

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



Product: UltraCore 71A85  
 Lot No.: 11225319  
 Classification: E71T-1M-H8, E71T-9M-H8  
 Specification: FEMA 353  
 Test Completed: January 3, 2007

This is to certify that the above listed product was tested according to the procedures shown. Mechanical and chemical composition of the weld deposit were as shown.

The product stated herein was manufactured and supplied in accordance with the Quality System Program of The Lincoln Electric 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 9001:2000 by Certificate No. 30275 with an expiration date of November 13, 2008.

Test Conditions	Requirements FEMA 353	High Heat Input	Low Heat Input
		Results	Results
Electrode Size (inch)		0.045	0.045
Electrode Polarity		DC+	DC+
Wire Feed Speed <b>cm/min</b> (inch/min.)		<b>698</b> (275)	<b>826</b> (325)
Current (amps)		165	190
Arc Voltage (volts)		24	25
Contact Tip to Work Distance <b>mm</b> (inch)		<b>25</b> (1)	<b>25</b> (1)
Passes / Layers		6/4	17/7
Preheat Temp. °C (°F)		<b>150</b> (300)	<b>20</b> (71)
Interpass Temp. °C (°F)		<b>260</b> (500)	<b>95</b> (200)
Shielding Gas (per AWS A5.32)		75%Ar/25%CO <sub>2</sub> (SG-AC-25)	75%Ar/25%CO <sub>2</sub> (SG-AC-25)
Heat Input <b>kJ/mm</b> (kJ/in) avg.		<b>3.2</b> (81)	<b>1.1</b> (29)
Weld Position		3G	1G

Mechanical Properties			
Tensile Strength <b>MPa</b> (ksi)	(70 min.)	<b>560</b> (81)	<b>670</b> (97)
Yield Strength, 0.2% offset <b>MPa</b> (ksi)	(58 min.)	<b>460</b> (67)	<b>620</b> (90)
Elongation (%)	22% min.	29	25
<b>Avg. Charpy V-notch Impact Properties</b>			
Joules @ 20 °C (ft-lbf @ 70°F)	(40 min.)	<b>176</b> (130)	<b>148</b> (109)
<b>Avg.</b>		<b>125</b> (92)	<b>132</b> (97)
Joules @ -18 °C (ft-lbf @ 0°F)	Not Required	<b>111,129,136</b> (82,95,100)	<b>130,132,133</b> (96,97,98)

Chemical composition (weight %) AWS A5.20-2005			
C	0.12 max.	0.04	0.04
Mn	1.75 max.	1.37	1.51
Si	0.90 max.	0.49	0.53
S	0.03 max.	0.01	0.01
P	0.03 max.	0.01	0.01

This product satisfies the requirements of FEMA 353, Appendix D after exposure for eight weeks at 80°F, 80% relative humidity. 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.

*David A. Fink* 30 Oct 2007

David A. Fink, Manager, Compliance Engineering,  
 Consumable R&D Department, Date

*Phillip J. Woodring* October 27, 2007

Phillip J. Woodring,  
 Certification Supervisor, Date