

NS-101 COPPERFREE™ AWS ER70S-3, EM13K



PRODUCT DESCRIPTION:

NS-101 is a copper free mild steel solid filler wire designed to extract maximum weld quality and user appeal from ER70S-3 wire. The manganese and silicon contents are restricted to the high end of the chemistry range, assuring maximum deoxidation, flat bead profiles and low spatter levels.

**Mild steel GMA welding wire
for industrial and light duty
applications**

NS PREMIUM WELDING WIRE CHARACTERISTICS:

- NS-101 CopperFree™ provides the ultimate in flexibility to support your GMAW operations.
- Cast of 35"(.88m) to 55" (1.3m) and Helix below 1" (25.4mm) improve feedability and provide accurate wire positioning
- Manufactured according to ISO9001:2008 quality standards

NS-101	PRODUCT FEATURES
ARC STARTS	Excellent
ARC STABILITY	Excellent
FEEDABILITY	Excellent
SPATTER	Minimal
COPPER FLAKING	None
DE-OXIDIZERS	Moderate
WELD APPEARANCE	Excellent
POST WELD CLEANING	Excellent

NS-101 APPLICATIONS:

- Low carbon killed and semi killed steel
- Well suited for all metal transfer modes of GMAW
- Robotic, mechanized or semi-automatic welding
- Welding steel with light mill scale, light rust or thin oil
- Used for single and multi-pass weldments
- Pipe welding, structural steel and steel buildings
- Applications requiring a minimum 70,000 psi tensile strength

TYPICAL WIRE CHEMISTRY PERCENTAGES:

	C	Mn	Si	P	S	Cu	Ni	Cr	Mo	V
NS-101 TYP.	0.09	1.17	0.60	0.012	0.014	0.07	0.06	0.07	0.008	0.005
AWS A5.18	0.06/0.15	0.90/1.40	0.45/0.70	0.025 (max.)	0.035 (max.)	0.50 (max.)	0.15 (max.)	0.15 (max.)	0.15 (max.)	0.03 (max.)
AWS A5.17	0.06/0.16	0.90/1.40	0.35/0.75	0.030 (max.)	0.030 (max.)	0.35 (max.)	-	-	-	-

CLASSIFICATIONS & APPROVALS:

- AWS A5.18: ER70S-3
- AWS A5.17: EM13K
- ASME SFA-5.18: ER70S-3
- MIL-E-23765/1: MIL-70S-3
- CWB W48-01: ER49S-3

WELDING POSITIONS:

All position welding is possible when using the correct shielding gas blends, welding process and parameters.

TYPICAL APPLICATION SHIELDING GAS BLENDS:

- 100% CO₂
- 75-95% Argon/Balance CO₂
- 95-98% Argon/Balance O₂
- Flow Rate: 35-50 CFH

WIRE DIAMETERS (in):

.025	.030	.035	.040	.045	.052	.062
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TYPICAL MECHANICAL PROPERTIES:

	TENSILE STRENGTH PSI	YIELD STRENGTH PSI	MINIMUM ELONGATION %	CVN IMPACT VALUES @ 0° F
NS-101	79,900	66,200	28	68 ft-lbf
AWS MINIMUM	70,000	58,000	22	20 ft-lbf

Typical conducted with CO₂ Shielding Gas
Wire performance data available upon request



**COPPERFREE™ WELDING
PARAMETERS AND PACKAGE OPTIONS**



APPROXIMATE WELDING PARAMETERS:

GRADE	DIA.	POLARITY	TRANSFER MODE	WIRE FEED SPEED in/min (m/min)		VOLTAGE		AMPERAGE	
				Min.	Max.	Min.	Max.	Min.	Max.
CopperFree™	0.030	DCEP	Short Circuit	75 (1.9)	300 (7.6)	17	22	45	130
CopperFree™	0.035	DCEP	Short Circuit	100 (2.5)	400 (10.1)	17	24	75	180
CopperFree™	0.035	DCEP	Spray	375 (9.5)	625 (15.9)	23	29	180	280
CopperFree™	0.045	DCEP	Globular	100 (2.5)	425 (10.8)	18	24	125	225
CopperFree™	0.045	DCEP	Short Circuit	125 (3.2)	450 (11.4)	18	24	125	225
CopperFree™	0.045	DCEP	Spray	350 (8.9)	500 (12.7)	26	30	250	350
CopperFree™	0.052	DCEP	Globular	175 (4.4)	300 (7.6)	18	26	150	250
CopperFree™	0.052	DCEP	Short Circuit	200 (5.1)	325 (8.3)	22	26	200	300
CopperFree™	0.052	DCEP	Spray	300 (7.6)	500 (12.7)	27	31	300	425
CopperFree™	0.062	DCEP	Globular	180 (4.6)	320 (8.1)	19	27	150	250
CopperFree™	0.062	DCEP	Short Circuit	190 (4.8)	325 (8.3)	23	27	200	325
CopperFree™	0.062	DCEP	Spray	200 (5.1)	375 (9.5)	27	31	325	425

PACKAGES
33-lb. Fiber Spool - Random Wound
45-lb. Fiber Spool - Random Wound
60-lb. Fiber Spool - Random Wound
250-lb. Smart Pak - 100% Recyclable
300-lb. Tru-Trac®
500-lb. Drum Pack
500-lb. Smart Pak - 100% Recyclable
900-lb. Drum Pack
900-lb. Smart Pak - 100% Recyclable
425-lb. Trigger Trac®
1,000-lb. Tru-Trac®
1,000-lb. Wood Reel
<i>Note: See "Premium Packaging Options" for full description of packages. For additional packages, please contact NS Customer Service at 1-800-777-1618.</i>
Exclusive to NS customers.

DISCLAIMER:
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For Material Safety Data Sheets (MSDS) and Certificates of Compliance, visit our website at www.nationalstandard.com

