Certificate of Conformance to Requirements for Welding Electrode

Product Type:	**SubCOR EM13KS MOD**
Classification:	**EC1**
Specifications:	**AWS A5.17/A5.17M; ASME SFA 5.17**
Diameter Tested:	**5/32"**
Date Tested:	**10/7/2024**
Date Generated:	**3/3/2025**

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)
HA-495 (F7A2-EC1)	525 / DCEP	28	70 (1.8)	1.25 (32)	Room Temp	300(149)	17 (43.2)
SWX 150 (F7A8-EC1)	525 / DCEP	29	67 (1.7)	1.25 (32)	Room Temp	300(149)	16 (40.6)
SWX 150 (F7P8-EC1)	525 / DCEP	29	63 (1.6)	1.25 (32)	Room Temp	300(149)	16 (40.6)
SWX 120 (F7A8-EC1)	525 / DCEP	29	64 (1.6)	1.25 (32)	Room Temp	300(149)	16 (40.6)
SWX 120 (F7P8-EC1)	525 / DCEP	29	64 (1.6)	1.25 (32)	Room Temp	300(149)	16 (40.6)
HN 590 (F7A8-EC1 H8)	525 / DCEP	29	60 (1.5)	1.25 (32)	Room Temp	300(149)	15 (38.1)
HN-590 (F7P8-EC1 H8)	525 / DCEP	29	62 (1.6)	1.25 (32)	Room Temp	300(149)	15 (38.1)

Mechanical Properties - Tensile

Shielding Medium	Ref. No.	Testing Conditions	Ult. Tensile Strength psi (MPa)	Yield Strength psi (MPa)	Elong.% in 2"
SWX 150 (F7A8-EC1)	PE7290	Aged 48 Hrs 220F	82,000 (563)	70,000 (485)	29
SWX 150 (F7P8-EC1)	PE7305	SR 1 Hr @ 1150F	74,000 (511)	59,000 (407)	31
SWX 120 (F7A8-EC1)	PE7306	Aged 48 Hrs 220F	81,000 (556)	71,000 (488)	28
SWX 120 (F7P8-EC1)	PE7307	SR 1 Hr @ 1150F	79,000 (546)	66,000 (456)	28
HA-495 (F7A2-EC1)	PE6369	Aged 48 Hrs 220F	89,000 (612)	79,000 (544)	27
HN 590 (F7A8-EC1 H8)	PE8686	Aged 48 Hrs 220F	82,000 (566)	70,000 (480)	28
HN-590 (F7P8-EC1 H8)	PE9146	SR 1 Hr @ 1150F	80,000 (548)	64,000 (441)	30

Mechanical Properties - Impact

Shielding Medium	Ref. No.	Testing Conditions	Temp. F (C)	Individuals ft.lb.(J)	Avg. ft.lb.(J)	Type
HA-495 (F7A2-EC1)	PE6369	As Welded	-40 (-40)	51,54,74 (69,73,100)	60 (81)	Charpy-V-Notch
SWX 150 (F7A8-EC1)	PE7290	As Welded	-80 (-62)	17,73,97 (23,99,132)	62 (85)	Charpy-V-Notch
SWX 150 (F7P8-EC1)	PE7305	SR 1 Hr @ 1150F	-80 (-62)	99,92,95 (134,125,129)	95 (129)	Charpy-V-Notch
SWX 120 (F7A8-EC1)	PE7306	As Welded	-80 (-62)	46,68,90 (62,92,122)	68 (92)	Charpy-V-Notch
SWX 120 (F7P8-EC1)	PE7307	SR 1 Hr @ 1150F	-80 (-62)	23,58,38 (31,79,52)	40 (54)	Charpy-V-Notch
HN 590 (F7A8-EC1 H8)	PE8686	As Welded	-80 (-62)	26,26,23 (35,35,31)	25 (34)	Charpy-V-Notch
HN-590 (F7P8-EC1 H8)	PE9146	SR 1 Hr @ 1150F	-80 (-62)	89,81,80 (121,110,108)	83 (113)	Charpy-V-Notch

Ref.No.	Radiographic Inspection	Fillet Weld Test					
PE7290	Conforms	Horizontal :		Overhead :		Vertical :	
PE7305	Conforms	Horizontal :		Overhead :		Vertical :	
PE7306	Conforms	Horizontal :		Overhead :		Vertical :	
PE7307	Conforms	Horizontal :		Overhead :		Vertical :	
PE6369	Conforms	Horizontal :		Overhead :		Vertical :	
PE8686	Conforms	Horizontal :		Overhead :		Vertical :	
PE9146	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
HA-495 (F7A2-EC1) / PE6369	0.07	1.62	0.024	0.010	0.73	0.05				0.09															
SWX 150 (F7A8-EC1) / PE7290	0.09	0.98	0.012	0.006	0.38	0.05				0.09															
SWX 120 (F7A8-EC1) / PE7306	0.07	1.51	0.019	0.010	0.31	0.07				0.08															

HN 590 (F7A8-EC1 H8) / PE8686	0.06	1.73	0.019	0.011	0.41	0.05				0.07																

Diffusible Hydrogen Collected per AWS A4.3

SWX 150(F7A8-EC1-H8)	5.6 ml/100g of weld metal for 5/32 in diameter 42% relative humidity
SWX 120(F7A8-EC1-H8)	7.2 ml/100g of weld metal for 5/32 in diameter 40% relative humidity
HN-590 (F7A8-EC1 H8)	3.3 ml/100g of weld metal for 5/32 in diameter 38% 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.