



Certificate of Conformance to Requirements for Welding Electrode

Product Type: HOBALLOY 11018M
Classification: E11018M H4R
Specifications: AWS A5.5/A5.5M; ASME SFA 5.5
Diameter Tested: 5/32" 3/16"
Date Tested: 9/11/2023
Date Generated: 9/12/2023

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 | 24 - 26 | 250F () | 250F () |
| 3/16X14 in | DCEP | 225 | 23 | 225F () | 250F () |

Mechanical Properties - Tensile

| Size / Polarity | Ref. No. | Testing Conditions | Ult. Tensile Strength psi(MPa) | Yield Strength psi(MPa) | Elong.% in 2" |
|-------------------|----------|--------------------|--------------------------------|-------------------------|---------------|
| 3/16X14 in / DCEP | PE6907 | Aged 48 Hrs 220F | 115,000 (793) | 107,000 (738) | 23 |
| 5/32X14 in / DCEP | PE6868 | Aged 48 Hrs 220F | 116,000 (800) | 107,000 (738) | 23 |

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 | PE6868 | As Welded | -60 F (-51 C) | 36,41,37 (49,56,50) | 38 (52) | Charpy-V-Notch |
| 3/16X14 in / DCEP | PE6907 | As Welded | -60 F (-51 C) | 72,60,65 (98,81,88) | 66 (89) | Charpy-V-Notch |

| Size / Polarity | Ref. No. | Radiograph | Fillet Weld Test | | | |
|-------------------|----------|------------|------------------|----------|------------|------------|
| 3/16X14 in / DCEP | PE6907 | Conforms | Horizontal : | Conforms | Overhead : | Vertical : |
| 5/32X14 in / DCEP | PE6868 | Conforms | Horizontal : | | Overhead : | Conforms |
| | | | | | | 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 |
|-----------------------------|------|------|-------|-------|------|----|------|------|------|------|----|----|----|----|---|---|----|----|----|---|----|----|----|----|----|
| 3/16X14 in / DCEP / CD95125 | 0.04 | 1.65 | 0.013 | 0.009 | 0.36 | | 0.21 | 0.01 | 1.81 | 0.32 | | | | | | | | | | | | | | | |
| 5/32X14 in / DCEP / CD97702 | 0.04 | 1.45 | 0.015 | 0.009 | 0.24 | | 0.16 | 0.01 | 1.74 | 0.30 | | | | | | | | | | | | | | | |
| 5/32X14 in / DCEP / PE6868 | 0.04 | 1.73 | 0.016 | 0.009 | 0.35 | | 0.16 | 0.01 | 1.77 | 0.29 | | | | | | | | | | | | | | | |
| 3/16X14 in / DCEP / PE6907 | 0.04 | 1.75 | 0.015 | 0.009 | 0.40 | | 0.21 | 0.01 | 1.76 | 0.34 | | | | | | | | | | | | | | | |

| | | |
|----------------------|--|--------------------------------|
| 3/16X14 in / CD95125 | Total H2O Method : Train - As Received | Total Coating Moisture : 0.043 |
| 5/32X14 in / CD97702 | Total H2O Method : Train - As Received | Total Coating Moisture : 0.055 |
| 5/32X14 in / PE6868 | Total H2O Method : Train - 9 Hour | Total Coating Moisture : 0.113 |
| 3/16X14 in / PE6907 | Total H2O Method : Train - 9 Hour | Total Coating Moisture : 0.13 |

Diffusible Hydrogen Collected per AWS A4.3

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|---|
| 3.4 ml/100g of weld metal for 3/16X14 in diameter 28% relative humidity |
| 3.2 ml/100g of weld metal for 5/32X14 in diameter 33% 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.