

Classifications

EN ISO 17634-A	EN ISO 17634-B	AWS A5.36	AWS A5.36M
T ZCrMo9VNB P M 1	T 69 T1-1M-9C1MV	E91T1-M21PY-B91	E621T1-M21PY-B91

Characteristics and typical fields of application

Thermanit MTS 3 PW is a slagleading rutile-basic flux cored wire for welding of high temperature, tempered 9 – 12 % chrome steels, particularly for T91/P91-steels in turbine-, boiler- and pipeline-constructions as well as cast technics. This flux cored wire was designed for welding with plus polarity and mixed gas M21 acc. to EN ISO 14175 and is suitable for out of position welding as well.

Base materials

Similar alloyed creep resistant steels
1.4903 – X10CrMoVNb9-1, G-X12CrMoVNbN9-1
ASTM A199 Gr. T91, A335 Gr. P91, A213/213M Gr. T91

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

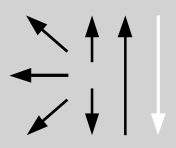
	C	Si	Mn	Cr	Ni	Mo	V	Nb	N
wt-%	0.10	0.2	0.7	9.0	0.2	1.0	0.2	0.05	0.04

Mechanical properties of all-weld metal

Heat-treatment	Shielding gas	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	M21	580 (≥ 565)	720 (690 – 830)	17 (≥ 14)	35 (≥ 32)

a = annealed, 760 °C (1400 °F) / 3 h / furnace, down to 300 °C (572 °F) / Air

Operating data

	Polarity: DC (+)	Shielding gas: (EN ISO 14175) M21 und M12 Consumption: ca. 15 – 18 l/min.	Ø (mm) 1.2	Spool B300	Amps A 160 – 300	Voltage V 25 – 35
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Welding with conventional or pulsed power sources (preferably slightly trailing torch position, angle appr. 80°). Recommended stick out 18 - 20 mm and length of arc 3 – 5 mm. Preheating and interpass temperature 200 – 300 °C (392 – 572 °F). After welding, the weld joint should cool down below 80 °C (176 °F) 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 (1400 °F)/min. 3h, max. 10h, heating and cooling rates below 550 °C (1022 °F) max. 150 °C (302 °F)/h, above 550 °C (1022 °F) max. 80 °C (176 °F).