

Classifications

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|-----------------------|-----------------------------|
| EN ISO 21952-A | AWS A5.28 / SFA-5.28 |
| W Z CrMo9Si | ER80S-B8 |

Characteristics and typical fields of application

BÖHLER CM 9-IG is solid filler rod designed for manual gas tungsten arc welding. The 9Cr-1Mo type weld metal exhibits a fully tempered martensitic microstructure with favorable mechanical properties in post weld heat treated condition. The range of application covers joint welding of similar alloyed creep resisting steels tube, pipe, plate and forgings used in the thermal power and petrochemical industry. BÖHLER CM 9-IG is approved for long-term service up to 600 °C.

Base materials

Similar alloyed creep resistant steels and castings like

1.7386 X11CrMo9-1, 1.7388 X7CrMo9-1

ASTM A 182 Gr. F9; A 213 Gr. T9; A 217 Gr. C12; A 234 Gr. WP9; A 335 Gr. P9; A 336 Gr. F9; A 369 Gr. FB9; A 387 Gr. 9 u. 9CR; A 426 Gr. CP9; A 989 Gr. K90941

Typical analysis


| | C | Si | Mn | Cr | Mo |
|-------|------|-----|-----|-----|-----|
| wt.-% | 0.07 | 0.4 | 0.5 | 9.0 | 1.0 |

Mechanical properties of all-weld metal - typical values (min. values)

| Condition | Yield strength $R_{p0.2}$ | Tensile strength R_m | Elongation A ($L_0=5d_0$) | Impact energy ISO-V KV J |
|-----------|---------------------------|------------------------|-----------------------------|--------------------------|
| | MPa | MPa | % | 20 °C |
| s | 530 (≥ 470) | 670 (≥ 590) | 24 (≥ 18) | 220 (≥ 34) |

s heat treated 760 °C / 2 h / furnace down to 300 °C / air – shielding gas Argon

Operating data

| | | | |
|--|-------------------------------------|-------------------------|---------------------|
|  | Polarity | DC - | Dimension mm |
| | Shielding gas (EN ISO 14175) | I1 | 1.6 × 1000 |
| | Rod marking | + WZ CrMo9Si / ER80S-B8 | 2.0 × 1000 |
| | | | 2.4 × 1000 |
| | | | 3.2 × 1000 |

Preheat and interpassttemperature should be controlled between 150 and 350 °C. In order to optimize impact energy a welding technique that ensures small layer thickness and low heat input is recommended. After welding the weld seam must be cooled below 100 °C in order to complete the martensitic transformation prior to PWHT commonly carried out between 730 and 760 °C for at least 2 h. Cast components might require lower PWHT holding temperature. The un-tempered martensitic microstructure is very sensitive to cold and stress corrosion cracking. Residual welding and external stresses must be reduced to a minimum. Any exposure to moisture must be avoided in the as welded condition. Keeping a temperature above the dew point or storage in humidity controlled atmosphere is highly recommended bridging the gap between welding and final post weld heat treatment.

Approvals

TÜV (02182), CE