

Classifications

EN ISO 17633-A	EN ISO 17633-B	AWS A5.22 / SFA-5.22
T 19 9 L P M21 (C1) 1	TS 308L-F M21 (C1) 1	E308LT1-4(1)

Characteristics and typical fields of application

Rutile flux-cored wire of T 19 9 L P / E308LT1 type for welding of stainless steels such as 1.4307 / 304L with good corrosion resistance under moderately severe conditions, e.g. in oxidizing acids and cold or dilute reducing acids. The carefully controlled chemical composition gives a weld metal with a ferrite content in the range of 3 – 6 FN (measured with Fischer Feritescope) and very good toughness down to –196°C as specified for LNG applications. FOXcore 308L-T1 Cryo is designed for all-round welding and can be used in all positions without changing the parameter settings. Very good slag detachability and almost no spatter formation. The wide arc ensures even penetration and side-wall fusion to prevent lack of fusion. Due to the fast freezing rutile slag, the weldability is excellent also in the vertical-up and overhead positions. Suitable for service temperatures from –196°C to 350°C. The scaling temperature is approximately 850°C in air. Also fulfills AWS A5.22 E308LT1-4J and E308LT1-1J.

Base materials

1.4301 X5CrNi18-10, 1.4306 X2CrNi19-11, 1.4307 X2CrNi18-9, 1.4311 X2CrNi18-9,
1.4312 GX10CrNi18-8, 1.4541 X6CrNiTi18-10, 1.4546 X5CrNiNb18-10, 1.4550 X6CrNiNb18-10
UNS S30400, S30403, S30453, S32100, S34700
AISI 304, 304L, 304LN, 302, 321, 347

Typical analysis

	C	Si	Mn	Cr	Ni	FN
wt.-%	0.025	0.7	1.4	18.9	10.8	2 – 4

Mechanical properties of all-weld metal - typical values (min. values)

Condition	Yield strength	Tensile strength R_m	Elongation A ($L_0=5d_0$)	Impact energy ISO-V KV J		Hardness	Lateral expansion mm
	$R_{p0.2}$ MPa	MPa	%	20°C	–196°C		–196°C
u	390 (≥ 350)	540 (≥ 520)	40 (≥ 30)	70	40 (≥ 32)	200	0.45 (≥ 0.38)

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 offers the best weldability. 100% CO₂ can be also used, but the voltage should be increased by 2 V. Suitable gas flow rate for welding is 16 – 25 l/min. Suggested heat input is 0.5 – 2.0 kJ/mm, interpass temperature max. 150°C and 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

CE