



## Certificate of Conformance to Requirements for Welding Electrode

Hobart

Customer:	Product Type:	SDX S2Si - EM12K 5/32 55 CL
Customer P.O. No.:	Classification:	EM12K
Order No.:	Specifications:	AWS A5.17 ASME SFA5.17
Stock Number: 722401025H	Diameter Tested:	
Lbs. Shipped:	Date Tested:	12/06/13
Date Generated: 11/30/2017	Diameter Shipped:	5/32 in
Lot Nos. Shipped:		

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.

### 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)
SWX110 (F7A4-EM12K H8)	525 / DCEP	29	38 (1)	1.25 (32)	Room Temp	300(149)	16 (40.6)
SWX 120 (F7A6-EM12K H8)	525 / DCEP	29	39 (1)	1.25 (32)	Room Temp	300(149)	16 (40.6)
SWX 130 (F7A4-EM12K)	525 / DCEP	29	38 (1)	1.25 (32)	Room Temp	300(149)	16 (40.6)
SWX 150 (F7A6-EM12K)	525 / DCEP	29	38 (1)	1.25 (32)	Room Temp	300(149)	16 (40.6)
SWX 120 (F7P8-EM12K H8)	475-575 / DCEP	27-30	38 (1)	1.25 (32)	Room Temp	275-325()	15 (38.1)
HN-590 (F7A4-EM12K)	475-575 / DCEP	27-29	38 (1)	1.25 (32)	Room Temp	325(163)	15 (38.1)
HA-495 (F7A2-EM12K)	570 / DCEP	28.5	38 (1)	1.5 (38)	Room Temp	325(163)	15 (38.1)
SWX 110 (F7P6-EM12K H8)	475-575 / DCEP	27-30	38 (1)	1.25 (32)	Room Temp	275-325()	16 (40.6)
SWX 150 (F7P8-EM12K)	575 / DCEP	27.5	50 (1.3)	1 (25)	325(163)	325(163)	16 (40.6)
HN-590 (F7P5-EM12K)	565 / DCEP	28		30 MM ( )	Room Temp	325(163)	15 (38.1)

### Mechanical Properties - Tensile

Shielding Medium	Ref. No.	Testing Conditions	Ult. Tensile Strength psi (MPa)	Yield Strength psi (MPa)	Elong.% in 2"
SWX110 (F7A4-EM12K H8)	PC1623	Aged 48 Hrs 200F	82,000 ( 569 )	71,000 ( 491 )	29
SWX 120 (F7A6-EM12K H8)	PC1624	Aged 48 Hrs 200F	78,000 ( 538 )	66,000 ( 452 )	27
SWX 130 (F7A4-EM12K)	PC1625	Aged 48 Hrs 200F	82,000 ( 563 )	69,000 ( 478 )	27
SWX 150 (F7A6-EM12K)	PC1627	Aged 48 Hrs 200F	77,000 ( 530 )	68,000 ( 467 )	31
SWX 120 (F7P8-EM12K H8)	PC5226	SR 1 Hr @ 1150F	78,000 ( 541 )	64,000 ( 442 )	28
HN-590 (F7A4-EM12K)	PC5228	As Welded	82,000 ( 568 )	69,000 ( 476 )	28
HA-495 (F7A2-EM12K)	PC5340	As Welded	94,000 ( 645 )	84,000 ( 580 )	22
SWX 110 (F7P6-EM12K H8)	PC5384	SR 1 Hr @ 1150F	78,000 ( 538 )	64,000 ( 439 )	29
SWX 150 (F7P8-EM12K)	PD0263	SR 1 Hr @ 1150F	74,000 ( 507 )	61,000 ( 422 )	32
HN-590 (F7P5-EM12K)	PD4471	SR 1 Hr @ 1150F	79,000 ( 547 )	64,000 ( 444 )	28

### Mechanical Properties - Impact

Shielding Medium	Ref. No.	Testing Conditions	Temp. F (C)	Individuals ft.lb.(J)	Avg. ft.lb.(J)	Type
SWX110 (F7A4-EM12K H8)	PC1623	As Welded	-40 (-40)	49,42,52 (66,57,70)	48 ( 65 )	Charpy-V-Notch
SWX 120 (F7A6-EM12K H8)	PC1624	As Welded	-60 (-51)	70,72,86 (95,98,117)	76 ( 103 )	Charpy-V-Notch
SWX 130 (F7A4-EM12K)	PC1625	As Welded	-40 (-40)	24,24,22 (33,33,30)	23 ( 32 )	Charpy-V-Notch
SWX 150 (F7A6-EM12K)	PC1627	As Welded	-60 (-51)	98,84,89 (133,114,121)	90 ( 122 )	Charpy-V-Notch
SWX 120 (F7P8-EM12K H8)	PC5226	SR 1 Hr @ 1150F	-80 (-62)	40,51,50 (54,69,68)	47 ( 64 )	Charpy-V-Notch
HN-590 (F7A4-EM12K)	PC5228	As Welded	-40 (-40)	33,33,29 (45,45,39)	32 ( 43 )	Charpy-V-Notch
HA-495 (F7A2-EM12K)	pc5340	As Welded	-20 (-29)	33,35,33 (45,47,45)	34 ( 46 )	Charpy-V-Notch
SWX 110 (F7P6-EM12K H8)	pc5384	SR 1 Hr @ 1150F	-60 (-51)	47,58,50 (64,79,68)	52 ( 70 )	Charpy-V-Notch
SWX 150 (F7P8-EM12K)	PD0263	SR 1 Hr @ 1150F	-80 (-62)	67,46,57 (91,62,77)	57 ( 77 )	Charpy-V-Notch
HN-590 (F7P5-EM12K)	PD4471	SR 1 Hr @ 1150F	-50 (-46)	47,48,35 (64,65,47)	43 ( 59 )	Charpy-V-Notch
HN-590 (F7P5-EM12K)	PD4471	SR 1 Hr @ 1150F	-60 (-51)	44,38,40 (60,52,54)	41 ( 55 )	Charpy-V-Notch

Ref.No.	Radiographic Inspection	Fillet Weld Test			
PC1623	Conforms	Horizontal :		Overhead :	Vertical :
PC1624	Conforms	Horizontal :		Overhead :	Vertical :
PC1625	Conforms	Horizontal :		Overhead :	Vertical :

PC1627	Conforms	Horizontal :		Overhead :		Vertical :	
PC5226	Conforms	Horizontal :		Overhead :		Vertical :	
PC5228	Conforms	Horizontal :		Overhead :		Vertical :	
PC5340	Conforms	Horizontal :		Overhead :		Vertical :	
PC5384	Conforms	Horizontal :		Overhead :		Vertical :	
PD0263	Conforms	Horizontal :		Overhead :		Vertical :	
PD4471	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	
NONE / CB67464	0.12	1.05	0.011	0.005	0.20	0.07	0.03		0.04															
SWX110 (F7A4-EM12K H8) / PC1623	0.06	1.36	0.015	0.012	0.34	0.17	0.05		0.05	0.01														
SWX 120 (F7A6-EM12K H8) / PC1624	0.06	1.31	0.014	0.010	0.17	0.18	0.04		0.06	0.01														
SWX 130 (F7A4-EM12K) / PC1625	0.06	1.32	0.017	0.016	0.43	0.18	0.04		0.05	0.01														
SWX 150 (F7A6-EM12K) / PC1627	0.07	0.93	0.013	0.007	0.18	0.17	0.04		0.06	0.01														
SWX 120 (F7P8-EM12K H8) / PC5226	0.08	1.34	0.016	0.016	0.24	0.23	0.06		0.08	0.02														
HN-590 (F7A4-EM12K) / PC5228	0.07	1.47	0.026	0.017	0.27	0.22	0.06		0.07	0.02														
HA-495 (F7A2-EM12K) / PC5340	0.09	1.50	0.023	0.018	0.59	0.23	0.05		0.07	0.02														
SWX 110 (F7P6-EM12K H8) / PC5384	0.06	1.27	0.016	0.016	0.36	0.23	0.06		0.07	0.02														
SWX 150 (F7P8-EM12K) / PD0263	0.08	0.99	0.014	0.010	0.26	0.22	0.07		0.08	0.02														
HN-590 (F7P5-EM12K) / PD4471	0.08	1.75	0.032	0.018	0.36	0.21	0.04		0.07	0.03														

**Diffusible Hydrogen Collected per AWS A4.3**

SWX-120	5.5 ml/100g of weld metal for 5/32 in diameter 77% relative humidity
SWX-110	4.7 ml/100g of weld metal for 5/32 in diameter 77% relative humidity

*Dave A. Thomas*

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.