Avesta FCW 2507/P100-PW

Flux-cored wire, high-alloyed, superduplex stainless

Classifications

EN ISO 17633-A	EN ISO 17633-B	AWS A5.22
T 25 9 4 N L P M21/C1 2	TS 2594-F M21/C1 1	E2594T1-4/1

Characteristics and typical fields of application

Rutile flux-cored wire of 25 9 4 N L P / E2594T1 type designed for welding ferritic-austenitic superduplex steel and equivalent steel grades such as EN 1.4410 / UNS S32570 and EN 1.4501 / UNS S32760. Can also be used for joints between superduplex grades and austenitic stainless steels or carbon steels. Superduplex steels are particularly popular for desalination, pulp & paper, flue gas desulphurization and sea water systems. The properties of the weld metal match those of the parent metal, offering high tensile strength and toughness as well as an excellent resistance to stress corrosion cracking and localized corrosion in chloride containing environments. Meet the corrosion test requirements per ASTM G48 Methods A, B and E (40°C). Over-alloyed in nickel to promote austenite formation. Designed for all-round welding and can be used in all positions without changing the parameter settings. The weldability is excellent in the vertical-up and overhead welding positions. The operating temperature range is –40°C to 220°C.

Duplex alloys have good weldability, but the welding procedure should be adapted to the base material considering fluidity, joint design, heat input, etc.

Base materials

25%Cr superduplex ferritic-austenitic stainless steel and castings EN 1.4410 X2CrNiMoN25-7-4, 1.4467 X2CrMnNiMoN 26-5-4, 1.4468 GX2 CrNiMoN 25-6-3, 1.4501 X2CrNiMoCuWN25-7-4, 1.4507 X2CrNiMoCuN 25-6-3, 1.4515 GX2CrNiMoCuN 26-6-3, 1.4517 GX2CrNiMoCuN 25-6-3-3

UNS S32750, S32760, J93380, S32520, S32550, S39274, S32950

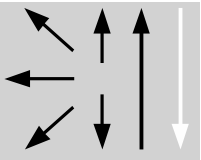
Typical analysis of all-weld metal

	C	Si	Mn	Cr	Ni	Mo	N	PREN	Ferrite WRC-92 FN
wt.-%	0.03	0.7	0.9	25.3	9.8	3.7	0.23	> 41	45 – 55

Typical mechanical properties of all-weld metal – typical values (minimum values)

Heat treatment	Yield strength $R_{p0.2}$	Tensile strength R_m	Elongation A (L_0=5d_0)	Impact work ISO-V KV J		Hardness
	MPa	MPa	%	20°C	–40°C	HB
u	**690** (≥ 550)	**890** (≥ 760)	**27** (≥ 18)	**60** ≥ 50	**38** (≥ 32)	**260**
u untreated, as-welded – shielding gas Ar + 18 % CO_2						

Operating data



Polarity	Wire feed m/min	Arc length mm	Current A	Voltage V	Ø (mm)
DC+	5.5 – 11.5	~ 3	130 – 230	23 – 30	1.2

Ar + 15 – 25 % CO_2 offers the best weldability and mechanical properties. Gas flow rate 20 – 25 l/min. Suggested heat input is 0.5 – 1.5 kJ/mm, interpass temperature max. 120°C and wire stick-out 15 – 20 mm. Re-drying of the wire possible at 150°C for 24 h if necessary. The scaling temperature is approx. 850°C in air. Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1100 – 1185°C followed by water quenching. Ferrite measured with Fischer Feritescope 45 – 51 FN.

Approvals

CE