

**Classifications**

EN ISO 17633-A	EN ISO 17633-B	AWS A5.22 / SFA-5.22
T 23 12 2 L P M21 (C1) 1	TS 309LMo-F M21 (C1) 1	E309LMoT1-4(1)

**Characteristics and typical fields of application**

Austenitic stainless rutile flux-cored wire of T 23 12 2 L P / E309LMoT1 type. The corrosion resistance is superior to T 19 12 3 L / E316L type fillers. Primarily designed for welding dissimilar joints between stainless steels and low-alloyed steels. It can also be used for overlay welding, providing an 18Cr-8Ni-2Mo deposit from the very first layer. 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. Increased travel speeds as well as self-releasing slag with little demand for cleaning and pickling provide considerable savings in time and money. The wide arc ensures even penetration and side-wall fusion to prevent lack of fusion. Provides high resistance to hot cracking even at high dilution. Alloying with molybdenum increases the corrosion resistance and weld metal strength. Suitable for service temperatures from -60°C to 300°C. Ferrite measured with FeritScope MP30 15 – 23 FN. For flat and horizontal welding positions, FOXcore 309LMo-T0 may be preferred.

**Base materials**

Primarily used for surfacing (buffer layer) unalloyed or low-alloyed steels and when joining molybdenum-alloyed stainless steels to carbon steels. Joints and mixed joints between austenitic steels, austenitic and ferritic heat resistant steels with ferritic steels, pressure boiler steels, fine grained structural steels and ship building steels, etc. Also used for sufficient strength and ductility when welding duplex stainless steels to austenitic stainless steel and carbon steels.

**Typical analysis**

	C	Si	Mn	Cr	Ni	Mo	FN
wt.-%	0.03	0.7	1.4	23.0	12.5	2.7	23 – 35

**Mechanical properties of all-weld metal - typical values (min. 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 energy ISO-V KV J	
	MPa	MPa	%	20°C	-60°C
u	540 (≥ 350)	705 (≥ 550)	28 (≥ 25)	65	44 (≥ 32)

u untreated, as-welded - shielding gas M21 (Ar + 18% CO<sub>2</sub>)

**Operating data**

	<b>Polarity</b>	DC +	<b>Dimension mm</b>
	<b>Shielding gas (EN ISO 14175)</b>	M21, (C1)	0.9
			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% CO<sub>2</sub> offers the best weldability. 100% CO<sub>2</sub> can be also used, but the voltage should be increased by 2 V. Suitable gas flow 16 – 25 l/min. Suggested heat input is max. 2.0 kJ/mm and wire stick-out 15 – 20 mm. For dissimilar welding, slight weaving is recommended for all welding positions. Preheat and interpass temperatures as required by the base metal. Post-weld heat treatment generally not needed. For constructions that include dissimilar welding of low-alloyed steels, a stress-relieving annealing stage may be advisable. Always consult the supplier of the parent material or seek other expert advice to ensure that the correct heat treatment process is carried out.

**Approvals**

TÜV (09116), ABS (M21), BV (C1 + Ø 1.2 mm), CWB, DNV GL, LR, CE