

## Classifications

EN ISO 3580-A	EN ISO 3580-B	AWS A5.5 / SFA-5.5	AWS A5.5M
E ZCrMoWVNb 9 1 1 B 4 2 H5	E6215-G H5	E9015-B92 H4 (mod.)	E6215-B92 H4 (mod.)

## Characteristics and typical fields of application

BÖHLER FOX C 9 MW is a core wire alloyed covered electrode with basic coating for shielded metal arc welding. The 9Cr-1Mo-1W-VNb 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 strength enhanced ferritic steels like ASTM grade 911 (E 911) pipe, Tubes, forgings and castings, used in the thermal power industry. BÖHLER FOX C 9 MW is approved for long-term service at temperatures up to 650 °C.

The chemical composition is optimized in order to provide a high creep resistant and ductile weld metal after post weld heat treatment along with low level of trace elements and guarantees low level of diffusible hydrogen in the weld metal.

## Base materials

Similar alloyed creep resistant steels and castings like  
 1.4905 X11CrMoWVNb9-1-1, 1.4906 G X12CrMoWVNbN 10-1-1  
 E 911, C 911, C0ST E  
 ASTM grades F911, T911, WP911, P911

## Typical analysis

	C	Si	Mn	Cr	Ni	Mo	W	V	Nb	N
wt.-%	0.10	0.2	0.6	8.5	0.6	1.0	1.0	0.2	0.05	0.04

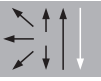
## Mechanical properties of all-weld metal - typical values (min. values)

Condition	Yield strength $R_{p0.2}$	Tensile strength $R_m$	Elongation A ( $L_0=5d_0$ )	Impact energy ISO-V KV J
	MPa	MPa	%	20°C
T1	630 (≥ 530)	770 (≥ 620)	18 (≥ 15)	65 (≥ 41)
T2	690 (≥ 530)	820 (≥ 620)	16 (≥ 15)	40 (≥ 27)

T1: tempered (760 °C / 2 h)

T2: tempered (730 °C / 8 h)

## Operating data

	<b>Polarity</b>	DC +	<b>Dimension mm</b>	<b>Current A</b>
	<b>Electrode identification</b>	FOX C 9 MW E Z CrMoWVNb	3.2 × 350	90 – 120
		9 1 1 B	4.0 × 350	130 – 180
		5.0 × 450	160 – 210	

Preheat and interpasstempérature should be controlled between 200 and 300 °C. and 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 740 and 770 °C for at least 2 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. PWHT of cast components might require lower holding temperature of around 730 °C but extended holding time of ≥ 8 h.

## Approvals

TÜV (09176.), CE