

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
Specially designed electrode for difficult-to-weld steels such as Mn-steels, tool steels and high temperature grades.					

\* Obsolete national standards, replaced by EN 10088.

#### Characteristics

AVESTA P7 AC/DC is a high-alloy electrode designed for welding C/Mn-steels, tool steels, spring steels, high temperature steels and other difficult-to-weld steels. P7 is also suitable for dissimilar welds between stainless and mild steel.

AVESTA P7 provides a ferritic-austenitic structure with a high resistance to hot and solidification cracking. The mechanical properties as well as the wear resistance are very good.

AVESTA P7 is also, due to its good corrosion resistance, suitable for some applications in the pulp and paper industry.

#### Welding directions

AVESTA P7 is primarily intended for welding without preheating and this is particularly true for 14% manganese steels, which should be welded as cold as possible. However, in cases where welding is carried out on severely restrained constructions and on material susceptible to hardening, it may sometimes be advisable to preheat the material slightly.

A short arc should be used when welding and high amperages should be avoided.

Welding to primer-coated sheet should be avoided, as there is a significant risk of pore formation. The paint should therefore be removed from all surfaces that are likely to be exposed to temperatures above 500°C.

#### Weld deposit data at maximum welding current

Diam. mm	Length mm	N	B	H	T	Metal recovery, approx. %
2.5	350	0.59	71	1.00	50	118
3.25	350	0.62	42	1.53	56	117
4.0	400	0.66	24	2.14	70	116

#### Packaging data

Diam. mm	Length mm	Weight/capsule, kg	Approx. No. of electrodes/capsule	Weight/carton, kg
2.5	350	4.10	174	12.30
3.25	350	4.10	108	12.30
4.0	400	4.90	78	14.70
5.0	400	5.30	58	15.90

#### Standard designations

EN 1600 E 29 9 R

#### Typical analysis % (All weld metal)

C	Si	Mn	Cr	Ni
0.09	0.8	0.8	29.0	9.5

Ferrite 40 FN WRC-92

#### Mechanical properties

	Typical values (IIW)	Min. values EN 1600
Yield strength, R <sub>p0.2</sub>	620 N/mm <sup>2</sup>	450 N/mm <sup>2</sup>
Tensile strength, R <sub>m</sub>	810 N/mm <sup>2</sup>	650 N/mm <sup>2</sup>
Elongation, A <sub>5</sub>	16 %	15 %
Impact strength, KV +20°C	25 J	
Hardness approx.	270 Brinell	

#### Welding data

DC+ or AC	Diam., mm	Current, A
	2.5	50–80
	3.25	80–120
	4.0	100–160
	5.0	160–220

**Interpass temperature:** Max. 150°C.

**Heat input:** Max. 2.0 kJ/mm.

**Heat treatment:** Generally none. Alloys of this type are susceptible to precipitation of secondary phases in the temperature range 550–950°C.

**Structure:** Austenite with 30–40 % ferrite.

**Scaling temperature:** Approx. 1000°C (air)

**Corrosion resistance:** Very good corrosion resistance in wet sulphuric environments, e.g. in sulphate digesters used by the pulp and paper industry.

**Approvals:** –

#### Welding positions

