Thermanit MTS 5 CoT

TIG rod / wire, creep resistant

Classifications

EN ISO 21952-A	AWS A5.28 / SFA-5.28
W Z CrCoW 11 2 2	ER110S-G

Characteristics and typical fields of application

TIG rod and wire of W Z CrCoW 11 2 2 / ER110S-G type for manual and mechanized gas tungsten arc welding. The 12Cr-1.5W-1.5Co-0.3Mo-V-NbB 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 VM12-SHC tube and pipe used in the thermal power industry. Thanks to the controlled Mn+Ni content othe A_{c1} Temperature is certainly above 790ºC. Approved for high temperature service under creep conditions up to 650 ºC. The chemical composition of 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.

Base materials

Similar alloyed creep resistant steel and castings like
VM12-SHC – 1.4915 – X12CrCoWMoVNb12-2-2 (VdTÜV WB 560)

Typical analysis

	C	Si	Mn	Cr	Ni	Mo	W	V	Co	Nb	N	B
wt.-%	0.16	0.4	0.4	11.4	0.4	0.3	1.5	0.2	1.55	0.055	0.04	0.003

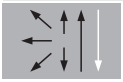
Structure: Martensite, suitable for quenching and tempering

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	700 (≥ 620)	840 (≥ 760)	18 (≥ 15)	60 (≥ 40)

s heat treated, tempered 770 °C / 2 h - shielding gas I1

Operating data



Polarity	DC -
Shielding gas (EN ISO 14175)	I1
Rod marking	+ VM12-SHC (X12CrCoW-VNb12-2-2)

Dimension mm
0.8
1.0
1.6 × 1000
2.0 × 1000
2.4 × 1000

Preheat and interpass temperature should be controlled between 200 and 280 ºC. In order to optimize impact energy, a multi-layer welding technique that ensures small layer thickness and low heat input is recommended. After welding the weld seam must be cooled below 100 ºC in order to complete the martensitic transformation prior to PWHT which is typically carried out between 750 and 770 ºC for at least 0,5 h for thin section tube welds and at least 2 h for thicker sections.. 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 (10578), CE