FOXcore GUARD 309L-T1

Flux-cored wire, high alloyed, austenitic stainless, low Chrome (VI) emission, special applications

Classifications

EN ISO 17633-A	EN ISO 17633-B	AWS A5.22 / SFA-5.22
T 23 12 L P M21 1	TS 309L-F M21 1	E309LT1-4

Characteristics and typical fields of application

Rutile flux-cored wire of T 23 12 L P / E309LT1 type, specially developed to reduce the emission of Cr(VI) significantly. Designed for surfacing low-alloyed steels and dissimilar welding of mild steel and CrNi stainless steels. Corrosion resistance superior to T 19 9 L / E308L fillers. When used for overlay welding on mild steel a corrosion resistance equivalent to that of 1.4301 / 304 is obtained already in the first layer. With FOXcore GUARD 309L-T1, the total amount of Cr(VI) in the welding fume has been substantially reduced to assist in meeting exposure limits, approximately 90% lower than for conventional flux-cored wires. The airborne Cr(VI) has been reduced without compromised weldability.

FOXcore GUARD 309L-T1 is designed for position 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 a good side-wall fusion to prevent lack of fusion. Suitable for service temperatures from –60ºC to 300ºC.

Please note that welder and operators should always be protected by fume extraction where possible and preferably also wear welding helmets with breathing apparatus (fresh air supply).

Base materials

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

Typical analysis

	C	Si	Mn	Cr	Ni	FN
wt.-%	0.03	0.7	1.4	23.0	12.5	12 – 23

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		Hardness
	MPa	MPa	%	20°C	−60°C	
u	400 (≥ 320)	540 (≥ 520)	38 (≥ 30)	70	60 (≥ 32)	215

u untreated, as-welded – shielding gas M21 (Ar + 18% CO_2)

Operating data

	Polarity	DC +	Dimension mm
	Shielding gas (EN ISO 14175)	M21	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. Suitable gas flow rate is 16 – 20 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. 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. Preheat and interpass temperatures as required by the base metal.

Approvals

CE