



Certificate of Conformance to Requirements for Welding Electrode

Product Type: HOBALLOY 9018M
Classification: E9018M H4R
Specifications: AWS A5.5/A5.5M; ASME SFA 5.5
Diameter Tested: 5/32"-1/4"
Date Tested: 9/30/2022
Date Generated: 12/28/2022

This is to certify that the product named above and supplied on the referenced order number is of the same classification, manufacturing process, and material requirements as the material which was used for the test that was concluded on the date shown, the results of which are shown below. All tests required by the specifications shown for classification were performed at that time and the material tested met all requirements. It was manufactured and supplied by the Quality System Program of Hobart Brothers, which meets the requirements of ISO 9001, ANSI/AWS A5.01, and other specification and Military requirements, as applicable. This document supplies actual test results of non-specific inspection in conformance with the requirements of EN 10204, type 2.2 certification.

MADE IN THE U.S. OF U.S. AND IMPORTED MATERIALS.

Test Settings

Size	Polarity	Amps	Volts	Preheat F(C)	Interpass F(C)
5/32X14 in	DCEP	170	26 - 24	225F ()	225F ()
1/4X18 in	DCEP	340	27 - 26	250 (121)	250 (121)

Mechanical Properties - Tensile

Size / Polarity	Ref. No.	Testing Conditions	Ult. Tensile Strength psi(MPa)	Yield Strength psi(MPa)	Elong.% in 2"
5/32X14 in / DCEP	PE4475	Aged 48 Hrs 220F	96,000 (661)	86,000 (592)	25
5/32X14 in / DCEP	PE4475	Aged 48 Hrs 220F	96,000 (661)	86,000 (592)	25
1/4X18 in / DCEP	PE4655	Aged 48 Hrs 220F	94,000 (645)	85,000 (585)	24

Mechanical Properties - Impact

Size / Polarity	Ref. No.	Testing Conditions	Test Temp. F(C)	Individuals ft.lb.(J)	Average ft.lb.(J)	Type
5/32X14 in / DCEP	PE4221	As Welded	-60 F (-51 C)	76,82,80 (103,111,108)	79 (108)	Charpy-V-Notch
1/4X18 in / DCEP	PE4655	As Welded	-60 F (-51 C)	66,40,48 (89,54,65)	51 (70)	Charpy-V-Notch

Size / Polarity	Ref. No.	Radiograph	Fillet Weld Test			
5/32X14 in / DCEP	PE4221	Conforms	Horizontal :	Overhead :	Vertical :	Conforms
1/4X18 in / DCEP	PE4655	Conforms	Horizontal :	Overhead :	Vertical :	Conforms

Chemical Analysis

Size / Polarity / Ref. No.	C	Mn	P	S	Si	Cu	Cr	V	Ni	Mo	Al	Ti	Nb	Co	B	W	Sn	Fe	Sb	N	Mg	Zn	Be	Sb	As
5/32X14 in / DCEP / CD81072																									
1/4X18 in / DCEP / CD81074	0.04	0.97	0.016	0.012	0.22		0.05	< .01	1.54	0.27															
5/32X14 in / DCEP / PE4221	0.05	1.11	0.011	0.010	0.27		0.06	0.01	1.48	0.30															
5/32X14 in / DCEP / PE4475	0.05	1.06	0.010	0.009	0.22		0.06	0.01	1.55	0.29															
1/4X18 in / DCEP / PE4655	0.05	0.91	0.014	0.014	0.22		0.07	0.01	1.59	0.30															

5/32X14 in / CD81072	Total H2O Method : Train - 9 Hour	Total Coating Moisture : 0.43
1/4X18 in / CD81074	Total H2O Method : Train - As Received	Total Coating Moisture : 0.061
5/32X14 in / PE4221	Total H2O Method : Train - As Received	Total Coating Moisture : 0.04
5/32X14 in / PE4475	Total H2O Method : Train - 9 Hour	Total Coating Moisture : 0.43
1/4X18 in / PE4655	Total H2O Method : Train - 9 Hour	Total Coating Moisture : 0.06

Diffusible Hydrogen Collected per AWS A4.3

2.8 ml/100g of weld metal for 5/32X14 in diameter 36% relative humidity

3.3 ml/100g of weld metal for 1/4X18 in diameter 36% relative humidity

James A. Owens, Q.A. Specialist

Certification and Limited Warranty - Data for the above supplied product are those obtained when welded and tested in accordance with the above specification. All tests for the above classification were satisfied. Other tests and procedures may produce different results.