



# METALLOY 92-S

LOW ALLOY COMPOSITE METAL-CORED SUBMERGED ARC ELECTRODE

101115 (Replaces 100720)

AWS A5.23/A5.23M

ASME SFA5.23

Class ECM1

## CHARACTERISTICS:

**Metalloy 92-S** is a composite metal-cored electrode for submerged arc welding where 80,000 psi tensile strength and low temperature toughness are required in the as welded or post weld heat treated condition (PWHT). It can be welded using either Hobart HN-511 or HN-590 flux. Applications include the joining of API pipe Grades of X60, X65, and X70; A516, Grade 70 either for as-welded or PWHT conditions for strength and -50 degree F low temperature toughness; undermatching for 90,000psi tensile strength materials and in the case of HPS70W, will not only meet the undermatch requirements for strength, but will assure the minimum nickel deposit requirement of 1%.

## ADVANTAGES OVER SOLID ELECTRODES:

Metalloy submerged arc electrodes provide higher deposition rates as compared to the solid wires of equal size, with the same amperage, electrical stickout and flux. Since Metalloy products are made using a steel sheath with alloying metal powders, customers will enjoy industry leading performance. Penetration patterns are broader than solid wires, making it easier to bridge fit-up gaps; and higher current levels can be used on the root passes and thin materials without burn through. Feed and straightening roll pressure should be set lower than solid wire to avoid distorting the tubular electrode and tracking problems since these electrodes are softer. Metal cored electrodes will also reduce tip and liner wear due less drive roll pressure required to feed the electrodes as compared to solid wire.

The properties listed below are typical of either DC electrode positive (reverse polarity) or AC.

### Metalloy 92-S Electrode/Flux AWS A5.23 Deposit Chemical Analysis

Flux	Electrode Classification	C	Mn	P	S	Si	Cu	Cr	Ni	Mo	V+ Ti+ Zr
AWS A5.23 (Max)	ECM1	0.10	0.60-1.60	0.030	0.030	0.80	0.30	0.15	1.25-2.00	0.35	<=0.03 max
Hobart HN-511	ECM1	0.04	1.40	0.014	0.006	0.30	0.08	0.07	1.69	0.23	0.006
Hobart HN-590	ECM1	0.05	1.37	0.022	0.015	0.31	0.07	0.06	1.80	0.24	0.011

### Metalloy 92-S Electrode/Flux Mechanical Properties

Flux	Electrode/Flux Classification	Tensile Strength		Yield Strength		% Elong. in 2"	CVN @ -80°F (-62°C)		CVN @ -100°F (-73°C)	
		ksi	(MPa)	ksi	(MPa)		ft/lbs	(J)	ft/lbs	(J)
Hobart HN-511	F8A8-ECM1-M1	95.1	(656)	85.7	(591)	24.5	55	(75)	51	(69)
Hobart HN-511 (PWHT)	F8P8-ECM1-M1	91.6	(632)	79.0	(545)	25.8	56	(76)	29	(39)
Hobart HN-590	F8A8-ECM1-M1	92.3	(636)	81.9	(565)	25.5	45	(61)	29	(39)
Hobart HN-590 (PWHT)	F8P8-ECM1-M1	88.9	(613)	77.1	(532)	26.1	54	(73)	36	(49)

## TYPICAL DIFFUSIBLE HYDROGEN:

Hydrogen Equipment	Hobart HN-590
Gas Chromatography	2.45ml/100g

**AVAILABLE DIAMETERS:** 3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

\*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and Hobart Brothers Company expressly disclaims any liability incurred from any reliance thereon. Typical data is obtained when welded and tested in accordance with AWS A5.17 specification. Other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by Hobart Brothers Company.

www.hobartbrothers.com  
 400 Trade Square East  
 Troy, OH 45373  
 PH: 1-800-424-1543  
 FX: 1-800-541-6607



# METALLOY 92-S

LOW ALLOY METAL-CORED SUBMERGED ARC ELECTRODE  
AWS A5.23

## 3/32" Diameter, 1-1/4" Electrical Stickout, DCEP with Hobart HN-590

AMPERAGE	VOLTAGE	APPROXIMATE WIRE FEED SPEED, IPM	DEPOSITION RATE Lbs/hr
200	28	65	5.9
250	28	75	7.1
300	29	85	8.7
350	30	105	10.7
400	30	125	12.8
450	32	150	15.4
500	37	175	17.8
550	37	210	21.1
600	38	240	24.3
650	39	270	27.7

## 1/8" Diameter, 1-1/4" Electrical Stickout, DCEP with Hobart HN-590

AMPERAGE	VOLTAGE	APPROXIMATE WIRE FEED SPEED, IPM	DEPOSITION RATE Lbs/hr
250	28	40	6.0
300	29	46	7.2
350	30	54	8.6
400	31	64	10.4
450	31	76	12.1
500	32	87	14.7
550	32	100	17.3
600	35	116	20.0
650	36	135	23.0
700	37	153	25.7
750	38	175	29.6
800	40	199	33.0

## 5/32" Diameter, 1-1/2" Electrical Stickout, DCEP with Hobart HN-590

AMPERAGE	VOLTAGE	APPROXIMATE WIRE FEED SPEED, IPM	DEPOSITION RATE Lbs/hr
400	30	45	12.2
500	33	58	14.5
600	35	69	18.5
700	38	90	23.8
800	40	113	29.8
900	42	143	38.7
1000	48	172	42.8

\*Voltage listed was used for these particular tests. Typically, the voltage can be varied +2 volts depending on flux, material thickness, and application. The deposition rate may vary with the flux used.

**Notice:**

Actual use of the product may produce varying results due to conditions and welding techniques over which Tri-Mark has no control, including, but not limited to, plate chemistry, weldment design, fabrication methods, electrode size, welding procedure, service requirements, and environment. The purchaser is solely responsible for determining the suitability of Tri-Mark products for the purchaser's own use. Any prior representations shall not be binding. Tri-Mark disclaims any warranty of merchantability or fitness for any particular purpose with respect to its products.

**Caution:**

Consumers should be thoroughly familiar with the safety precautions shown on the Warning Label posted on each shipment and in American National Standard Z49.1, "Safety in Welding and Cutting," published by the American Welding Society, 550 NW LeJeune Road, Miami, FL, 33126, and OSHA Safety and Health Standards 29 CFR 1910, available from the U.S. Department of Labor, Washington, D.C. 20210.