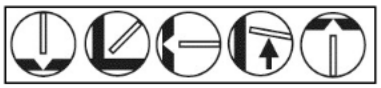
FabCO® B9

AWS A5.29: E91T1-B9M H4

WELDING POSITIONS:



FEATURES:	BENEFITS:
• Fast-freezing slag	• Provides good puddle control and bead contour when welding in all positions
• Nominal 9% Chromium/1% Molybdenum weld deposit composition	• Suitable for welding chrome-moly steels of a similar composition, such as ASTM A387 Grade 91
• High-strength deposit with excellent creep resistance	• Allows extended service at high temperatures
• Excellent arc stability and operating characteristics	• Assists producing welds of consistent appearance and quality; improves operator appeal
• Low spatter levels	• Reduces clean-up time, improves productivity
• Typical weld deposit X-factor weld <15	• Helps minimize the risk of temper embrittlement

APPLICATIONS:

- Single or multi-pass welding
- High service temperatures
- Some corrosive environments
- Nominal 9% Cr / 1% Mo Steels
- Boiler and pressure vessels
- ASTM A387 Grade 91
- Power generation industries
- Steam and chemical piping
- P91 Piping

SLAG SYSTEM: Fast-freezing, rutile type, flux-cored wire

SHIELDING GAS: 75% Argon (Ar)/25% Carbon Dioxide (CO_2), 35-50 cfh, (17-24 l/min)

TYPE OF CURRENT: Direct Current Electrode Positive (DCEP)

STANDARD DIAMETERS: 0.045" (1.2 mm)

RE-DRYING: Not recommended

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

TYPICAL WELD METAL CHEMISTRY* (Chem Pad):

Weld Metal Analysis (%)	75% Ar/25% CO_2	AWS Spec
Carbon (C)	0.10	0.08-0.13
Manganese (Mn)	0.59	1.20
Silicon (Si)	0.23	0.50
Phosphorus (P)	0.012	0.020
Sulphur (S)	0.010	0.015
Nickel (Ni)	0.58	0.80
Chromium (Cr)	8.93	8.0-10.5
Molybdenum (Mo)	0.89	0.85-1.20
Vanadium (V)	0.20	0.15-0.30
Niobium (Nb)	0.03	0.02-0.10
Nitrogen (N)	0.03	0.02-0.07
Aluminum (Al)	0.01	0.04
Copper (Cu)	0.04	0.25

Note: AWS specification single values are maximums. The sum of Mn and Ni shall not exceed 1.50%

TYPICAL X-FACTOR* (Bruscata Formula‡):

Weld Metal Analysis (%)	75% Ar/25% CO_2
Phosphorus (P)	0.012 (120 ppm)
Antimony (Sb)	0.003 (30 ppm)
Tin (Sn)	0.001 (10 ppm)
Arsenic (As)	0.0004 (4 ppm)
X-FACTOR‡	**14**

‡ Bruscato (X-Factor) Formula + (10P + 5Sb + 4Sn + As) / 100. Unit for elemental values is parts per million (ppm)

TYPICAL DIFFUSIBLE HYDROGEN*:

75% Ar/25% CO_2	AWS Spec
2.1 ml/100g	4.0 ml/100g Maximum

Note: Gas Chromatography Method

TYPICAL MECHANICAL PROPERTIES* [PWHT 2 Hrs. @ 1400°F (760°C)]:

Mechanical Tests	75% Ar/25% CO_2	AWS Spec
Tensile Strength	106,000 psi (731 MPa)	90,000-120,000 psi (620-830 MPa)
Yield Strength	87,000 psi (601 MPa)	78,000 psi (540 MPa) Minimum
Elongation % in 2" (50 mm)	19%	16% Minimum

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Typical Mechanical Properties* (High-Temperature Tensile):

Mechanical Tests	1025°F (550°C)			1115°F (600°C)		
	Base Metal	Transverse Tensile	Weld Metal	Base Metal	Transverse Tensile	Weld Metal
Tensile Strength	56,800 psi (392 MPa)	59,000 psi (407 MPa)	65,200 psi (450 MPa)	56,800 psi (392 MPa)	59,000 psi (407 MPa)	65,200 psi (450 MPa)
Yield Strength	40,000 psi (276 MPa)	N/A	45,100 psi (311 MPa)	40,000 psi (276 MPa)	N/A	45,100 psi (311 MPa)
Elongation % in 2" (50 mm)	24%	N/A	13%	24%	N/A	13%

Typical Charpy V-Notch Impact Values*: Not required

Typical Operating Parameters:

Diameter Inches	(mm)	Weld Position	Amps	Volts	Wire-Feed Speed in/min	(m/min)	Deposition Rate lbs/hr (kg/hr)	Contact Tip to Work Distance Inches	(mm)
0.045	(1.2)	All Position	170	24	250	(6.4)		3/4	(19)
0.045	(1.2)	All Position	260	26	460	(11.7)		3/4	(19)

- **Maintaining a proper welding procedure - including pre-heat and interpass temperatures - may be critical depending on the type and thickness of steel being welded.**
- **See Above:** This information was determined by welding using 75% Argon (Ar)/25% Carbon Dioxide (CO_2) shielding gas with a flow rate between 35-50 cfh (17-24 l/min).
- **All positions include:** Flat, Horizontal, Vertical Up, and Overhead.

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

Diameter Inches	(mm)	33-lb. (15kg) Vacuum-Packed Spool	400-lb. (181.4kg) X-Pak
0.045	(1.2)	S247912-053	S247912-064

Conformances and Approvals:

- **AWS A5.29,** E91T1-B9M H4
- **AWS A5.29M,** E621T1-B9M H4
- **ASME SFA 5.29,** E91T1-B9M H4

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.

Revision Date: 160302 (Replaces 150929)

HOBART FILLER METALS