

## ER70S-6

Copper-Coated Solid MIG Wire (GMAW) | AWS A5.18 ER70S-6

### PRODUCT DESCRIPTION

Sheffield Welding ER70S-6 is a copper-coated, non-alloy solid MIG welding wire designed for single-pass, multi-pass, and high-speed welding of carbon steel and 490–500 MPa low-alloy steels. Compatible with both 100% CO<sub>2</sub> and argon-rich (Ar/CO<sub>2</sub>) shielding gases, this wire delivers excellent welding process performance with a stable arc, minimal spatter, clean bead profile, and low porosity sensitivity. Suitable for all-position welding across a wide range of welding currents.

### CLASSIFICATIONS & APPROVALS

Specification	Classification
AWS A5.18	ER70S-6
ASME SFA-5.18	ER70S-6
GB/T 8110	G49A 3 C1 S6 / G49A 4 M21 S6
ISO 14341-B	G49 A 3 C1 S6 / G49 4 M21 S6

### TYPICAL APPLICATIONS

- General structural steel fabrication and erection
- Sheet metal and thin-gauge steel welding
- Automotive and transportation manufacturing
- Shipbuilding and marine construction
- Pressure vessel and storage tank fabrication
- Pipe and pipeline fabrication
- Heavy equipment manufacturing and repair
- General manufacturing, maintenance, and repair welding

### SHIELDING GAS & POLARITY

Parameter	Specification
Shielding Gas	100% CO <sub>2</sub> or 75–80% Ar / 20–25% CO <sub>2</sub> mixed gas
Gas Flow Rate	15–25 L/min (32–53 CFH)
Polarity	DCEP (DC Electrode Positive / DC+)
Welding Positions	All positions (Flat, Horizontal, Vertical-Up, Overhead)
Contact Tip to Work Distance	10–20 mm (3/8" – 3/4")
Arc Length	4–5 mm recommended for argon-rich gas

### WELD DEPOSIT CHEMISTRY — % by Weight

	C	Mn	Si	S	P	Ni	Cr	Mo	Cu	V
AWS A5.18	0.06–0.15	1.40–1.85	0.80–1.15	≤0.035	≤0.025	≤0.15	≤0.15	≤0.15	≤0.50	≤0.03
Typical	0.08	1.51	0.85	0.011	0.017	0.01	0.01	0.008	0.21	0.007

Values are representative test results from manufacturer qualification testing. Actual chemistry per lot is documented on the Certificate of Conformance.

### MECHANICAL PROPERTIES — As Welded

Test	Gas	Tensile Strength	Yield Strength	Elongation	Impact @ -30°C	Impact @ -40°C
Req. per AWS A5.18	—	≥490 MPa	≥400 MPa	≥22%	≥27 J	≥27 J
Actual	100% CO <sub>2</sub>	515 MPa	432 MPa	30%	92 J	—
Actual	Ar/CO <sub>2</sub>	546 MPa	457 MPa	29%	—	85 J

Typical values from manufacturer qualification testing per AWS A5.18. Results shown for both 100% CO<sub>2</sub> and argon-rich (75–80% Ar / 20–25% CO<sub>2</sub>) shielding gases.

## RECOMMENDED WELDING PARAMETERS (DCEP)

Wire Diameter	0.030 in (0.8 mm)	0.035 in (1.0 mm)	0.045 in (1.14 mm)	1/16 in (1.6 mm)
Amperage (A)	50–180	70–230	80–350	120–500
Voltage (V)	16–22	17–24	18–30	20–36
Gas Flow (L/min)	10–18	12–20	15–25	18–25

Parameters are guidelines. Optimize based on joint design, fit-up, base metal thickness, transfer mode, and operator technique.

## AVAILABLE PACKAGING

Sheffield Item ID	Diameter	Spool Size	Net Weight	AWS Classification
SWP70S-6.030X33	0.030 in (0.8 mm)	33 lb Spool	33 lbs (14.97 kg)	ER70S-6
SWP70S-6.035X33	0.035 in (1.0 mm)	33 lb Spool	33 lbs (14.97 kg)	ER70S-6
SWP70S-6.045X33	0.045 in (1.14 mm)	33 lb Spool	33 lbs (14.97 kg)	ER70S-6
SWP70S-61-16X33	1/16 in (1.6 mm)	33 lb Spool	33 lbs (14.97 kg)	ER70S-6

## STORAGE & HANDLING

- Store in original, unopened packaging in a clean, dry environment.
- Recommended storage: 50–100°F (10–38°C), relative humidity below 60%.
- Once opened, use promptly. Re-seal partially used spools to minimize moisture exposure and surface oxidation.
- Do not use wire that has been contaminated with oil, grease, dirt, or moisture.
- Remove rust, oil, moisture, and other impurities from the weldment before welding.
- When welding in windy conditions, use a windproof barrier to prevent porosity.

## HEALTH & SAFETY

Refer to the Sheffield Welding Safety Data Sheet (SDS) for this product before use. Follow all applicable OSHA regulations and ANSI Z49.1 Safety in Welding, Cutting, and Allied Processes. Use adequate ventilation or approved respiratory protection. Wear appropriate PPE including welding helmet, gloves, and protective clothing.

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