Thermanit MTS 616 - Marathon 543

SAW wire/flux combination, low-alloyed, creep resistant

Classifications

EN ISO 24598-A	AWS A5.23 / SFA-5.23
S S ZCrMoWVNb9 0.5 1.5 FB	F9PZ-EG-G-H4

Characteristics and typical fields of application

Thermanit MTS 616 - Marathon 543 is a wire - flux combination for submerged arc welding of 9% Cr creep resistant steel, especially for P92 (NF616) acc. to ASTM A335. Approved in long-term condition up to +650ºC service temperature.
Marathon 543 is an agglomerated welding flux of the fluoride basic type with high basicity. For more information regarding Marathon 543 see our detailed data sheet.

Base materials

Similar alloyed creep resistant steels like 1.4901 - X10CrWMoVNb9-2, NF 616
ASTM A 213 Gr. T92 ; A 335 Gr. P92

Typical analysis

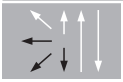
wt.-%	C	Si	Mn	Cr	Ni	Mo	W	V	Nb	N
wire	0.11	0.15	0.5	8.8	0.45	0.45	1.65	0.20	0.06	0.04
all-weld metal	0.09	0.15	0.7	8.7	0.40	0.43	1.65	0.18	0.05	0.04

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
a1, DC+	≥ 560	≥ 700	≥ 18	≥ 41

a1 = 4 hours 760 °C + furnace down to 300 °C + air

Operating data



Polarity	DC +

Dimension mm
1.2
1.6
2.0
2.5
3.0
3.2
4.0

Preheating and interpass temperature 200 – 280ºC. Heat Input < 1,8kJ/mm. For optimised toughness properties a technology which ensures thin welding layers is recommended.
After welding the joint should cool down below 80ºC in order to finish the martensite transformation. Pipe welds with wall thickness up to 45 mm can be cooled down to room temperature. For heavier wall thicknesses or stressed components, unfavourable possible stress condition must be considered.
The recommended post weld heat treatment is annealing at 760ºC/min. 2 hrs, max. 10 hrs., heating/cooling rates below 550ºC max. 150ºC/h, above 550ºC max 80ºC/h.

Approvals

TÜV (09391), CE