



Inspection Certificate
In accordance with
EN 10204 3.1

Customer :

Product : HN-590

Lot No. : 260430

Specification : --

Customer P.O.# : 2000-014687/PO:ICO-02498987

Mesh Size :

Classification : --

Certificate No. : F060426-1

Date of Mfg. : 04/30/2026

Date of Issue : 06/05/2026

CHEMICAL ANALYSIS OF FLUX FOR SUBMERGED ARC WELDING

SiO ₂	11.2%
Al ₂ O ₃ + TiO ₂	33.2%
MnO + FeO	14.2%
CaO + MgO + CaF ₂	41.1%



J. M. Wang

Q.C Section J. M. WANG

Manufacturing, Certification and Limited Warranty Agreement

Data for the above supplied product are those obtained when welded and tested accordance with the above specification. All tests for the above classification were satisfied. Other tests and procedures may produce different results. The above supplied product are manufactured by Tien Tai Electrode an ITW Co. located at: No.6 Kaifa 4th Rd., Rende Dist., Tainan City 717, Taiwan R.O.C. Hobart Brothers produces welding consumables under continuing quality assurance programs audited and approved by Lloyd's Register Quality Assurance Limited(LRQA)



Certificate No. :B052026-1

**Inspection Certificate
In accordance with
EN 10204 3.1**

Customer :

Product : HOBART M12K/HN-590
Diameter : 4.0mm
Classification : F7A4-EM12K
Specification : AWS A5.17-'19

Customer P.O.# : 2000-014687/PO:ICO-02498987
Lot No. : 260302U30S40/260430
Date Tested : 05/19/2026
Date of Issue : 06/05/2026

Part Number :
Lot Classification :
Level of Testing :

Test Settings

Amps DCEP	Volts	WFS	Shielding Gas	Electrode Stickout	Temperature		Travel Speed
					Preheat	Interpass	
500	28	43 ipm	NONE	35 mm	85±25°F 30±15°C	300±25°F 150±15°C	16±1 ipm

6 Layers, 2 passes on each layer 1 through 6; 7th Layer, 3 passes on cap layer.

Mechanical Properties Lab Test #2FE19

Item	Ult. Tensile Strength		Yield Strength		Elong % in 2 "	Impact Test Temp.	Charpy V-Notch Values ft.lbf			
Requirement	70000 ~ 95000 490 ~ 660	psi MPa	58000 Min. 400 Min.	psi MPa	22 Min.	-40 °F -40 °C	20 ft.lbf Min. 27 J Min.			
AS WELDED	86476 596	psi MPa	72964 503	psi MPa	33	-40 °F -40 °C	46 62	46 63	50 68	Avg.:47 ft.lbf Avg.:64 J

Radiographic		Fillet Weld Test						Moisture %	
Inspection:	Conforms	Horizontal:	N/A	Vertical:	N/A	Overhead:	N/A	N/A	
Bending Test									

Chemical Composition of Wire and Rod (%)

Elements	C	Mn	Si	S	P	Cu								
Requirement	0.05 0.15	0.80 1.25	0.10 0.35	Max. 0.030	Max. 0.030	Max. 0.35								
Filler Metal	0.09	1.06	0.25	0.007	0.009	0.010								

Remarks

Production Date :04/30/2026
Customer special required as follows:
(1)Deposited Metal Chemical Analysis:
C:0.064%,Mn:1.87%,Si:0.43%,S:0.007%,P:0.024%,Cu:0.064%

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