



METALLOY N1S

LOW ALLOY METAL-CORED SUBMERGED ARC ELECTRODE

020715 (Replaces 050616)

AWS A5.23

ASME SFA 5.23

Class ECNi1

CHARACTERISTICS:

Metalloy N1S is a metal cored electrode for submerged arc welding where a 1% nickel deposit is required. This composition improves low temperature toughness, while only raising the tensile strength slightly. Typical applications include structural and weathering steels (such as A242, A588 and A709Gds 50W and HPS 50W where color match is not required) shipbuilding, and offshore fabrication.

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 tracking problems since these electrodes are softer. Metal cored electrodes will also reduce tip and liner wear.

The properties listed below are typical of either DC electrode positive (reverse polarity), or unbalanced squarewave AC polarity with 66% electrode positive / 34% electrode negative.

Metalloy N1S Electrode/Flux Deposit Chemical Analysis

Flux	Wire Classification	C	Mn	Si	S	P	Ni	Mo	Cu
AWS A5.23 (Max)	ECNi1	0.12	1.60	0.80	0.030	0.030	0.75-1.1	0.35	0.35
HPF-N90	ECNi1	0.07	1.14	0.35	0.012	0.018	0.88	0.02	0.04
HPF-N90 (PWHT)	ECNi1	0.07	1.03	0.29	0.015	0.022	1.04	0.01	0.04
HPF-N11	ECNi1	0.08	0.80	0.34	0.010	0.018	0.94	0.02	0.03

Metalloy N1S Mechanical Properties

Flux	Flux/Wire 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)
HPF-N90	F7A10-ECNi1-Ni1	77.0	(531)	64.0	(441)	27	—	70	(94)	
HPF-N90	F6P10-ECNi1-Ni1	71.0	(490)	55.0	(377)	32	—	63	(85)	
HPF-N11	F7A8-ECNi1-Ni1	80.0	(553)	68.0	(465)	28	68	(92)	—	

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 A5.23 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.

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AWS A5.23

3/32" Diameter, 1-1/4" Electrical Stickout, DCEP with HPF-N90

AMPERAGE	VOLTAGE	APPROXIMATE WIRE FEED SPEED, ipm	DEPOSITION RATE
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 HPF-N90

AMPERAGE	VOLTAGE	APPROXIMATE WIRE FEED SPEED, ipm	DEPOSITION RATE
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 HPF-N90

AMPERAGE	VOLTAGE	APPROXIMATE WIRE FEED SPEED, ipm	DEPOSITION RATE
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.