

# METALLOY<sup>®</sup> 90



AWS A5.28: E90C-K3 H4

WELDING POSITIONS:



**FEATURES:**

- Excellent wetting characteristics
- High tensile strength electrode
- High deposition rates possible at low heat inputs
- Can be used with standard CV equipment
- All-position capability when using pulsed-spray transfer

**BENEFITS:**

- Assists in producing smooth weld beads with uniform fusion
- Suitable for quench and temper high-strength low-alloy steels
- Increases productivity, minimizes Heat Affected Zone (HAZ)
- Promotes versatility, reduces equipment cost
- Increases productivity, reduces clean-up time

**APPLICATIONS:**

- High-strength low-alloy steels
- Quench and temper steels
- Single or multi-pass welding
- Castings
- Heavy equipment

**WIRE TYPE:** Gas-shielded, metal powder, metal-cored wire

**SHIELDING GAS:** 75-95% Argon (Ar)/Balance Carbon Dioxide (CO<sub>2</sub>), 35-50 cfm (14-24 l/min)

**TYPE OF CURRENT:** Direct Current Electrode Positive (DCEP)

**STANDARD DIAMETERS:** 0.045" (1.2 mm), 0.052" (1.4 mm), 1/16" (1.6 mm)

**RE-DRYING:** Not recommended

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

**TYPICAL WELD METAL PROPERTIES\* (Chem Pad):**

Weld Metal Analysis	75% Ar/25% CO <sub>2</sub>	90% Ar/10% CO <sub>2</sub>	AWS Spec
Carbon (C)	0.06	0.06	0.15
Manganese (Mn)	1.19	1.41	0.75-2.25
Silicon (Si)	0.25	0.31	0.80
Sulphur (S)	0.012	0.012	0.025
Phosphorus (P)	0.009	0.006	0.025
Nickle (Ni)	1.84	1.83	0.50-2.50
Chromium (Cr)	0.08	0.08	0.15
Molybdenum (Mo)	0.34	0.34	0.25-0.65
Vanadium (V)	0.00	0.01	0.03
Copper (Cu)	0.06	0.06	0.35

**Note:** AWS specification single values are maximums.

**TYPICAL DIFFUSIBLE HYDROGEN:**

Hydrogen Equipment	75% Ar/25% CO <sub>2</sub>	AWS Spec
(GAS CHROMATOGRAPHY)	2.33 ml/100g	4.0 ml/100g Maximum

**TYPICAL MECHANICAL PROPERTIES\* (AS WELDED):**

Mechanical Tests	75% Ar/25% CO <sub>2</sub>	90% Ar/10% O <sub>2</sub>	AWS Spec
Tensile Strength	102,000 psi (703 MPa)	110,000 psi (758 MPa)	90,000 psi (620 MPa) Minimum
Yield Strength	94,000 psi (648 MPa)	104,000 psi (717 MPa)	78,000 psi (540 MPa) Minimum
Elongation % in 2" (50 mm)	23%	22%	18% Minimum

**TYPICAL CHARPY V-NOTCH IMPACT VALUES\* (AS WELDED):**

CVN Temperatures	75% Ar/25% CO <sub>2</sub>	90% Ar/10% O <sub>2</sub>	AWS Spec
Avg. at -60°F (-51°C)	71 ft•lbs (96 Joules)	23 ft•lbs (31 Joules)	20 ft•lbs (27 Joules) Minimum

\*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 AWS A5.28 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.

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Diameter		Weld Position	Amps	Volts	Wire Feed Speed		Deposition Rate		Contact Tip to Work Distance	
Inches	(mm)				in/min	(m/min)	lbs/hr	(kg/hr)	Inches	(mm)
0.045	(1.2)	Flat & Horizontal	200	27	245	(6.2)	5.9	(2.7)	5/8	(16)
0.045	(1.2)	Flat & Horizontal	300	29	455	(11.6)	12.0	(5.4)	3/4	(19)
0.045	(1.2)	Flat & Horizontal	350	30	580	(14.7)	15.2	(6.9)	3/4	(19)
0.052	(1.4)	Flat & Horizontal	250	27	295	(7.5)	9.0	(4.1)	3/4	(19)
0.052	(1.4)	Flat & Horizontal	350	29	516	(13.1)	17.5	(7.9)	3/4	(19)
0.052	(1.4)	Flat & Horizontal	400	31	636	(16.2)	21.5	(9.8)	3/4	(19)
1/16	(1.6)	Flat & Horizontal	300	29	255	(6.5)	11.2	(5.1)	1	(25)
1/16	(1.6)	Flat & Horizontal	400	30	390	(9.9)	17.6	(8.0)	1	(25)
1/16	(1.6)	Flat & Horizontal	450	31	465	(11.8)	20.9	(9.5)	1	(25)

- **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 with 75% Ar/25% CO<sub>2</sub> shielding gas with a flow rate between 35-50 cfh (14-24 l/min). For 90% Ar/10% CO<sub>2</sub> shielding gas, decrease listed voltages by 1-3 volts.

**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		33-lb. (15kg)	60-lb. (27kg)	600-lb. (273kg)	750-lb. (340kg)
Inches	(mm)	Spool	Coil	X-Pak	X-Pak
0.045	(1.2)	S281612-K29	—	—	S281612-K75
1/16	(1.6)	—	S281619-K02	S281619-K56	—

#### CONFORMANCES AND APPROVALS:

- AWS A5.28, E90C-K3 H4

#### 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, 550 NW LeJune Road, Miami, FL 33126; 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](http://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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