



TECHNICAL SPECIFICATION SHEET

ER70S-3 CARBON STEEL WELDING WIRE

SPECIFICATION COMPLIANCE: AISI/AWS A5.18 & ASME SFA 5.18 ER 70S-3

DESCRIPTION: ER70S-3 is a premium mild steel solid wire, with silicon and manganese levels suitable for general purpose welding over clean to light levels of rust and mill scale. ER70S-3 has the flexibility to provide trouble-free performance in heavy-duty, high-speed spray or pulse applications to lighter duty, lower speed short-arc applications. ER70S-3 is designed for use with various gas mixtures such as 100% CO₂, 75/25 Ar/CO₂ or 98/2 Ar/O₂. Even in the most difficult applications ER70S-3 produces a smooth stable arc with low spatter, producing a weld bead that ties in evenly with the sides and has a smooth finished appearance.

APPLICATIONS: Frame fabrication, automotive structures, farm implements, construction equipment, pressure vessels, pipe fabrication, railcar construction and repair, general fabrication. Widely used in high-speed robotic and automatic welding applications and semi-automatic applications.

NOMINAL COMPOSITION:

Carbon	.06-.15 %	Copper	.50 % max.	Manganese	0.90-1.40 %
Silicon	0.45-0.75%	Sulfur	.035 % max.	Phosphorus	0.025 % max.
Nickel	0.15 % max.	Chromium	0.15 % max.	Vanadium	0.03% max.
Molybdenum	0.15 % max.	Iron	Balance	Others Total	.50 % max.

PHYSICAL PROPERTIES:

Density lbs/cu in .283

TYPICAL MECHANICAL PROPERTIES AS WELDED (GMAW)

Shielding Gas	CO ₂	75% Ar/25% CO ₂	98% Ar/2% O ₂
Tensile Strength (psi)	74-77,000	75-78,000	80-83,000
Yield Strength (psi)	60,400	62-65,000	64-66,200
Elongation % in 2"	28%	25.6%	22.2%
Reduction of area	35-70%	35-70%	35-70%
Charpy V-notch ft. lbs.	78-81	63-65	58-61

* RECOMMENDED WELDING PARAMETERS:

GMAW(MIG) Parameters (DC Reverse Polarity) Electrode Positive Spray transfer:

<u>Wire Dia.</u>	<u>Amps</u>	<u>Volts</u>	<u>Argon/ 1-5% O₂</u>	<u>Wire Feed ipm</u>
.023	85-170	23-27	25	360-620
.030	135-230	24-28	25	390-670
.035	165-300	24-28	30	360-520
.045	200-375	24-30	30-35	210-390
1/16	275-500	24-32	40	150-360
3/32	300-600	24-33	50	75-125



*** RECOMMENDED WELDING PARAMETERS (continued):**

GTAW (Tig) Parameters (DCSP) 2 % Thoriated Tungsten Electrode negative

<u>Material</u>	<u>Tungsten dia</u>	<u>Filler Wire Size</u>	<u>Amps</u>	<u>Gas Cup</u>	<u>Argon(cfh)</u>
1/16"	1/16"	1/16"	100-140	3/8	20
3/32"	1/16"	1/16"	100-160	3/8	20
1/8"	3/32"	1/16"	125-200	7/16	20
3/16"	3/32"	3/32"	150-250	7/16	25
1/4"	1/8"	1/8"	150-250	1/2	25
3/8"	1/8"	1/8"	150-275	1/2	25
1/2"	1/8"	1/8"	150-300	1/2	25

*** All parameters are suggested as basic guidelines and will vary depending on joint design number of passes, and other factors.**

SAFETY INFORMATION:

WARNING: PROTECT yourself and others. Read and understand this information.

FUMES AND GASES can be hazardous to your health.

HEAT RAYS (INFRARED RADIATION) from flame or hot metal can injure eyes.

- Before use, read and understand the manufacturer's instructions, Material Safety Data Sheet (MSDS) and your employer's safety practices.
- Keep your head out of fumes.
- Use enough ventilation, exhaust at the flame, or both, to keep fumes and gases from your breathing zone and the general area.
- Wear correct eye, ear, and body protection.
- See American National Standard Z49.1, *Safety in Welding, Cutting, and Allied Processes*, published by the American Welding Society, 550 N.W. LeJeune Road, Miami, Florida 33126; OSHA Safety and Health Standards, available from the U.S. Government Office, Washington, DC 20402

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