

Classifications

EN ISO 18274	AWS A5.14 / SFA-5.14	EN ISO 14174
S Ni 6625 (NiCr22Mo9Nb)	ERNiCrMo-3	S A FB 2 AC

Characteristics and typical fields of application

Thermanit 625 - Marathon 444 is a wire/flux combination for submerged arc welding. Solid wire of S Ni 6625 (NiCr22Mo9Nb) / ERNiCrMo-3 type for joining similar nickel-alloys and dissimilar joints between Ni-alloys with low-alloyed and stainless steels and surfacing on low-alloyed steels. Also used for joining of 6Mo superaustenitic grades, e.g. 254 SMO® (1.4547 / UNS S31254). Resistant to scaling up to 1000°C. Service temperature limit max. 500°C in sulfurous atmospheres, otherwise heat resistant up to 900°C. Resistant to stress corrosion cracking. Excellent resistance to general, pitting, crevice and intercrystalline corrosion in chloride containing environments. Good toughness at subzero temperatures as low as -196°C. Creep rupture properties according to matching high temperature steels / alloys.

Marathon 444 is an agglomerated fluoride basic welding flux with high basic slag characteristics without Cr-support. The weld metals show excellent mechanical properties with high hot cracking resistance. For more information regarding this flux, see the separate datasheet.

Base materials

1.4529 X1NiCrMoCuN25-20-7, 1.4547 X1CrNiMoCuN20-18-7, 1.4558 X2NiCrAlTi32-20, 1.4580 X6CrNiMoNb17-12-2 1.4583 X10CrNiMoNb18-12, 1.4876 X8NiCrAlTi32-21, 1.4877 X6NiCrNbCe32-27, 1.4958 X5NiCrAlTi31-20, 1.5662 X8Ni9, 2.4816 NiCr15Fe 2.4641 NiCr21Mo6Cu, 2.4817 LC-NiCr15Fe, 2.4856 NiCr22Mo9Nb, 2.4858 NiCr21Mo

ASTM A 553 Gr.1, Alloy 600, Alloy 600 L, Alloy 625, Alloy 800 / 800H, Alloy 825

UNS N06600, N07080, N0800, N0810, N08367, N08926, S31254

Cladding and dissimilar welding with unalloyed and low-alloyed steels, e.g. P265GH-P295GH, 16Mo3, S355N 254 SMO®

Typical analysis

wt.-%	C	Si	Mn	Cr	Ni	Mo	Nb	Fe
wire	0.01	0.10	0.10	22.0	Bal.	9.0	3.6	< 1.0
all-weld metal	0.012	0.16	0.20	21.8	Bal.	9.0	3.2	< 1.0

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	-196°C
u	(≥ 420)	(≥ 700)	(≥ 40)	≥ 80	≥ 70

u untreated, as-welded

Operating data

	Dimension mm	Current A	Voltage V
	1.6	200 – 300	23 – 30
	2.0	250 – 350	28 – 32
	2.4	300 – 400	29 – 33

To minimize the risk of hot cracking, heat input and interpass temperature must be low and there must be as little dilution as possible from the parent metal. No preheating. Suggested heat input is max. 1.5 kJ/mm and interpass temperature max. 100°C. Polarity: DC+ or AC.

Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1150°C followed by water quenching.

Approvals

TÜV (10173), DNV GL