BÖHLER C 9 MV-MC

Metal cored wire, high-alloyed, creep resistant

Classifications

EN ISO 17634-B	AWS A5.28	AWS A5.28M
T69T15-1G-9C1MV	E90C-B9	E62C-B9

Characteristics and typical fields of application

Metal cored wire for high temperature, creep resistant martensitic 9 – 12 % chromium steels in turbine and boiler fabrication and in the chemical industry. Especially designed for the ASTM steels T91 / P91. For optimised toughness values a welding technology should be applied which produces thin welding layers (approx. 2 mm), also a decisive influence on toughness values is given by the used shielding gas.

Base materials

Similar alloyed creep resistant steels

1.4903 X10CrMoVNb9-1, GX12CrMoVNbN9-1

ASTM A 335 Gr. P91, A 336 Gr. F91, A 369 Gr. FP91, A 387 Gr. 91, A 213 Gr. T91

Typical analysis of all weld metal (wt.-%)

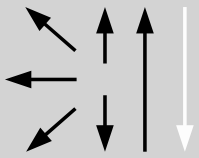
	C	Si	Mn	Cr	Ni	Mo	V	Nb	N
wt.-%	0.10	0.3	0.6	9.0	0.7	1.0	0.2	0.05	0.04

Mechanical properties of all-weld metal

Condition	Yield strength $R_{p0,2}$	Tensile strength R_m	Elongation A (L_0=5d_0)	Impact work ISO-V KV J
	MPa	MPa	%	+20 °C
a	**650** (≥ 565)	**760** (690 – 890)	**18** (≥ 14)	**55** (≥ 32)

a annealed 760 °C/3 h / furnace down to 300 °C / air – shielding gas Argon + 2.5 % CO_2

Operating data



Polarity:	Shielding gas:	ø (mm)	Amps A	Voltage V
DC (+)	Argon + 2.5 % CO_2 or Argon + 15 – 20 % CO_2	1.2	150 – 290	18 – 30

Welding with conventional or pulsed power sources (preferably slightly trailing torch position, angel appr. 80°). Recommended stick out 18 – 20 mm and length of arc 3 – 5 mm.

Preheating and interpass temperature 200 – 300 °C. After welding, the weld joint should cool down below 80 °C to finish the martensite transformation. In case of greater wall thickness or complex components the possibility of residual stresses must be considered.

The following post weld heat treatment is recommended: annealing 760 °C / min. 2 h, max. 10 hrs, heating and cooling rates below 550 °C max. 150 °C / h, > above 550 °C max. 80 °C / h.

Positional weld ability of metal cored wires is similar to solid wires.