AVESTA 2507/P100

www.avestawelding.com

Welding wire MIG

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
2507	1.4410	S32750	2328	–	Z3 CND 25-06 Az

* Obsolete national standards, replaced by EN 10088.

CHARACTERISTICS

AVESTA 2507/P100 is intended for welding super duplex alloys such as 2507, ASTM 32760, 32550 and 31260. It can also be used for welding duplex steel type 2205 if extra high corrosion resistance is required.

AVESTA 2507/P100 produces a ferritic-austenitic weld metal. The higher content of Cr, Ni, Mo and N, compared to 2205, provides excellent mechanical as well as corrosion properties.

AVESTA 2507/P100 is over-alloyed with respect to Ni to ensure that the right ferrite balance is achieved after welding.

WELDING DIRECTIONS

The weldability of 2507/P100 is good, especially when using pulsed arc. The weldability using short arc is somewhat limited and the welding of thin gauges <0.12″ (<3 mm) and in-position is best performed using pulsed arc.

However, super duplex steels are somewhat more difficult to weld compared to austenitic steels such as 316L, mainly with respect to fluidity and penetration into the parent metals.

To utilise the good properties of a duplex steel it is of utmost importance to obtain a good ferrite content in the weld. This is best achieved by welding with sufficient root gap of 0.08-0.1″ (2-2.5 mm), the right amount of filler metal and by welding with a controlled heat input. The 2507/P100 is more prone to hot cracking than 2205 and should be welded with a heat input not exceeding 38.1 kJ/in (1.5 kJ/mm) and by keeping the interpass temperature at maximum 212°F (100°C.)

Duplex steels have remarkably lower thermal expansion than for example 304 and 316 type steels. The deformation and extension during welding is therefore somewhat lower.

WELDING DATA

	∅ (inch)	∅ (mm)	Current (A)	Voltage (V)
Pulsed arc	0.047″	1.20	I_{peak} = 350–450 A I_{bkg} = 50–150 A Freq = 80–120 Hz	

For further recommendations, please contact Avesta Welding

Standard designations

EN 12072	25 9 4 L N
AWS A5.9	–

Shielding gas recommendations

Ar + 30% He + 2.5% CO_2 or Ar

The addition of helium improves the fluidity and gives a slightly wider weld and the carbon dioxide stabilises the arc. Helium increases the energy in the arc and the heat should therefore be kept at a lower level than when welding without helium, to compensate for the higher temperature in the arc. Addition of helium will increase the blackening slightly.

Gas flow rate: 25-34 ft^3 /hour (12–16 l/min.)

Chemical composition - Typical values, %

C	0.02	Ni	9.5
Si	0.35	Mo	4,0
Mn	0.4	N	0.25
Cr	25.0		

Ferrite: 50 FN (WRC-92)

Mechanical properties – Typical values, IIW

		Typ. values		Typ. values	
Yield strength, $R_{p0,2}$		570	N/mm^2	83	ksi
Tensile strength, R_m		830	N/mm^2	120	ksi
Elongation, A5		29	%	29	%
Impact strength, KV	+20°C	140	J	103	ft·lb

Interpass temperature: Max. 212°F (100°C)

Heat input: 12.7-38.1 kJ/in (0.5–1.5 kJ/mm)

Heat treatment: Generally none. If requested, quench annealing at 2012-2102°F (1100–1150°C).

Structure: Austenite with 45–55 % ferrite.

Scaling temperature: Approx. 1562°F (850°C) (air).

Corrosion resistance: Very good resistance to pitting and stress corrosion cracking in chlorine-containing environments. Pitting resistance according to ASTM G48-A better than 104°F (40°C).

Approvals: –