

Submerged Arc Welding Flux



GJ-EM13K

Copper-Coated Solid Wire

(Medium-manganese, high-silicon killed steel)

- ▶ AWS A5.17 EM13K
- ▶ EN ISO 14171-A-S3Si

Product description

GJ-EM13K is a medium-manganese, high-silicon solid wire strictly complying with AWS A5.17 EM13K. The elevated silicon content provides strong deoxidation and excellent fluidity, producing smooth, convex beads with superior gap-bridging capability in heavy structural welding.

Key Advantages

- ▶ Superior Deoxidation: High silicon content ensures excellent deoxidation, producing pore-free welds even on moderately contaminated surfaces.
- ▶ Excellent Bead Appearance: Optimized Mn/Si ratio delivers smooth, well-shaped weld beads with minimal spatter.
- ▶ High Productivity: Suitable for high-current, high-speed welding with stable arc and easy slag removal.

Application Guide

- ▶ With GJ-101G (Basic Flux): For heavy structural steel, pressure vessels, and bridge construction requiring high toughness.
- ▶ With GJ-301 (Neutral Flux): For standard structural steel and H-beam fabrication with excellent bead appearance.
- ▶ With GJ-501H (Active Flux): For high-speed PEB lines and shipbuilding requiring high deposition rates.

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● Main constituents

Elements	C (Carbon)	Mn (Manganese)	Si (Silicon)	S (Sulfur)	P (Phosphorus)	Cu (Copper)
AWS Requirement	0.06 - 0.16	0.90 - 1.40	0.35 - 0.75	≤0.030	≤0.030	≤0.35
Typical Actual Value	0.08	1.20	0.52	0.010	0.015	0.10

● Typical Mechanical Properties of Deposited Metal

The mechanical properties of EM13K must be evaluated in combination with a specific flux. The following data is based on testing combined with an AWS F7A2 basic agglomerated flux (e.g., SJ101).

Test Item	Yield Strength	Tensile Strength	Elongation	Impact Value@ -20°C
AWS F7A2 Requirement	≥400 MPa	480 - 660 MPa	≥22%	≥27 J
Typical Actual Result	430 MPa	540 MPa	27%	85 J

● Reference Welding Parameters

Wire Diameter	1.6 mm (1/16")	2.5 mm(3/32")	3.2 mm (1/8")	4.0 mm (5/32")	5.0 mm (3/16")
Amperage	250 - 420	350 - 500	400 - 550	470 - 600	550 - 650
Voltage	26 - 30	27 - 30	28 - 31	28 - 32	30 - 34