TGY 9018-B3

High Strength Low Alloy Basic Coated Electrode

Classification

AWS A/SFA 5.5 : E9018-B3
EN ISO 3580-A : E CrMo2 B 4 2 H5
IS 1395 : E63 B B3 2 6 Fe

Type of Current

AC, DCEP

Description and Applications

- The electrode is a low-alloy steel rod coated to produce a weld metal with a composition of approximately 2.25% Chromium and 1% Molybdenum.
- It is a low-hydrogen, basic-coated electrode, which results in a high-quality, crack-resistant weld.
- The weld metal provides high tensile strength, around 90,000 psi (620 MPa), making it suitable for applications under heavy loads ad stress.
- It offers excellent resistance to creep and heat, maintaining strength at elevated temperatures, up to approximately 600°C.
- The basic coating ensures excellent weldability with a stable arc, low spatter, and reduced hydrogen in the weld, preventing hydrogen cracking.
- High-Temperature Piping: Ideal for welding steam pipes, superheater piping, and turbine components in power plants and industrial facilities.
- Used in the fabrication of steam boilers and pressure vessels that operate under high temperatures and pressures.
- Recommended for welding materials such as ASTM A335 Gr. P22 and ASTM A387 Gr. 22, which are 2.25Cr-1Mo steels used in high-temperature applications.

Chemical composition for Weld Metal, Weight%

Element	C	Mn	Si	Cr	Mo	S
Typical	0.06	0.8	0.44	2.4	1.1	0.02
Requirement (as per AWS A 5.5)	0.05 - 0.12	0.90 max	0.80 max	2-2.5	0.90-1.20	0.03 max
Requirement (as per EN ISO 3580-A)	Same as above	0.40 - 1.30	Same as above	2-2.6	0.90-1.30	0.025 max
Requirement (as per IS 1395)	0.10 max	Same as AWS A 5.5	Same as above	Same as AWS A 5.5	Same as AWS A 5.5	Same as AWS A 5.5

Mechanical properties of Weld Metal

Property	Condition	UTS (Mpa)	YS (Mpa)	%El (L=5d)	CVN Impact Strength
Typical	PWHT: 690°C for 1 hour	660	580	22	120 Joule at 20°C
Requirement (as per AWS A 5.5)		620 min	530 min	17 min	Not Specified

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Welding Position

Typical	Flat	Flat	Horizontal	Horizontal	Overhead	Overhead	Vertical Up
Requirement (as per AWS A 5.5)	Flat	Flat	Horizontal	Horizontal	Overhead	Overhead	Vertical
Requirement (as per ISO 3580-A)	1F (PA)	1G (PA)	2F (PB)	2G (PC)	4F (PD)	4G (PE)	3G (PF)
Requirement (as per IS 1395)	Flat	Flat	Horizontal	Horizontal	Overhead	Overhead	Vertical

Type of Current

Typical	AC (70 OCV)	DCEP
Requirement (as per AWS A 5.5)	AC	DCEP
Requirement (as per ISO 3580-A)	AC	DCEP
Requirement (as per IS 1395)	AC (70 OCV)	DCEP

Recommended Welding Current Range

Size (mm) Dia x Length	Current Range (Amp)
2.5x350	60-90
3.2x450	100-140
4.0x450	140-180
5.0x450	190-250

Packing

▶Vacuum packing:

- 18 Kg box consisting of 10 packets of 1.8 Kg each (for electrode size 2.5x350 mm)
- 20 Kg box consisting of 10 packets of 2 Kg each (for all other electrode sizes)

Identification

Name printed

Notes on Usage

- These electrodes are sensitive to moisture and must be stored in an electrode oven at a temperature 120-150°C to prevent defects like porosity.
- If exposed to the atmosphere for too long, bake electrodes in an electrode oven at 315°C for at least one hour.