



SDX S2Si-EM12K

AWS A5.17: EM12K
EN ISO 14171: S2Si

FEATURES:

- Copper-coated wire
- Moderate manganese and silicon levels
- Suitable for use with a wide variety of Hobart fluxes

BENEFITS:

- Offers optimal consistency of electrode feeding and electrical transfer
- Provide improved resistance to porosity, improved mechanical properties, and increased travel speeds
- Provides versatility in application and procedure development

APPLICATIONS:

- General fabrication
- Storage vessels
- Structural and bridge fabrication
- Pressure vessels
- Heavy equipment

WIRE TYPE: Copper-coated solid wire

RECOMMENDED FLUXES: HA-495, HN-590, SWX 120, SWX 150

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

STANDARD DIAMETERS: 5/64" (2.0 mm), 3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

STORAGE: Product should be stored in a dry, enclosed environment, and in its original intact packaging

RE-DRYING: Not recommended

AWS CLASSIFICATIONS:

With Flux	Condition	Specifications	Classification (US Customary Units)	Classification (SI Units)
HA-495	As-Welded	A5.17/A5.17M	F7A2-EM12K	F48A3-EM12K
HN-590	As-Welded	A5.17/A5.17M	F7A4-EM12K	F48A4-EM12K
	PWHT*	A5.17/A5.17M	F7P5-EM12K	F48P4-EM12K
SWX 120	As-Welded	A5.17/A5.17M	F7A6-EM12K	F48A5-EM12K
	PWHT*	A5.17/A5.17M	F7P8-EM12K	F48P6-EM12K
SWX 150	As-Welded	A5.17/A5.17M	F7A6-EM12K	F48A5-EM12K
	PWHT*	A5.17/A5.17M	F7P8-EM12K	F48P6-EM12K

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

EN ISO CLASSIFICATIONS:

With Wire	Condition	Specification	Classification
SWX 120	As-Welded	EN ISO 14171-A	S 38 5 AB S2Si
SWX 150	As-Welded	EN ISO 14171-A	S 38 5 FB S2Si

TYPICAL WIRE CHEMICAL COMPOSITION*:

With Flux	% C	% Mn	% Si	% P	% S	% Cu
None (Wire Melt Button)	0.09	1.18	0.18	0.014	0.009	0.15
AWS A5.17 EM12K Requirements*	0.05-0.15	0.80-1.25	0.10-0.35	0.030	0.030	0.35

Note: AWS Specification single values are maximums

*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 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 LLC.

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TYPICAL WELD DEPOSIT CHEMICAL COMPOSITION*:

With Flux	% C	% Mn	% Si	% P	% S	% Cu
HA-495	0.09	1.50	0.59	0.023	0.018	0.05
HN-590	0.07	1.47	0.27	0.026	0.017	0.22
SWX 120	0.06	1.31	0.17	0.014	0.010	0.18
SWX 150	0.07	0.93	0.18	0.013	0.007	0.17

TYPICAL MECHANICAL PROPERTIES*:

With Flux	Condition	Tensile Strength	Yield Strength	Elongation % in 2" (50 mm)
HA-495	As-Welded	94 ksi (648 MPa)	84 ksi (579 MPa)	22%
HN-590	As-Welded	82 ksi (565 MPa)	69 ksi (476 MPa)	28%
	PWHT*	79 ksi (547 MPa)	64 ksi (444 MPa)	28%
SWX 120	As-Welded	78 ksi (538 MPa)	66 ksi (455 MPa)	27%
	PWHT*	78 ksi (538 MPa)	64 ksi (441 MPa)	28%
SWX 150	As-Welded	77 ksi (531 MPa)	68 ksi (469 MPa)	31%
	PWHT*	74 ksi (510 MPa)	61 ksi (421 MPa)	32%

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

TYPICAL CHARPY V-NOTCH IMPACT VALUES*:

With Flux	Condition	Avg. at 0°F (-20°C)	Avg. at -20°F (-30°C)	Avg. at -40°F (-40°C)	Avg. at -50°F (-46°C)	Avg. at -60°F (-50°C)	Avg. at -80°F (-60°C)
HA-495	As-Welded	30 ft-lbs (41 J)	30 ft-lbs (41 J)	—	—	—	—
HN-590	As-Welded	—	45 ft-lbs (61 J)	30 ft-lbs (41 J)	—	—	—
	PWHT*	—	—	—	43 ft-lbs (59 J)	—	—
SWX 120	As-Welded	—	—	—	—	75 ft-lbs (102 J)	65 ft-lbs (88 J)
	PWHT*	—	—	—	—	60 ft-lbs (81 J)	45 ft-lbs (61 J)
SWX 150	As-Welded	—	—	—	—	90 ft-lbs (122 J)	25 ft-lbs (34 J)
	PWHT*	—	—	—	—	55 ft-lbs (75 J)	55 ft-lbs (75 J)

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

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TYPICAL OPERATING PARAMETERS*:

Diameter		Amps	Volts	Wire Feed Speed		Deposition Rate		Contact Tip to Work Distance	
Inches	(mm)			Inches	(m/min)	lbs/hr	(kg/hr)	Inches	(mm)
5/64	(2.0)	200	29	63	(1.60)	4.8	(2.2)	1.25	(32)
5/64	(2.0)	300	31	95	(2.41)	8.1	(3.7)	1.25	(32)
5/64	(2.0)	400	33	135	(3.43)	11.3	(5.1)	1.25	(32)
5/64	(2.0)	500	36	200	(5.08)	16.0	(7.3)	1.25	(32)
3/32	(2.4)	300	29	70	(1.78)	8.1	(3.7)	1.25	(32)
3/32	(2.4)	400	30	90	(2.29)	10.6	(4.8)	1.25	(32)
3/32	(2.4)	500	37	120	(3.05)	14.8	(6.7)	1.25	(32)
3/32	(2.4)	600	38	155	(3.94)	18.9	(8.6)	1.25	(32)
1/8	(3.2)	400	31	54	(1.37)	11.4	(5.2)	1.25	(32)
1/8	(3.2)	500	32	68	(1.73)	13.1	(5.9)	1.25	(32)
1/8	(3.2)	600	35	80	(2.03)	15.6	(7.1)	1.25	(32)
1/8	(3.2)	700	37	90	(2.41)	19.3	(8.8)	1.25	(32)
5/32	(4.0)	400	30	38	(0.97)	10.3	(4.9)	1.5	(38)
5/32	(4.0)	500	33	48	(1.22)	14.0	(6.4)	1.5	(38)
5/32	(4.0)	600	35	55	(1.40)	17.2	(7.8)	1.5	(38)
5/32	(4.0)	700	38	65	(1.65)	19.6	(8.9)	1.5	(38)
5/32	(4.0)	800	40	75	(1.91)	23.5	(10.7)	1.5	(38)
5/32	(4.0)	900	42	88	(2.24)	28.2	(12.8)	1.5	(38)

Maintaining a proper welding procedure - including pre-heat and interpass temperatures - may be critical depending on the type and thickness of steel being welded.

Parameters are provided for informational purposes only. All values are approximate. The optimal voltage may vary (typically ± 2 volts) depending on the choice of flux, material thickness, joint design, and other variables specific to the application.

Likewise, actual deposition rate may vary depending on choice of flux and contact tip to work distance.

STANDARD PACKAGING: For a complete list of diameters and packaging, please contact Hobart Brothers at

Diameter	55-lb. (25 kg) Wire Basket	1000 lb. (454 kg) Drum
Net Pallet Weight	2310-lb. (1050kg)	2000-lb. (907kg)
5/64" (2.0 mm)	S295125-S20	S295125-S71
3/32" (2.4 mm)	S295129-S20	S295129-S71
1/8" (3.2 mm)	S295143-S20	S295143-S71
5/32" (4.0 mm)	S295150-S20	S295150-S71

CONFORMANCES AND APPROVALS:

With Flux	ABS	CE	CWB	DNV-GL
HA-495	—	X	F49A3-EM12K-H8	—
SWX 110	4YM H5	X	F49A4-EM12K-H8	IV YM
SWX 120	—	X	F49A5-EM12-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

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); 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.

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

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