

# FabCOR<sup>®</sup> 86R



AWS A5.18: E70C-6M H4  
EN ISO 17632-A: T 46 2 M M21 3 H5

AWS  
WELDING POSITIONS

EN  
WELDING POSITIONS



## FEATURES:

- High deposition rates and efficiencies
- Virtually no slag coverage
- Outstanding high-production performance
- Smooth arc characteristics
- Low diffusible hydrogen weld deposit
- Low smoke and spatter levels
- Excellent for both CV and pulsed welding

## BENEFITS:

- Improves productivity compared to solid wire or flux-cored electrodes
- Reduces clean-up time, improves productivity
- Excellent for robotic welding
- Improved operator appeal, assists in maintaining consistent weld quality
- Minimizes risk of hydrogen-induced cracking
- Improves operator appeal and productivity
- Promotes versatility in procedure development

## APPLICATIONS:

- Single and multi-pass welding
- Storage vessels
- Rail cars
- Automatic and mechanized welding
- Steel structures
- Non-alloyed and fine grain steels
- Earthmoving equipment

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

**SHIELDING GAS:** 75-95% Argon (Ar)/Balance Carbon Dioxide (CO<sub>2</sub>), 95% Argon (Ar)/5% Oxygen (O<sub>2</sub>), 35-50 cfh (17-24 l/min)

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

**STANDARD DIAMETERS:** 0.035" (0.9 mm), 0.045" (1.2 mm), 0.052" (1.4 mm), 1/16" (1.6 mm), 5/64" (2.0 mm), 3/32" (2.4 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 <sub>2</sub>	95% Ar/5% CO <sub>2</sub>	95% Ar/5% O <sub>2</sub>	AWS Spec
Carbon (C)	0.03	0.03	0.04	0.12
Manganese (Mn)	1.44	1.68	1.48	1.75
Silicon (Si)	0.67	0.78	0.64	0.90
Sulphur (S)	0.015	0.009	0.010	0.03
Phosphorus (P)	0.008	0.002	0.008	0.03

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

## TYPICAL MECHANICAL PROPERTIES\* (As Welded):

Mechanical Tests	75% Ar/25% CO <sub>2</sub>	95% Ar/5% CO <sub>2</sub>	95% Ar/5% O <sub>2</sub>	AWS Spec
Tensile Strength	81,000 psi (558 MPa)	85,000 psi (586 MPa)	76,000 psi (524 MPa)	70,000 psi (480 MPa) Minimum
Yield Strength	69,000 psi (476 MPa)	75,000 psi (517 MPa)	61,000 psi (421 MPa)	58,000 psi (400 MPa) Minimum
Elongation % in 2" (50 mm)	30%	27%	29%	22% Minimum

## TYPICAL CHARPY V-NOTCH IMPACT VALUES\* (As Welded):

CVN Temperatures	75% Ar/25% CO <sub>2</sub>	95% Ar/5% CO <sub>2</sub>	95% Ar/5% O <sub>2</sub>	AWS Spec
Avg. at -20°F (-30°C)	74 ft•lbs (101 Joules)	50 ft•lbs (68 Joules)	119 ft•lbs (161 Joules)	20 ft•lbs (27 Joules) Minimum
Avg. at -40°F (-40°C)	40 ft•lbs (54 Joules)	32 ft•lbs (43 Joules)	42 ft•lbs (57 Joules)	Not Specified

## TYPICAL DIFFUSIBLE HYDROGEN\*:

Hydrogen Equipment	75% Ar/25% CO <sub>2</sub>	95% Ar/5% CO <sub>2</sub>	95% Ar/5% O <sub>2</sub>	AWS Spec
(GAS CHROMATOGRAPHY)	2.0 ml/100g	2.7 ml/100g	3.3 ml/100g	4.0 ml/100g Maximum

\*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 AWS A5.18 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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Diameter Inches (mm)	Weld Position	Amps	Volts	Wire-Feed Speed		Deposition Rate		Contact Tip to Work Distance	
				in/min	(m/min)	lbs/hr	(kg/hr)	Inches	(mm)
0.035 (0.9)	Flat & Horizontal	200	25	490	(12.4)	7.1	(3.2)	1/2	(13)
0.035 (0.9)	Flat & Horizontal	250	27	680	(17.2)	10.7	(4.9)	1/2	(13)
0.035 (0.9)	Flat & Horizontal	300	29	780	(19.8)	12.5	(5.7)	1/2	(13)
0.045 (1.2)	Flat & Horizontal	200	24	240	(6.1)	6.0	(2.7)	3/4	(19)
0.045 (1.2)	Flat & Horizontal	250	26	340	(8.6)	8.7	(3.9)	3/4	(19)
0.045 (1.2)	Flat & Horizontal	300	28	420	(10.7)	11.2	(5.1)	3/4	(19)
0.045 (1.2)	Flat & Horizontal	350	30	570	(14.5)	15.6	(7.1)	3/4	(19)
0.045 (1.2)	Flat & Horizontal	400	33	725	(18.4)	19.8	(9.0)	3/4	(19)
0.052 (1.4)	Flat & Horizontal	200	24	190	(4.8)	6.0	(2.7)	1	(25)
0.052 (1.4)	Flat & Horizontal	250	26	265	(6.7)	8.9	(4.0)	1	(25)
0.052 (1.4)	Flat & Horizontal	300	28	340	(8.6)	11.8	(5.4)	1	(25)
0.052 (1.4)	Flat & Horizontal	350	29	420	(10.7)	14.9	(6.8)	1	(25)
0.052 (1.4)	Flat & Horizontal	400	32	540	(13.7)	19.1	(8.7)	1	(25)
1/16 (1.6)	Flat & Horizontal	250	24	160	(4.1)	7.0	(3.2)	1	(25)
1/16 (1.6)	Flat & Horizontal	300	26	205	(5.2)	9.5	(4.3)	1	(25)
1/16 (1.6)	Flat & Horizontal	350	27	255	(6.5)	11.8	(5.4)	1	(25)
1/16 (1.6)	Flat & Horizontal	400	29	320	(8.1)	15.5	(7.0)	1	(25)
1/16 (1.6)	Flat & Horizontal	500	32	500	(12.7)	24.5	(11.1)	1	(25)
5/64 (2.0)	Flat & Horizontal	300	26	135	(3.4)	8.1	(3.7)	1	(25)
5/64 (2.0)	Flat & Horizontal	400	28	190	(4.9)	13.4	(6.1)	1	(25)
5/64 (2.0)	Flat & Horizontal	500	31	290	(7.4)	20.6	(9.3)	1 1/4	(32)
3/32 (2.4)	Flat & Horizontal	350	27	105	(2.7)	12.6	(5.7)	1	(25)
3/32 (2.4)	Flat & Horizontal	450	29	150	(3.9)	18.1	(8.2)	1	(25)
3/32 (2.4)	Flat & Horizontal	550	32	220	(5.6)	23.7	(10.8)	1 1/4	(32)

- **Maintaining a proper welding procedure - including pre-heat and interpass temperatures - may be critical depending on the type and thickness of steel being welded.**
- **For out of position welding, short circuit or pulsed spray transfer mode must be used.**
- **Pulse waveforms are designed with nominal operating points that may result in average voltage and current values that differ from the above table. Generally, pulse processes can be expected to produce lower heat inputs than a standard CV process.**
- **See Above:** This information was determined by welding using 90% Ar/10% CO<sub>2</sub> shielding gas with a flow rate between 35-50 cfh (17-24 l/min). For the higher CO<sub>2</sub> shielding gas mixtures within the recommended range, increase 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 Inches (mm)	33-lb. (15kg) Spool	44-lb. (20kg) Spool	50-lb. (22.7kg) Spool	50-lb. (22.7kg) Coil	60-lb. (27.2kg) Coil	500 lb. (227kg) X-Pak	600 lb. (272kg) Drum	950-lb. (430.9kg) Flat Reel	1000-lb. (453.6kg) X-Pak
Net Pallet Weight	2376-lb. (1078kg)	2376-lb. (1078kg)	1600-lb. (726kg)	1600-lb. (726kg)	1920-lb. (871kg)	2000-lb. (907kg)	1200-lb. (544kg)	950-lb. (431kg)	2000-lb. (907kg)
0.035 (0.9)	S249408-029	—	—	—	—	S249408-050	—	—	—
0.045 (1.2)	S249412-029	S249412-044	S249412-027	—	—	S249412-050	—	—	S249412-058
0.052 (1.4)	S249415-029	S249415-044	S249415-027	—	S249415-002	S249415-050	—	—	S249415-058
1/16 (1.6)	S249419-029	S249419-044	—	—	S249419-002	—	—	—	S249419-058
5/64 (2.0)	—	—	—	—	S249425-002	—	S249425-008	S249425-096	—
3/32 (2.4)	—	—	—	S249429-V14	—	—	S249429-008	—	—

## CONFORMANCES AND APPROVALS:

- **AWS A5.18**, E70C-6M H4
- **AWS A5.18M**, E48C-6M H4
- **ASME SFA 5.18** E70C-6M H4
- **ABS**, 80% Ar/20% CO<sub>2</sub>, 3YSA (0.035" - 1/16" diameter electrodes)
- **Bureau Veritas**, 80% Ar/20% CO<sub>2</sub>, S3YMH5 (0.035" - 1/16" diameter electrodes)
- **CE Marked** per CPR 305/2011
- **CWB**, 75-95% Ar/Balance CO<sub>2</sub>, E491C-6MJ-H4 (0.9 mm - 1.6 mm diameter electrodes)
- **CWB**, 95% Ar/5% O<sub>2</sub>, E491C-6MJ-H4 (1.2 mm - 1.6 mm diameter electrodes)
- **CWB**, E491T15-(M12A4, M20A4, M21A4, M22A4, GA4)-CS1-H4, (E491C-6MJ-H4) (1.2 - 1.6 diameter electrodes)
- **DNV-GL**, 80% Ar/20% CO<sub>2</sub>, III Y40MS(H5)
- **EN ISO 17632-A**: T 46 2 M M21 3 H5
- **CE Marked** per CPR 305/2011 (1.2 mm - 1.6 mm diameter electrodes)
- **Lloyd's Register**, 80% Ar/20% CO<sub>2</sub>, 3Y40S H5
- **AWS D1.8/D1.8M**, 75% Ar/25% CO<sub>2</sub>, [0.045" (1.2 mm), 1/16" (1.6 mm) diameter electrode]
- **AWS D1.8/D1.8M**, 85% Ar/15% CO<sub>2</sub>, [0.052" (1.4 mm), 1/16" (1.6 mm) diameter electrode]
- **AS/NZS ISO 17632-B (2006)** T49 3 T15-0MA-UH5 )

**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).

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