

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
2205	1.4462	S32205	2377	318S13	Z3 CND 22-05 Az

* Obsolete national standards, replaced by EN 10088.

Characteristics

AVESTA 2507/P100 has a rutile-basic type coating and 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

AVESTA 2507/P100 rutile should be welded in the same way as fully austenitic stainless consumables, i.e. high currents should be avoided and the material should be allowed to cool to below 100°C between passes.

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 (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 1.5 kJ/mm.

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.

Weld deposit data at maximum welding current

Diam. mm	Length mm	N	B	H	T	Metal recovery, approx. %
2.5	300	0.58	93	0.77	50	107
3.25	350	0.64	46	4.30	59	108
4.0	350	0.68	30	1.88	64	110

Packaging data

Diam. mm	Length mm	Weight/ capsule, kg	Approx. No. of electrodes/ capsule	Weight/ carton, kg
2.5	300	3.63	192	10.89
3.25	350	4.10	122	12.30
4.0	350	4.54	92	13.62

Standard designations

EN 1600 E 25 9 4 N L R

Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni	Mo	N
0.03	0.5	1.3	25.5	10.0	3.6	0.23

Ferrite 30 FN WRC-92

Mechanical properties

	Typical values (IIW)	Min. values EN 1600
Yield strength, R _{p0.2}	695 N/mm ²	550 N/mm ²
Tensile strength, R _m	895 N/mm ²	620 N/mm ²
Elongation, A ₅	27 %	18 %
Impact strength, KV		
+20°C	80 J	-
-40°C	55 J	-
Hardness approx.	250 Brinell	

Welding data

DC+ or AC	Diam., mm	Current, A
	2.5	50- 70
	3.25	80-100
	4.0	100-140

Interpass temperature: Max. 100°C.

Heat input: 0.5-1.5 kJ/mm.

Heat treatment: Generally none. In special cases quench annealing at 1110°-1150C.

Structure: Austenite with approx. 30 % ferrite.

Scaling temperature: Approx. 850°C (air)

Corrosion resistance: Very good resistance to pitting and stress corrosion cracking in chloride containing environments. Pitting resistance in accordance with ASTM G48-A better than 40°C.

Approvals: -

Welding positions

