



ESAB Welding & Cutting Products

**CERTIFICATE OF CONFORMANCE
TO SPECIFICATION REQUIREMENTS
FOR WELDING ELECTRODES AND FLUXES**

SECTION NO. 2

SUPPLIED TO: QUANTITY:
DIAMETER:
HEAT:
FLUX LOT:

This is to certify that Spoolarc 81 electrode, Classification EM12K and ESAB OK Flux 231 submerged arc welding flux, AWS/ASME Classification F7A2-EM12K-H8, as supplied on the above order, are of the same classification, manufacturing process and material requirements as the flux-electrode combination tested on April 17, 2010.

All tests required by Specification AWS /ASME SFA5.17 (F-No. 6) and ANSI/AWS A5.01 Schedule G were performed. The materials tested met all the requirements for Classification F7A2-EM12K-H8. The chemical composition of the electrode and mechanical properties of the deposited weld metal were as follows:

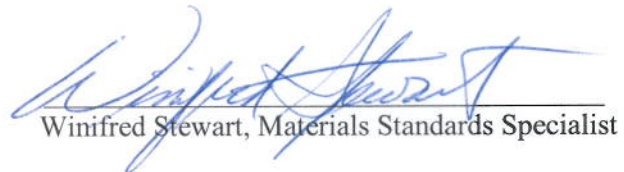
CHEMICAL COMPOSITION OF ELECTRODE						Total
C	Mn	Si	S	P	Cu	Other Elements
.11	.94	.21	.010	.006	.08	<.50
CHEMICAL COMPOSITION OF DEPOSITED WELD METAL (A-No. 1)						
.06	1.31	.79	.010	.024	.08	

WELD TEST NO.: 100417-1AW	AS-WELDED	CHARPY V-NOTCH IMPACT	
Radiography Test: Met all requirements		Ft-Lbs @ -22°F (Joules @ -30°C)	
Tensile Test:		19	(26)
Yield Strength, ksi (MPa)	73.0 (503)	24	(32)
Tensile Strength, ksi (MPa)	86.5 (596)	34	(46)
Elongation, 2-in. %	28.5	20	(27)
		<u>22</u>	<u>(30)</u>
		22 (avg. 3)	(30) (avg. 3)

Welding Conditions:		Base Plate:	A515/516 Gd. 70, 1 in. thick
Arc Voltage:	28.5	Set-up:	30° incl. angle, 1/2 in. root gap
Amperage:	535 DCEP	No. of Layers:	8 layers of 2 passes, 1 layers of 3
Travel Speed:	16 ipm	Preheat:	60 - 325°F Interpass: 300 ± 25°F
Diameter:	5/32-in.		

CAUTION: ESAB OK Flux 231 is an active flux. Active fluxes should be limited to multipass welding in plate a maximum of 1-in. (25 mm) thick. More highly alloyed wires than Spoolarc 80, 81 or 29S should not be used. Voltages in multipass welds should be limited to a maximum of 35 or even lower if weld procedure tests indicate excessive hardness is encountered.

WELD METAL DIFFUSIBLE HYDROGEN
ml/100g (Flux baked @ 550° F for 1 hour)
1.2, 4.6, 2.0, 5.7 (3.4 avg.)


Winifred Stewart, Materials Standards Specialist