

## FOXcore 625-T1

### Next Generation Nickel-Base Flux-Core Wire

FOXcore 625-T1 is a nickel-based flux-cored wire for high-productivity welding of nickel-base alloys and austenitic stainless steels with high molybdenum content. With outstanding mechanical properties and low temperature ductility, this wire is also highly suitable for 9Ni-steels for cryogenic applications with a design temperature of  $-196^{\circ}\text{C}$ . Typical applications are within LNG, pipeline, pharmaceuticals, chemical processing, shipbuilding, pulp & paper, oil & gas, etc.

The slag concept is optimized to allow X-ray safe welding in all positions, including pipes and tubes in fixed position. This makes it possible to replace manual welding with stick electrodes and TIG as well as solid wire in mechanized processes and robotic welding. Welding on ceramic backing material further increases productivity and allows single-sided welding.

FOXcore 625-T1 has excellent weldability, good slag removal and high resistance to pore formation. Together with reliable weld penetration and side-wall fusion, it is possible to minimize the amount of rework and resulting costs for repair and repeated x-ray inspection. This is a unique development for safer qualification of welding procedures. In addition, the surface appearance has been enhanced for reduced time and cost for post-weld cleaning. FOXcore 625-T1 is available on both 15 kg wire basket spools (#42479) and 5 kg high-quality plastic spools (#42512).

#### Robotic welding with FOXcore 625-T1



Test of FOXcore 625-T1 for side-wall-in welding of a 30 mm plate with a robotic system to replace SMAW in an LNG application. The weld passed the x-ray inspection.

#### Pipe welding with FOXcore 625-T1



Visual appearance of FOXcore 625-T1 for welding pipes in fixed position. The welds passed x-ray inspection.

# FOXcore 625-T1

## Classifications

EN ISO 12153	AWS A5.34 / SFA-5.34
T Ni 6625 P M21 2	ENiCrMo3T1-4

## Characteristics and typical fields of application

Nickel-base rutile flux-cored wire of Ni 6225 P / NiCrMo3-T1 type for welding of nickel-base alloys with high molybdenum content, e.g. Alloy 625 and Alloy 825, as well as superaustenitic stainless steels such as 254 SMO® (1.4547 / UNS S31254).

With exceptional mechanical properties and low temperature ductility, this wire can be used for welding 9Ni-steels for cryogenic applications. Suitable for pressure vessel fabrication in the service temperature range from -196 °C to 550 °C, otherwise resistant to scaling up to 1100 °C (in S-free atmosphere).

Can also be used for welding of dissimilar joints including low-alloyed "hard-to-weld" steels.

High nickel content prevents C-diffusion at high service temperatures or during post-weld heat treatment of dissimilar steels.

The weld metal has low coefficient of thermal expansion and is resistant to thermal shock.

The weld metal is exceptionally resistant to general corrosion in various types of acids and to pitting, crevice corrosion and stress corrosion cracking in chloride containing environments.

The fast freezing slag offers excellent weldability and slag control.

The wire is optimized to minimize risk of forming porosity in all positions.

## Base materials

1.4529 X1NiCrMoCuN25-20-7, 1.4876 X8NiCrAlTi32-21, 2.4641 NiCr 21Mo6Cu,	1.4547 X1CrNiMoCuN20-18-7, 1.5662 X8Ni9, 2.4856 NiCr 22Mo9Nb,	1.4580 X6CrNiMoNb17-12-2, 2.4816 NiCr15Fe, 2.4858 NiCr 21 Mo	1.4583 X10CrNiMoNb18-12, 2.4817 LC-NiCr15Fe,
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			


## Typical analysis of all-weld metal

	C	Si	Mn	Cr	Ni	Mo	Nb	Fe
wt.-%	0.02	0.5	0.3	20.7	Bal.	8.5	3.3	< 1.0

## Mechanical properties of all-weld metal – typical values (minimum values)

Condition	Yield strength R <sub>p0.2</sub>	Tensile strength R <sub>m</sub>	Elongation A (L <sub>0</sub> =5d <sub>0</sub> )	Impact work ISO-V KV J		Lateral expansion mm
	MPa	MPa	%	20 °C	-196 °C	-196 °C
u	475 (≥ 420)	750 (≥ 690)	42 (≥ 25)	83	72 (≥ 32)	1.07 (≥ 0.38)
u untreated, as-welded – shielding gas Ar + 20% CO <sub>2</sub>						

## Operating data

	Ø mm	Wire feed m/min	Arc length mm	Current A	Voltage V
	1.2	6.0 – 12.0	~ 3	130 – 230	23 – 27

Welding with standard GMAW power source on DC+. AC can be used to reach even higher toughness values when welding e.g. 9Ni-steels. No pulsing needed. Backhand (drag) technique preferred with a work angle of approximately 80°. Ar + 18-25 % CO<sub>2</sub> as shielding gas offers the best weldability. The gas flow should be 15 – 18 l/min. The heat input should not exceed 1.5 kJ/mm, the interpass temperature be limited to max. 100 °C and the wire stick-out 15 – 20 mm. Slight weaving is recommended for all welding positions.

## Approvals

TÜV (11223), DNV GL