

Classifications

EN ISO 17633-A	AWS A5.22 / SFA-5.22
T 23 12 Nb R M21 3	E309LNbT0-4

Characteristics and typical fields of application

Rutile flux-cored wire of T 23 12 Nb R / E309LNbT0 type for welding of dissimilar joints of high-alloyed Cr and CrNi(Mo) steels with unalloyed or low-alloyed steels in flat or horizontal position, as well as the first cladding layer on unalloyed and low-alloyed steels. Especially designed for welding with Ar + 15 – 25% CO₂ as shielding gas. 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 cost savings. The wire shows good wetting behavior and results in a finely rippled surface pattern. The wide arc ensures even penetration and side-wall fusion to prevent lack of fusion. Suitable for service temperatures down to –60°C. Bismuth-free weld deposit (Bi < 20 ppm) and controlled ferrite content of approximately 12 – 18 FN (measured with Fischer Feritescope) for high temperature service or post-weld heat treatment.

Base materials

Primarily used for surfacing (buffer layer) unalloyed or low-alloyed steels and when joining stainless and carbon steels.

Typical analysis

	C	Si	Mn	Cr	Ni	Nb	FN
wt.-%	0.034	0.7	1.3	22.3	12.5	0.9	10 - 19

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	450 (≥350)	625 (≥550)	30 (≥30)	65 (≥47)	50 (≥32)

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

Operating data

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

Welding with standard GMAW power source with DC+ polarity. Ar + 15 – 25% CO₂ offers the best weldability. 100% CO₂ can be also used, but the voltage should be increased by 2 V and the weld metal austenite content increases somewhat. Gas flow rate 15 – 20 l/min and the heat input not exceed 1.5 kJ/mm, interpass temperature max. 150°C and wire stick-out 15 – 20 mm.

Approvals

CE