

Classifications

EN ISO 3580-A	EN ISO 3580-B	AWS A5.5 / SFA-5.5	AWS A5.5M
E CrMo91 B 4 2 H5	E6215-9C1MV H5	E9015-B91 H4	E6215-B91 H4

Characteristics and typical fields of application

BÖHLER FOX C 9 MV is a basic coated stick electrode. The 9Cr-1Mo-VNb type weld metal is characterized by a martensitic structure and is suitable for applications in the tempered condition. The range of applications includes joint welding of creep-resistant steels and cast steel of the same type in turbine and power plant construction as well as in the chemical industry. BÖHLER FOX C 9 MV is approved for long-term temperatures of up to 650 °C. The very low content of trace elements in the weld metal guarantees a Bruscato factor < 15. Due to the limited Mn+Ni content of < 1.2% by weight, the A_{c1} temperature is above 780 °C. The basic coating guarantees a low content of diffusible hydrogen in the weld metal.

Base materials

Similar alloyed creep resistant steels and castings like
 1.4903 X10CrMoVNb9-1, 1.4955 GX12CrMoVNbN9-1
 ASTM Grade 91, T91, P91, F91, FP91, WP91, C12A
 10Cr9Mo1VNbN
 STPA28, STBA28

Typical analysis

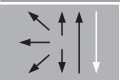
	C	Si	Mn	Cr	Ni	Mo	V	Nb	N
wt.-%	0.1	0.2	0.6	8.5	0.5	0.9	0.2	0.05	0.04

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 20 °C	MPa 550 °C	MPa 20 °C	MPa 550 °C	% 20 °C	% 550 °C	20 °C	0 °C
T	580 (≥ 530)	410 (≥ 280)	710 (≥ 620)	460 (≥ 330)	19 (≥ 17)	17 (≥ 15)	70 (≥ 47)	40 (≥ 27)

T: tempered (760 °C / 2 h)

Operating data

	Polarity	DC +	Dimension mm	Current A
	Electrode identification	FOX C 9 MV 9015-B9 E CrMo91 B	2.5 × 250	60 – 80
	Redrying	300 - 350 °C / 2 h	3.2 × 350	90 – 120
			4.0 × 350	110 – 150
			5.0 × 450	150 – 210

Preheat and interpasstemperature should be controlled between 200 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 750 and 770 °C for at least 2 h. PWHT of cast components might require lower holding temperature of around 730 °C but extended holding time of ≥ 8 h. 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. For heavy wall components conducting a dehydrogenating heat treatment between 260 and 400 °C before cooling down to room temperature can be recommended.

Approvals

TÜV (06762), CE