NATIONAL STANDARD

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

Certificate of Conformance

Product: **NS 115 CF**
Classification: **ER 70S-6**
Specification: ***AWS A5.18/ A5.18M:2017***
Test completion date: **25-Mar-2021**
Heat Number: **W65085**

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 9001:2015, AWS A5.18/ASME SFA5.18, and CWB W48-2018.

Operating Parameters	AWS Requirements	Data and Test Results
Electrode Size (in.)	.045”	.045”
Polarity	DCEP	DCEP-CV
Shielding Gas (per AWS A5.32)	100% CO_2	100%CO_2
Voltage (volts)	27.0-31.0 (nominal)	31.0
Wire Feed Speed (in/min)	450 in/min ± 5%	450
Travel Speed (in/min)	12-14	12.5
Current (amps)	260-290	268.2
Average heat input (kJ/in)	N/A	40.0
Contact tip to work distance (in.)	0.75”± 0.125”	0.75”
Passes/Layers	N/A	15/6
Preheat Temp. °F	>60	RT
Interpass Temp. °F	300±25	300±25

Test Assembly Material:	ASTM A36
Radiographic Test:	Acceptable
Fillet Weld Test:	N/A
Tensile Condition:	OD- 0.62” 2”Gage Length
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 min	82.9
Yield Strength,0.2% offset (ksi)	58 min	66.5
% Elongation	22 min	27.4
%ROA	N/A	65.1
Average CVN impact properties	20 ft.lbf @ -20^{0}F	31.0 ft.lbf @ -40^{0}F

Chemical Composition of the Weld Deposit (Weight %)

Element	C%	Mn%	Si%	P%	S%	Cr%	Ni%	Mo%	V%	Al%	Cu%
AWS A5.18 Req	**0.06-0.15**	**1.40-1.85**	**0.80-1.15**	**0.025 Max**	**0.035 Max**	**0.15 Max**	**0.15 Max**	**0.15 Max**	**0.03 Max**	**-----**	**0.50 Max**
Results	**.07**	**1.53**	**0.97**	**.009**	**.007**	**.05**	**.06**	**<.01**	**<.01**	**<.01**	**.02**

Rev Date: 5/12/2021

David W Hamlin – Quality Manager