

309/309L



AWS A5.9: ER309 & ER309L

DESCRIPTION:

309/309L stainless steel solid wire and cut lengths are used for joining similar 309L alloys or for joining 300-series stainless steels to carbon or low alloy steels.

TYPICAL WIRE ANALYSIS:

Weld Metal Analysis (%)		AWS Spec	
		ER309	ER309L
Carbon (C)	0.02	0.12 max	0.03 max
Manganese (Mn)	2.10	1.0 to 2.5	1.0 to 2.5
Phosphorus (P)	0.001	0.03 max	0.03 max
Silicon (Si)	0.40	0.30 to 0.65	0.20 to 0.65
Copper (Cu)	0.27	0.75 max	0.75 max
Chromium (Cr)	24.00	23.0 to 25.0	23.0 to 25.0
Nickel (Ni)	13.50	12.0 to 14.0	12.0 to 14.0
Molybdenum (Mo)	0.20	0.75 max	0.75 max
Iron (Fe)	Bal.	Bal.	Bal.

TYPICAL MECHANICAL PROPERTIES* (As Welded):

Mechanical Tests		AWS Spec
Tensile Strength	87,000 psi (600 MPa)	Not required
Yield Strength	59,000 psi (407 MPa)	Not required
Elongation % in 2" (50 mm)	40%	Not required
DeLong Ferrite Number Range	8-14	Not required
Schaeffler Number Range	8-14	Not required
WRC Number Range (1992)	8-14	Not required

TYPICAL CHARPY V-NOTCH IMPACT VALUES*:

CVN Temperatures		AWS Spec
Avg. at room temperature	100 ft•lbs (136 Joules)	Not required

*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 are those obtained when welded and tested in accordance with the AWS A5.9 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.

309/309L

For Spray Transfer Welding with Bare Stainless Wire

Diameter Inches	(mm)	Weld Position	Type of Current	Amps	Volts	Stick-Out		98% Ar + 2% O ₂ Flow Rate	
						Inches	(mm)	cfh	(l/min)
0.035	(0.9)	Flat & Horizontal	DCEP	150-225	23-26	1/2-3/4	(13-19)	35	(16.5)
0.045	(1.2)	Flat & Horizontal	DCEP	200-325	24-28	1/2-3/4	(13-19)	35	(16.5)
1/16	(1.6)	Flat & Horizontal	DCEP	300-350	24-27	1/2-3/4	(13-19)	35	(16.5)

For Short-Circuit Welding with Bare Stainless Wire

Diameter Inches	(mm)	Weld Position	Type of Current	Amps	Volts	Stick-Out		90% He - 7-1/2% Ar - 2-1/2% CO ₂	
						Inches	(mm)	cfh	(l/min)
0.035	(0.9)	Flat & Horizontal	DCEP	60-200	14-22	3/8-1/2	(10-13)	25	(11.8)
0.045	(1.2)	Flat & Horizontal	DCEP	75-225	15-23	3/8-1/2	(10-13)	25	(11.8)
1/16	(1.6)	Flat & Horizontal	DCEP	100-250	16-23	3/8-1/2	(10-13)	25	(11.8)

For Welding with Stainless Cut-Lengths (DCEN, Argon Shield, Tungsten Electrode)

Diameter Inches	(mm)	Metal Thickness		Number of Passes	Tungsten Size		Amps	Travel Speed	
		Inches	(mm)		Inches	(mm)		In/Min	(mm/s)
1/16	(1.6)	1/16	(1.6)	1	1/16	(1.6)	35-60	12	(5.1)
3/32	(2.4)	3/32	(2.4)	1	1/16	(1.6)	45-85	12	(5.1)
3/32	(2.4)	1/8	(3.2)	1	1/16	(1.6)	55-100	12	(5.1)
1/8	(3.2)	3/16	(4.8)	1	3/32	(2.4)	65-130	10	(4.2)

AVAILABLE DIAMETERS AND PACKAGES: (Spooled and Coiled)

Diameter Inches	(mm)	30-Lb. Spool	60-Lb. Coil
		0.035	(0.9)
0.045	(1.2)	S520812-I26	—
1/16	(1.6)	S520818-I26	—
3/32	(2.4)	—	S520829-062

36" CUT LENGTHS (Double Stamped with AWS Class) (0.045 - 1/8)

Diameter Inches	(mm)	10-Lb. Tube
0.045	(1.2)	S510812-I12
1/16	(1.6)	S510811-I12
3/32	(2.4)	S510837-I12
1/8	(3.2)	S510846-I12

CONFORMANCES AND APPROVALS:

- AWS A5.9, Class ER309 & ER309L
- ASME SFA 5.9
- CWB, ER309L
- ABS, ER309L 100% Ar, all position, DCEN (0.9 mm - 4.0 mm)
- ABS, ER309L 98% Ar, 2% O₂, all position, DCEP (0.8 mm - 1.6 mm)

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

Material Safety Data Sheets on any Hobart Brothers Company product may be obtained from Hobart Customer Service or at www.hobartbrothers.com.

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

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200-D, INDEX

