



# METALLOY 100F3-S

**LOW ALLOY COMPOSITE METAL-CORED SUBMERGED  
ARC ELECTRODE**  
AWS A5.23/A5.23M  
ASME SFA A5.23/SFA 5.23M  
ECF3

100302 (Replaces 100126)

## CHARACTERISTICS:

**Metalloy 100F3-S** is a low alloy composite metal-cored electrode for submerged arc welding of similar applications as the solid wire classification EF3. This wire provides excellent bead appearance and tie-in and is more tolerant of mill scale and rust. Metalloy 100F3-S is designed for welding of higher strength steels such as A514 (T1), A517, A710, X70 and X80 pipe, and many others. Typical applications include pipeline welding, tank fabrication, offshore oil rigs, shipbuilding, blow-out arrestors, and heavy equipment manufacturing.

## ADVANTAGES OVER SOLID WIRE:

Tri-Mark 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 Tri-Mark 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. Drive roll and straightening roll pressure should be set lower than solid wire as these electrodes are softer. Metal cored electrodes may cause the electrode to deform and may cause electrode tracking problems. Metal cored electrodes should reduce tip and liner wear.

Below results are typical of using direct current electrode positive (DCEP).

### Metalloy 100F3-S Electrode/Flux AWS A5.23 Deposit Chemistry Analysis

Flux	Electrode Classification	C	Mn	Si	S	P	Ni	Mo	Cu
AWS A5.23 (Max)	ECF3	0.17	1.25-2.25	0.80	0.030	0.030	0.70-1.10	0.40-65	0.35
Hobart HN-511	ECF3	0.066	1.79	0.351	0.015	0.024	0.777	0.532	0.065
Hobart HN-590	ECF3	0.062	1.81	0.354	0.014	0.023	0.785	0.539	0.064

### Metalloy 100F3-S Electrode/Flux Mechanical Properties

Flux	Electrode/Flux Classification	Tensile Strength ksi (MPa)	Yield Strength ksi (MPa)	% Elong. in 2%	CVN @ -20° F (-29°C) Ft/lbs. (J)	CVN @ -40° F (-40°C) Ft/lbs. (J)	CVN @ -60°F (-51°C) Ft/lbs. (J)
Hobart HN-511	F10A6-ECF3-F3	113.9 (785)	107.2 (739)	23.2		96.2 (130)	96 (81)
Hobart HN-511(PWHT)	F10P6-ECF3-F3	109.2 (752)	98.8 (681)	24.3		75.6 (102)	52 (71)
Hobart HN-590	F10A4-ECF3-F3	103.3 (712)	92.4 (637)	24.3		57 (73)	35 (47)
Hobart HN-590 (PWHT)	F10P2-ECF3-F3	104.4 (719)	90.3 (623)	23.8	60 (81)	27 (36)	

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



# METALLOY 100F3-S

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

3/32" Diameter, 1-1/4" Electrical Stickout, DCEP with Hobart HN-590					
AMPERAGE (DCEP)	VOLTAGE	APPROXIMATE WIRE FEED SPEED, IPM		DEPOSITION RATE lbs/hr	
		Metalloy	Solid	Metalloy	Solid
200	28	65	48	5.9	5.3
250	28	75	57	7.1	6.5
300	29	85	70	8.7	8.1
350	30	105	80	10.7	9.2
400	30	125	89	12.9	10.6
450	32	150	103	15.4	12.6
500	37	175	121	17.8	14.8
550	37	210	139	21.1	16.6
600	38	240	156	24.3	18.9
650	39	270	179	27.7	21.3

1/8" Diameter, 1-1/4" Electrical Stickout, DCEP with Hobart HN-590					
AMPERAGE (DCEP)	VOLTAGE	APPROXIMATE WIRE FEED SPEED, IPM		DEPOSITION RATE lbs/hr	
		Metalloy	Solid	Metalloy	Solid
250	28	40	38	6.0	6.4
300	29	46	43	7.2	8.1
350	30	54	48	8.6	9.1
400	31	64	54	10.4	10.6
450	31	76	60	12.1	11.8
500	32	87	68	14.7	13.1
550	32	100	75	17.3	14.5
600	35	116	80	20.0	15.6
650	36	135	86	23.0	17.6
700	37	153	94	25.7	19.3
750	38	175	101	29.6	20.9
800	40	199	110	33.0	23.0

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

**CAUTION:**

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

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