



Certificate of Conformance to Requirements for Welding Electrode

Product Type: SubCOR N1S
Classification: ECNi1
Specifications: AWS A5.23/A5.23M; ASME SFA 5.23
Diameter Tested: 5/32"
Date Tested: 10/20/2020
Date Generated: 10/28/2020

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.

THE STEEL USED IN THIS LOT OF MATERIAL WAS MELTED AND MANUFACTURED IN THE U.S.A.

Test Settings

Shielding Medium	Amps / Polarity	Volts	WFS in/min(m/min)	ESO in(mm)	Preheat F(C)	Interpass F(C)	Travel Speed in/min(cm/min)
SWX 120 (F7A10-ECNi1-Ni1)	525 / DCEP	28.5	68 (1.7)	1.25 (32)	300(149)	300(149)	16 (40.6)
HN-590 (F7A8-ECNi1-Ni1 H8)	525 / DCEP	28	64 (1.6)	1.25 (32)	300(149)	300(149)	16 (40.6)
HN-590 (F7P10-ECNi1-Ni1 H8)	525 / DCEP	28	65 (1.7)	1.25 (32)	300(149)	300(149)	16 (40.6)

Mechanical Properties - Tensile

Shielding Medium	Ref. No.	Testing Conditions	Ult. Tensile Strength psi (MPa)	Yield Strength psi (MPa)	Elong.% in 2"
HN-590 (F7A8-ECNi1-Ni1 H8)	PE1387	Aged 48 Hrs 220F	74,000 (510)	64,000 (438)	28
HN-590 (F7P10-ECNi1-Ni1 H8)	PE1392	SR 1 Hr @ 1150F	72,000 (496)	58,000 (401)	30
SWX 120 (F7A10-ECNi1-Ni1)	PC1949	Aged 48 Hrs 200F	73,000 (504)	62,000 (427)	28

Mechanical Properties - Impact

Shielding Medium	Ref. No.	Testing Conditions	Temp. F (C)	Individuals ft.lb.(J)	Avg. ft.lb.(J)	Type
SWX 120 (F7A10-ECNi1-Ni1)	PC1949	As Welded	-100 (-73)	76,106,98 (103,144,133)	93 (127)	Charpy-V-Notch
HN-590 (F7A8-ECNi1-Ni1 H8)	PE1387	As Welded	-80 (-62)	27,50,56 (37,68,76)	44 (60)	Charpy-V-Notch
HN-590 (F7P10-ECNi1-Ni1 H8)	PE1392	SR 1 Hr @ 1150F	-100 (-73)	54,60,46 (73,81,62)	53 (72)	Charpy-V-Notch

Ref.No.	Radiographic Inspection	Fillet Weld Test
PE1387	Conforms	Horizontal : Overhead : Vertical :
PE1392	Conforms	Horizontal : Overhead : Vertical :
PC1949	Conforms	Horizontal : Overhead : Vertical :

Chemical Analysis

Shielding Medium / 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
SWX 120 (F7A10-ECNi1-Ni1) / PC1949	0.04	1.04	0.013	0.009	0.18	0.04	0.05	0.002	0.91	0.01	0.001			0.0001											
HN-590 (F7A8-ECNi1-Ni1 H8) / PE1387	0.06	1.25	0.018	0.007	0.25	0.06	0.05	0.011	0.81	0.03	0.002			0.0006											
HN-590 (F7P10-ECNi1-Ni1 H8) / PE1392	0.05	1.19	0.021	0.008	0.17	0.05	0.05	0.011	0.83	0.01	0.001			0.0006											

Diffusible Hydrogen Collected per AWS A4.3

HN-590	5.7 ml/100g of weld metal for 5/32 in diameter 42% relative humidity
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Dave Thomas, Quality Assurance Rep.

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.