



NATIONAL STANDARD

National Standard, LLC
 3602 N. Perkins Road
 Stillwater, OK 74075

Certificate of Conformance

Product: **Standard Arc 3 CU**
 Classification: **ER 70S-3/ EM13K**
 Specification: **AWS A5.18/A5.18M:2005— AWS A5.17/A5.17M-97 (R2007)**
 Test completion date: **January 15, 2014**
 Heat#: **Typical Results**

This is to certify that the product named above and referenced on the sales invoice number is of the same classification, manufacturing process, and raw material requirements as the electrode which was used for the tests conducted on the date shown, the results of which are displayed below. All tests required by the specifications required for classification were performed at that time the product tested met all requirements. The Electrode was manufactured and supplied in accordance with the Quality System Program of National Standard Company, located in Stillwater, Oklahoma, U.S.A. This Quality System Program meets the requirements of ISO 9001:2008, ANSI/AWS 5.18, and CWB.

Operating Parameters	AWS/ASME Requirements	Data and Test Results
Electrode Size (in.)	.045"	.045"
Polarity	DCEP	DCEP
Shielding Gas (per AWS A5.32)	100% CO2	100%CO2
Voltage (volts)	26.0-30.0	30.1
Wire Feed Speed (in/min)	N/A	230
Travel Speed (in/min)	12-14	13.00
Current (amps)	330.0-360.0	332
Average heat input (kJ/in)	N/A	46.1
Contact tip to work distance (in.)	0.75" +/-0.125"	0.75"
Passes/Layers	14/6	14/6
Preheat Temp. °F	>60	RT
Interpass Temp. °F	300+/-25	300

Test Assembly Material:	A36, A370/E23
Radiographic Test:	Acceptable
Fillet Weld Test:	N/A
Tensile Condition:	OD- 0.502"
Radiograph:	Pass

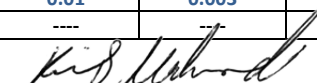
General Note:
 Mechanical and/or Chemical testing were conducted in accordance with the following standard test procedure: ASTM A370/E23, ASTM E8. The attached results should not be assumed to be the expected results in a particular application. Results will differ depending on many factors, such as temperature, weld procedure, plate chemistry, welding method, and fabrication. It is advised to users to confirm by qualification testing the suitability of any welding before use in their applications.

Mechanical Properties of the Weld Deposit (As-welded condition)

Tensile Strength (ksi)	70	76.4
Yield Strength,0.2% offset (ksi)	58	61.8
% Elongation	22	28.0
%ROA	N/A	68
Average CVN impact properties ft-lbf @0°F	20	74.4

Chemical Composition of the Weld Deposit (Weight %)

Element	C%	Mn%	Si%	P%	S%	Cr%	Ni%	Mo%	V%	Al%	Cu%
AWS A5.18	0.06-0.15	0.90-1.40	0.45-0.75	0.025	0.035	0.15	0.15	0.15	0.03	-----	0.50
Tested Results	0.08	1.13	0.57	0.008	0.013	0.04	0.03	0.01	0.003	0.00	0.10
AWS A5.17	0.06-0.16	0.90-1.40	0.35-0.75	0.030	0.030	----	----	----	----	----	0.35



 Kimars Mahmood, Quality Assurance Manager Date 1/18/14