

Classifications

EN ISO 17633-A	EN ISO 17633-B	AWS A5.22 / SFA-5.22
T Z 19 13 4 N L P M21 (C1) 1	TS 317L-F M21 (C1) 1	E317LT1-4(1)

Characteristics and typical fields of application

Rutile flux-cored wire of T Z 19 13 4 N L P / E317LT1 type for welding of corrosion resistant CrNiMo(N) austenitic stainless steels. Better resistance to general, pitting and intergranular corrosion in chloride containing environments than 1.4436 / 316L. Intended for severe service conditions, e.g. in dilute hot acids and satisfies the high demands of offshore fabricators, shipyards building chemical tankers as well as the chemical/petrochemical, pulp and paper industries. The fast freezing slag offers excellent weldability and slag control in all positions. Easy handling and high deposition rate result in high productivity with excellent welding performance and very low spatter formation. The wide arc ensures even penetration to prevent lack of fusion. Suitable for service temperatures from -60°C to 300°C. The weld metal exhibits resistance to pitting and intergranular corrosion (ASTM A 262 / Practice E) up to 300°C. Ferrite measured with Fischer Feritscope: 3 – 8 FN. For corrosion resistant single layer cladding, the wire should be used under mixed gas (Ar + 15 – 25% CO₂) to ensure a ferrite content of > 3 FN. For flat and horizontal welding positions, FOXcore 317L-T0 may be preferred.

Base materials

CrNiMo(N) austenitic stainless steels with higher Mo content or corrosion resistant claddings on mild steels
 1.4429 X2CrNiMoN17-13-3, 1.4434 X2CrNiMoN18-12-4, 1.4435 X2CrNiMo18-14-3, 1.4438 X2CrNiMo19-14-4, 1.4439 X2CrNiMoN17-13-5
 AISI 316L, 316LN, 317L, 317LN, 317LMN
 UNS S31600, S31653, S31703, S31726, S31753

Typical analysis

	C	Si	Mn	Cr	Ni	Mo	FN
wt.-%	0.03	0.7	1.3	18.8	13.1	3.4	2 – 10

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	-60°C
u	430 (≥ 350)	560 (≥ 550)	32 (≥ 25)	58	50 (≥ 32)

u untreated, as-welded – shielding gas M21 (Ar + 18% CO₂)

Operating data

	Polarity	DC +	Dimension mm
	Shielding gas (EN ISO 14175)	M21, (C1)	1.2

Welding with standard GMAW power source with DC+ polarity. No pulsing needed. Backhand (drag) technique preferred with a work angle of approximately 80°. Ar + 15 – 25% CO₂ as shielding gas offers the best weldability. 100% CO₂ can be also used, but the voltage should be increased by 2 V. Suitable gas flow rate is 16 – 25 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. Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1050°C followed by water quenching.

Approvals

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