

# HN-590



EN ISO 14174: S A AB 1 68 AC

## FEATURES:

- Agglomerated neutral flux
- Provides good deoxidization and bead appearance
- Provides very good slag removal
- Performs well up to 1000 amps using both DC or variable balance square-wave AC current
- Fine granule sizing

## BENEFITS:

- Can be used for multi-pass welding
- Ideal for general purpose welding. Tolerant of light rust and mill scale
- Reduces clean-up time to help improve productivity
- Allows flexibility in selecting productive procedures and torch configurations (single, twin, tandem, etc.)
- Assists flux feeding when using pressurized flux feeding systems

## APPLICATIONS:

- General fabrication
- Structural & bridge fabrication
- Single & multi-pass welding
- Heavy equipment
- Railcar
- Power transmission poles

**FLUX TYPE:** Agglomerated neutral

**BASICITY INDEX:** ~1.8 (Boniszewski)

**ALLOY TRANSFER:** Slightly Mn & Si alloying  
Typical AWS Wall Neutrality Number: 34 (Neutral)

**DENSITY:** ~1.2 kg/L

**MESH SIZE:** 0.25 - 1.2 mm/15 - 60 mesh

**CURRENT:** Direct Current Electrode Positive (DCEP), Direct Current Electrode Negative (DCEN), Alternating Current (AC)

**STORAGE:** Flux should be re-dried before use. Re-dried flux must be stored at 150±25°C (300±45°F) to prevent need for further re-drying

**RE-DRYING:** If the flux packaging has been opened and the flux has been exposed to moist conditions, re-drying is recommended. The flux should be re-dried at a temperature of 300-350°C (570-660°F) for a minimum of 2 hours. Re-drying should be made a maximum of three times.

**RECYCLING:** The flux recycling system must be free from moisture and oil. Slag and mill scale must be removed from the recycled flux. At least one part of new flux must be added to three parts of recycled flux.

## TYPICAL FLUX COMPOSITION\*:

Al <sub>2</sub> O <sub>3</sub> + TiO <sub>2</sub>	CaO + MgO + CaF	SiO <sub>2</sub>	MnO + FeO
~35%	~38%	~10%	~15%

## AWS CLASSIFICATIONS:

With Wire	Condition	Specifications	Classification (US Customary Units)	Classification (SI Units)
SDX S2Si-EM12K	As-Welded	A5.17/A5.17M	F7A4-EM12K	F48A4-EM12K
	PWHT*	A5.17/A5.17M	F7P5-EM12K	F48P4-EM12K
SDX EM13K	As-Welded	A5.17/A5.17M	F7A4-EM13K	F48A4-EM13K
	PWHT*	A5.17/A5.17M	F7P4-EM13K	F48P4-EM13K
SubCOR EM12K-S	As-Welded	A5.17/A5.17M	F7A6-EC1	F48A5-EC1
SubCOR EM13K-S	As-Welded	A5.17/A5.17M	F7A8-EC1 H8	F48A6-EC1 H8
	PWHT*	A5.17/A5.17M	F7P8-EC1 H8	F48P6-EC1 H8
SubCOR EM13K-S MOD	As-Welded	A5.17/A5.17M	F7A8-EC1 H8	F48A6-EC1 H8
	PWHT*	A5.17/A5.17M	F7P4-EC1 H8	F48P4-EC1 H8

**Note:** Stress-Relieved 1 Hr. @ 1150°F (620°C)

\*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and Hobart Brothers LLC expressly disclaims any liability incurred from any reliance thereon. Typical data are those obtained when welded and tested in accordance with the AWS A5.17, AWS A5.23, and EN ISO 14171 specifications. 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 LLC.

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## AWS CLASSIFICATIONS CONTINUED:

With Wire	Condition	Specifications	Classification (US Customary Units)	Classification (SI Units)
SubCOR N1-S	As-Welded	A5.23/A5.23M	F7A8-ECNi1-Ni1	F49A6-ECNi1-Ni1
	PWHT*	A5.23/A5.23M	F6P10-ECNi1-Ni1	F43P7-ECNi1-Ni1
SubCOR 92-S	As-Welded	A5.23/A5.23M	F8A8-ECM1/Ni4-M1/Ni4 H8	F55A6-ECM1/Ni4-M1/Ni4 H8
	PWHT*	A5.23/A5.23M	F8P8-ECM1/Ni4-M1/Ni4 H8	F55P6-ECM1/Ni4-M1/Ni4 H8
SubCOR 100F3-S	As-Welded	A5.23/A5.23M	F10A6-ECF3-F3	F69A5-ECF3-F3
	PWHT*	A5.23/A5.23M	F10P4-ECF3-F3	F69P4-ECF3-F3

Note: Stress-Relieved 1 Hr. @ 1150°F (620°C)

## TYPICAL WELD DEPOSIT COMPOSITION\*:

With Wire	% C	% Mn	% Si	% P	% S	% Cu	% Cr	% Ni	% Mo
SDX S2Si-EM12K	0.07	1.47	0.27	0.026	0.017	0.22	—	—	—
SDX EM13K	0.07	1.88	0.64	0.026	0.015	0.14	—	—	—
SubCOR EM12K-S	0.07	1.39	0.33	0.020	0.010	0.07	—	—	—
SubCOR EM13K-S	0.06	1.39	0.30	0.018	0.015	0.07	—	—	—
SubCOR EM13K-S MOD	0.08	1.42	0.44	0.017	0.008	0.08	—	—	0.09
SubCOR N1-S	0.06	1.45	0.34	0.019	0.014	0.06	—	0.95	—
SubCOR 92-S	0.04	1.51	0.36	0.017	0.011	0.05	0.05	1.70	0.23
SubCOR 100F3-S	0.06	1.90	0.42	0.023	0.008	0.06	0.04	0.90	0.54

## TYPICAL MECHANICAL PROPERTIES\*:

With Wire	Condition	Tensile Strength	Yield Strength	Elongation % in 2" (50 mm)
SDX S2Si-EM12K	As-Welded	82 ksi (476 MPa)	69 ksi (476 MPa)	28%
SDX EM13K	As-Welded	94 ksi (648 MPa)	82 ksi (565 MPa)	26%
	PWHT*	88 ksi (607 MPa)	74 ksi (510 MPa)	26%
SubCOR EM12K-S	As-Welded	79 ksi (545 MPa)	68 ksi (469 MPa)	28%
SubCOR EM13K-S	As-Welded	72 ksi (496 MPa)	59 ksi (407 MPa)	31%
	PWHT*	75 ksi (517 MPa)	65 ksi (448 MPa)	30%
SubCOR EM13K-S MOD	As-Welded	87 ksi (600 MPa)	78 ksi (538 MPa)	25%
	PWHT*	83 ksi (572 MPa)	69 ksi (476 MPa)	28%
SubCOR N1-S	As-Welded	79 ksi (545 MPa)	65 ksi (448 MPa)	31%
	PWHT*	77 ksi (531 MPa)	63 ksi (434 MPa)	31%
SubCOR 92-S	As-Welded	95 ksi (655 MPa)	86 ksi (593 MPa)	25%
	PWHT*	94 ksi (648 MPa)	82 ksi (565 MPa)	26%
SubCOR 100F3-S	As-Welded	112 ksi (772 MPa)	101 ksi (696 MPa)	23%
	PWHT*	108 ksi (745 MPa)	94 ksi (648 MPa)	22%

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## TYPICAL CHARPY V-NOTCH IMPACT VALUES\*:

With Wire	Condition	Avg. at -20°F (-30°C)	Avg. at -40°F (-40°C)	Avg. at -60°F (-50°C)	Avg. at -80°F (-60°C)	Avg. at -100°F (-70°C)
SDX S2Si-EM12K	As-Welded	45 ft-lbs (61 J)	30 ft-lbs (41 J)	—	—	—
	PWHT*	—	—	—	—	—
SDX EM13K	As-Welded	—	—	20 ft-lbs (27 J)	—	—
	PWHT*	—	—	24 ft-lbs (33 J)	15 ft-lbs (20 J)	—
SubCOR EM12K-S	As-Welded	—	—	50 ft-lbs (68 J)	—	—
SubCOR EM13K-S	As-Welded	—	—	60 ft-lbs (81 J)	—	—
	PWHT*	—	—	60 ft-lbs (81 J)	—	—
SubCOR EM13K-S MOD	As-Welded	—	—	—	55 ft-lbs (75 J)	—
	PWHT*	—	85 ft-lbs (115 J)	—	—	—
SubCOR N1-S	As-Welded	—	—	—	45 ft-lbs (61 J)	—
	PWHT*	—	—	—	—	40 ft-lbs (54 J)
SubCOR 92-S	As-Welded	—	—	—	40 ft-lbs (54 J)	—
	PWHT*	—	—	—	35 ft-lbs (47 J)	—
SubCOR 100F3-S	As-Welded	—	—	40 ft-lbs (60 J)	—	—
	PWHT*	—	30 ft-lbs (41 J)	—	—	—

Note: Stress-Relieved 1 Hr. @ 1150°F (620°C)

**STANDARD PACKAGING:** For a complete list of diameters and packaging, please contact Hobart Brothers at (800) 424-1543 or (937) 332-5188 for International Customer Service.

<b>50 lb. (23 kg)</b>
<b>Bag</b>
S669610-055

## CONFORMANCES AND APPROVALS:

With Wire	ABS	CWB
SDX S2Si-EM12K	—	F49A3-EM12K-H8
SubCOR 92-S	—	F55TA4-ECG-H8 F8TA4-ECG-H8
SubCOR EM13K-S	—	F49A4-EC1-H8
SubCOR EM13K-S	F7A8-EC1 H8	F49A5-EC1-H8 F43P6-EC1-H8
SubCOR EM13K-S MOD	3YTM H10	F49A6-EC1-H8
SubCOR N1-S	—	F49A6-ECNi1-Ni1-H8 F7A8-ECNi1-Ni1-H8

Limitations (diameter, position, etc.) may exist. Please refer to product approval certificates for more information.

**TECHNICAL QUESTIONS?** For technical support of Hobart Filler Metals products, contact the Applications Engineering department by phone toll-free at 1-800-532-2618 or by e-mail at [Applications.Engineering@hobartbrothers.com](mailto:Applications.Engineering@hobartbrothers.com)

### 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, 8669 NW 36th St., Miami, FL 33166 (can also be downloaded online at [www.aws.org](http://www.aws.org)); OSHA Safety and Health Standards 29 CFR 1910 is available from the U.S. Department of Labor, Washington, D.C. 20210

Safety Data Sheets on any Hobart Brothers LLC product may be obtained from Hobart Customer Service or at [www.hobartbrothers.com](http://www.hobartbrothers.com).

Because Hobart Brothers LLC is constantly improving products, Hobart reserves the right to change design and/or specifications without notice.

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