

Classifications

EN ISO 17633-A	EN ISO 17633-B	AWS A5.22 / SFA-5.22
T 19 9 Nb P M21 (C1) 1	TS 347H-F M21 (C1) 1	E347HT1-4(1)

Characteristics and typical fields of application

Rutile flux-cored wire of T 19 9 Nb P / E347HT1 type for welding of heat resistant austenitic CrNi-steels such as 1.4912 / 347H suitable for service temperatures up to 400°C. Especially designed for welding in all positions with Ar + 15 – 25% CO₂ as shielding gas. Application examples are heat exchangers, hot separators, hydrocracking and hydrodesulphurization in refineries. 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. The wide arc ensures even penetration to prevent lack of fusion. The bismuth-free weld deposit (Bi < 20 ppm) and controlled ferrite content of 4 – 8 FN (measured with Fischer Feritscope) meet the recommendations of API RP582 and AWS A5.22 for high temperature service or post-weld heat treatment. For flat and horizontal welding positions, FOXcore 347L H-T0 may be preferred.

Base materials

1.4541 X6CrNiTi18-10, 1.4550 X6CrNiNb18-10, 1.4878 X8CrNiTi18-10, 1.4912 X7CrNiNb18-10, 1.4940 X7CrNiTi18-10
UNS S32100, S32109, S34700, S34709
AISI 321, 321H, 347, 347H

Typical analysis

	C	Si	Mn	Cr	Ni	Nb	FN
wt.-%	0.045	0.6	1.3	18.5	10.5	0.45	2 – 7

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

Condition	Yield strength R _{p0.2} MPa	Tensile strength R _m MPa	Elongation A (L ₀ =5d ₀) %	Impact energy ISO-V KV J		
				20°C	-120°C	-196°C
u	370 (≥ 350)	560 (≥ 550)	45 (≥ 30)	95 (≥ 32)	55	38 (≥ 32)
a	375	570	44	90	35 (≥ 32)	28

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

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a post-weld heat treatment at 600°C for 36 h – shielding gas M21 (Ar + 18% CO₂)

Operating data

	Polarity	DC +	Dimension mm
	Shielding gas (EN ISO 14175)	M21 (C1)	

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 as shielding gas offers the best weldability. 100% CO₂ can be also used, but the voltage should be increased by 2 V. Suitable gas flow rate is 15 – 18 l/min. The heat input should not exceed 2.0 kJ/mm, the interpass temperature be limited to max. 150°C and the wire stick-out 15 – 20 mm.

Approvals

CE