,121)	161,161,167 (118,119,123)
Average Impact Energy	(40 min.)	117 (86)	135 (100)
Joules @ -18 °C (ft-lbs @ 0 °F)		115,117,118 (85,87,87)	134,135,136 (99,100,100)

1. This product satisfies the requirements of AWS D1.8:2009, Annex E, after exposure for 8 weeks at 80°F / 80% relative humidity.
2. 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).
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. Test assembly constructed of ASTM A36 steel.
5. The strength and elongation properties reported here were obtained from tensile specimens artificially aged at 105°C (220°F) for 48 hours.
6. 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 — April 17, 2014
Toronto Cunningham, Certification Supervisor — Date

David A Fink — April 21, 2014
Dave Fink, Manager, Compliance Engineering, Consumable R&D — Date

Cert. No. 17350

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LINCOLN ELECTRIC
THE WELDING EXPERTS®

Product: **UltraCore® 71A85**
Lot Number: **13631573**
Classification: **E71T-1M-H8, E71T-9M-H8**
Specification: **AWS D1.8:2009**
Date **March 21, 2014**

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 6.3.8.1 of AWS D1.8:2009.

The product stated herein was manufactured and supplied in accordance with the Quality System Program of The Lincoln Eletric Co., Cleveland, Ohio, U.S.A. as outlined in our Quality Assurance Manual. The Quality System Program of The Lincoln Electric Co. has been accepted by ASME, ABS and approved by VdTUV, and is certified to ISO 9001:2013

Operating Settings	AWS D1.8 Requirements	High Heat Input Results	Low Heat Input Results
Electrode Size		0.045 inch	0.045 inch
Polarity		DC+	DC+
Shielding Gas (per AWS A5.32)		25% CO2, 75% Ar (M21-ArC-75/25)	25% CO2, 75% Ar (M21-ArC-75/25)
Voltage, V		24	26
Wire Feed Speed, cm/min (in/min)		699 (275)	826 (325)
Current, A		180	190
Average Heat Input, kJ/mm (kJ/in)		3.1 (80)	1.1 (29)
Contact Tip to Work Distance, mm (in)		25 (1)	25 (1)
Travel Speed, cm/min (in/min)		8 (3)	25 (10)
Pass/Layers		7/5	19/7
Preheat Temperature, °C (°F)		150 (300)	20 (72)
Interpass Temperature, °C (°F)		260 (500)	95 (200)
Weld Position		3G	1G
Mechanical properties of weld deposits			
Tensile Strength, MPa (ksi)	(70 min.)	590 (85)	670 (97)
Yield Strength, 0.2% Offset, MPa (ksi)	(58 min.)	500 (73)	620 (90)
Elongation %	22 min.	28	25
Average Impact Energy	(40 min.)	158 (117)	163 (120)
Joules @ 21 °C (ft-lbs @ 70 °F)		155,159,162 (114,117,119)	161,161,167 (118,119,123)
Average Impact Energy	(40 min.)	121 (89)	112 (83)
Joules @ -18 °C (ft-lbs @ 0 °F)		115,122,126 (84,90,93)	105,112,119 (77,83,88)

1. This product satisfies the requirements of AWS D1.8:2009, Annex E, after exposure for 8 weeks at 80°F / 80% relative humidity.
2. 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).
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. Test assembly constructed of ASTM A36 steel.
5. The strength and elongation properties reported here were obtained from tensile specimens artificially aged at 105°C (220°F) for 48 hours.
6. 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 — March 21, 2014
Toronto Cunningham, Certification Supervisor — Date

David A Fink — March 25, 2014
Dave Fink, Manager, Compliance Engineering, Consumable R&D — Date

Cert. No. 17350