

Classifications		
AWS A5.22 / SFA-5.22	EN ISO 17633-A	EN ISO 17633-B
E316LT1-4(1)	T 19 12 3 L P M21 (C1) 1	TS 316L-F M21 (C1) 0

Characteristics and typical fields of application

Rutile flux-cored wire of type 316L / T 19 12 3 L P is designed for welding 316L / 1.4404, 1.4432 type stainless steels with good resistance to general, pitting and intergranular corrosion in chloride containing environments. Intended for severe service conditions, e.g. in dilute hot acids. Also suitable for welding steels that are stabilized with titanium or niobium, such as 316Ti / 1.4571 for service temperatures not exceeding 750°F. For higher temperatures a niobium-stabilized consumable such as FOXcore 318-T1 is required. The scaling temperature is approximately 1560°F in air. Designed for all purpose welding and can be used in all positions without changing the parameters, when set correctly. Very good slag detachability and almost no spatter. Due to the fast freezing rutile slag, the weldability is excellent particularly in the vertical-up and overhead positions. The wide arc ensures even root and side-wall penetration to prevent lack of fusion. Suitable for service temperatures from -180°F to 750°F. For flat and horizontal welding positions, FOXcore 316L-T0 DG may be preferred.

Base materials

1.4401 X5CrNiMo17-12-2, 1.4404 X2CrNiMo17-12-2, 1.4409 GX2CrNiMo19-11-2, 1.4429 X2CrNiMo17-12-3 1.4432 X2CrNiMo17-12-3, 1.4435 X2CrNiMo18-14-3, 1.4436 X3CrNiMo17-12-3, 1.4571 X6CrNiMoTi17-12-2 1.4580 X6CrNiMoNb17-12-2, 1.4583 X10CrNiMoNb18-12
UNS S31600, S31603, S31635, S31640, S31653
AISI 316L, 316Ti, 316Cb

Typical analysis

	C	Si	Mn	Cr	Ni	Mo	FN
wt.-%	0.03	0.7	1.5	19.0	12.0	2.7	4 – 13

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 (ft.lbf)			Hardness
	ksi	ksi	%	68°F	0°F	-180°F	HB
u	59 (46)	80 (74)	34 (30)	48	41	30 (24)	210

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

Operating data

	Dimension	Current A
	0.035"	100-160
	0.045"	150-250
	1/16"	200-350

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 approximately 2V. Suitable gas flow rate is 30-50scfh. Suggested heat input is max. 50 kJ/in, interpass temperature max. 300°F and wire stick-out 5/8"-3/4". Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1920°F followed by water quenching.

Approvals

TÜV (09118), DB (43.014.24), ABS, BV (M21 + Ø 1.2 mm), CWB, DNV GL, LR (M21), CE