

Classifications

EN ISO 12153	AWS A5.34 / SFA-5.34	AWS A5.34M
T Ni 6082 R M21 3	ENiCr3T0-4	TNi 6082-04

Characteristics and typical fields of application

Nickel-base rutile flux-cored wire of T Ni 6082 R / ENiCr3T0 type for welding of many creep-resistant steels and nickel-base alloys. Well-suited for dissimilar welding of stainless and nickel alloys to mild steels and some copper alloys. Can also be used as a buffer layer in many difficult-to-weld applications, where the high nickel content will minimize the carbon diffusion from the mild steel into the stainless material. The austenitic structure is very stable and the risk of solidification cracking is low. The weld metal has low coefficient of thermal expansion and is resistant to thermal shock. It provides high resistance to stress corrosion cracking and good resistance to intergranular corrosion. Easy handling and high deposition rate result in high productivity with excellent welding performance and very low spatter formation. Increased travel speeds as well as self-releasing slag with little demand for cleaning and pickling provide considerable savings in time and money. The wire shows good wetting behavior and results in a finely rippled surface pattern. The wide arc ensures even penetration to prevent lack of fusion. Suitable for pressure vessel fabrication in the service temperature range -196°C to 550°C , otherwise resistant to scaling up to 1100°C (in S-free atmosphere). Especially designed for flat and horizontal welding positions.

Base materials

Suitable for high-quality weld joints of nickel-base alloys, joint welding of dissimilar steels and difficult-to-weld combinations including low-temperature steels up to 5% Ni, high-temperature and creep resistant materials, scaling resistant, unalloyed and high-alloyed Cr and CrNiMo stainless steels

2.4816 NiCr15Fe, 2.4817 LC-NiCr15Fe, 1.4876 X10NiCrAlTi32-21
Alloy 600, Alloy 600 L, Alloy 800 / 800H, UNS N06600, N07080, N0800, N0810

Typical analysis

	C	Si	Mn	Cr	Ni	Nb	Fe	FN
wt.-%	0.03	0.4	3.2	19.5	Bal.	2.5	≤ 2.5	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	385 (≥ 360)	650 (≥ 550)	39 (≥ 25)	120	115 (≥ 32)

u untreated, as welded - shielding gas M21 (Ar + 18 % CO_2)

Operating data

	Polarity	DC +	Dimension mm
	Shielding gas (EN ISO 14175)	M21	1.2

Welding with standard GMAW power source on DC+ polarity. No pulsing needed. Backhand (drag) technique preferred with a work angle of approximately 80° . Ar + 15 – 25% CO_2 as shielding gas offers the best weldability. Suitable gas flow rate is 16 – 25 l/min. To minimize the risk of hot cracking when welding fully austenitic steels and nickel-base alloys, heat input and interpass temperature must be low and there must be as little dilution as possible from the parent metal. 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. Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at $1050 - 1150^{\circ}\text{C}$ followed by water quenching.

Approvals

TÜV (10298)