

9016-B9

CATEGORY SMAW Stick Electrodes

TYPE Basic, Cr and Mo-alloyed electrode for heat resistant steels T/P91 and T/P92

APPLICATIONS Headers, main steam piping and turbine casings, in fossil fuelled power generating plants. Oil refineries and coal liquefaction and gasification plants. Preheat and Interpas temperature 200°C - 300°C.

PROPERTIES 9016-B9 is designed to weld equivalent 'type T91' T92 CrMo steels modified with small additions of Tungsten and Vanadium to give improved long term creep properties. These consumables are specifically intended for high integrity structural service at elevated temperature so the minor alloy additions responsible for its creep strength are kept above the minimum considered necessary to ensure satisfactory performance. In this case, weldments will be weakest in the softened (intercritical) HAZ region of parent material, as indicated by so-called 'type IV' failure in transverse weld creep tests.

CLASSIFICATION AWS A 5.5: E 9018-B9
EN ISO 3580-A: E CrMo91 B42 H5
3580-B: E 62 15-9C1MV1 H5

SUITABLE FOR X11CrMo9-1, X12CrMo9.1, X20CrMoV11-1, X20CrMoV12-1, 1.7386, 1.4922, 1.4935 ASTM: A 199Gr.T9, A335Gr.P9, A351, A213/213M Gr.T/P91Gr.T/P92

APPROVALS CE approved

WELDING POSITIONS: 

ANALYSES %

| C | Mn | Si | Cr | Ni | Mo | V | W |
|------|------|------|-----|------|------|-----|-----|
| 0.06 | 0.60 | 0.35 | 9.0 | 0.90 | 0.90 | 0.2 | 0.2 |

PWHT: 750°C/2hr, oven cooling till 300°C and then cooled on air.

MECHANICAL PROPERTIES

| Heat Treatment | R _{p0.2} (N/mm ²) | R _m (N/mm ²) | A ₅ (%) | Impact Energy (J) ISO-V | | | Hardness HRc / HV |
|----------------|--|-------------------------------------|--------------------|-------------------------|-------|-------|-------------------|
| | | | | +20°C | -40°C | -60°C | |
| AW | >520 | 650-850 | >17 | >50 J | | | |

AW = as welded

WELDING PARAMETERS / PACKING

| Welding Parameters | | | Packing | | |
|--------------------|-------------|-------------|----------|------------|-----------|
| D (mm) | Length (mm) | Current (A) | kg / can | kg / 6pack | kg / 1000 |
| 2.5 | 300 | 65-85 | 2.5 | 15 | 19.8 |
| 3.2 | 350 | 100-130 | 2.6 | 15.6 | 36.4 |
| 4.0 | 450 | 140-180 | 3.1 | 18.6 | 66.7 |
| 5.0 | 450 | 180-230 | 3.1 | 18.6 | 101.9 |

REDRYING TEMPERATURE 400C / 1hr