HOBART FILLER METALS

Certificate of Conformance to Requirements for Welding Electrode

Product Type:	SubCOR EM13KS 5/32 60 CL
Classification:	EC1
Specifications:	AWS A5.17-97; ASME SFA5.17
Diameter Tested:	5/32"
Date Tested:	11/23/2015
Date Generated:	12/18/2015

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	525 / DCEP	28.5	67 (1.7)	1.25 (32)	Room Temp	300(149)	15 (38.1)
HN-590	525 / DCEP	28.5	67 (1.7)	1.25 (32)	Room Temp	300(149)	15 (38.1)
HA-495	525 / DCEP	28.5	67 (1.7)	1.25 (32)	Room Temp	300(149)	15 (38.1)
SWX 120	525 / DCEP	28.5	16 (0.4)	1.25 (32)	Room Temp	300(149)	15 (38.1)
HN-590	525 / DCEP	28.5	16 (0.4)	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 120	PC7503	Aged 48 Hrs 200F	76,000 (524)	65,000 (449)	30
HN-590	PC7504	Aged 48 Hrs 200F	72,000 (500)	59,000 (409)	31
HA-495	PC7590	Aged 48 Hrs 200F	84,000 (579)	72,000 (499)	28
SWX 120	PD0062	SR 1 Hr @ 1150F	73,000 (503)	60,000 (416)	32
HN-590	PD0063	SR 1 Hr @ 1150F	76,000 (525)	65,000 (450)	30

Mechanical Properties - Impact

Shielding Medium	Ref. No.	Testing Conditions	Temp. F (C)	Individuals ft.lb.(J)	Avg. ft.lb.(J)	Type
SWX 120	PC7503	As Welded	-100 (-73)	68,75,58 (92,102,79)	67 (91)	Charpy-V-Notch
HN-590	PC7504	As Welded	-80 (-62)	64,57,69 (87,77,94)	63 (86)	Charpy-V-Notch
HA-495	PC7590	As Welded	-40 (-40)	70,60,57 (95,81,77)	62 (85)	Charpy-V-Notch
SWX 120	PD0062	SR 1 Hr @ 1150F	-100 (-73)	68,75,58 (92,102,79)	67 (91)	Charpy-V-Notch
HN-590	PD0063	SR 1 Hr @ 1150F	-80 (-62)	64,57,69 (87,77,94)	63 (86)	Charpy-V-Notch

Ref.No.	Radiographic Inspection	Fillet Weld Test		
PC7503	Conforms	Horizontal :	Overhead :	Vertical :
PC7504	Conforms	Horizontal :	Overhead :	Vertical :
PC7590	Conforms	Horizontal :	Overhead :	Vertical :
PD0062	Conforms	Horizontal :	Overhead :	Vertical :
PD0063	Conforms	Horizontal :	Overhead :	Vertical :

Diffusible Hydrogen Collected per AWS A4.3

SWX-120	3.2 ml/100g of weld metal for 5/32 in diameter 59% relative humidity
HA-495	2.9 ml/100g of weld metal for 5/32 in diameter 59% relative humidity
HA-590	2.8 ml/100g of weld metal for 5/32 in diameter 51% relative humidity

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. Hobart Brothers produces welding consumables under continuing quality assurance programs audited and approved by the American Bureau of Shipping ("ABS").