Avesta Welding

P690 basic

For welding steels such as					
Outokumpu	EN	ASTM	BS	NF	SS
For welding N06690/2.4642 and for overlay welding of carbon/low-alloy steels. Particularly suited for the conditions in nuclear fabrication.					

Standard designations

EN ISO 14172	E Ni Cr 30 Fe 9 Nb
AWS A5.11	ENiCrFe-7

Characteristics

AVESTA P690 basic is a nickel base electrode with a basic type coating. P690 is suitable for many welding applications, such as joining nickel base alloys, e.g. Inconel 690 as well as for joining unalloyed or low-alloy steels to stainless steels and nickel base alloys. P690 is also well suited for depositing overlays on carbon steel, especially when there are stringent requirements regarding service at high temperatures, or in the construction of nuclear reactors.

P690 is unsusceptible to sigma phase embrittlement and shows little tendency towards carbon diffusion. It is therefore very well suited for constructions in service at elevated temperatures.

Welding data

DC+	Diam. mm	Current, A
	3.25	70 – 110
	4.0	100 – 145

Weld deposit data

Metal recovery approx. 110%.

Typical analysis % (All weld metal)

C	Si	Mn	Cr	Nb	Mo	Fe	Ni
0.03	0.4	3.0	30.0	1.5	0.3	9.0	bal.

Ferrite 0 FN

Mechanical properties	Typical values (IIW)	Min. values EN 14172
Yield strength $R_{p0.2}$	400 N/mm^2	360 N/mm^2
Tensile strength R_m	640 N/mm^2	550 N/mm^2
Elongation A_5	35 %	27 %
Impact strength KV		
+20°C	110 J	
–196°C	100 J	
Hardness approx.	220 Brinell	

Interpass temperature: Max. 100°C.

Heat input: Max. 1.5 kJ/mm.

Heat treatment: Generally none (in special cases quench annealing at 1050°C).

Structure: Fully austenitic.

Scaling temperature: Approx. 1100°C (air).

Corrosion resistance: Very good resistance to stress corrosion cracking in oxidising acids and water at high temperatures. Also very good resistance to intergranular corrosion due to the low carbon content and absence of sigma phase.

Approvals

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Welding positions

Ø 3.25 Ø 4.0