

For welding steel such as:

Outokumpu	EN	ASTM	SS*	BS*	NF*
253 MA®	1.4835	S30815	2368	-	-
153 MA™	1.4818	S30415	2372	-	-

\* Obsolete national standards, replaced by EN 10088.

#### Characteristics

AVESTA 353 MA basic has a basic coating and should be welded using DC (+ pole). It is designed for welding AvestaPolarit 353 MA, which is the highest alloyed steel with the best high temperature properties in the AvestaPolarit family of MA-steels. The chemical composition of 353 MA is balanced to give optimal properties at temperatures above 1832°F (1000°C). The steel, as well as the weld metal, has superior resistance to carbon and nitrogen pick-up at elevated temperatures. This, among other things, is achieved by an addition of rare earth metals (REM).

Due to the fully austenitic structure, the weld metal is somewhat more sensitive to hot cracking than, for example, 253 MA.

#### Welding directions

353 MA has a tendency of giving a thick oxide layer during welding and hot rolling. Black plates and previous weld beads should be carefully brushed or ground prior to welding.

The joint should be prepared with a sufficient root gap to ensure full penetration. The fully austenitic structure makes the weld metal somewhat susceptible to hot cracking. High welding currents and big weld pools should be avoided. The heat input should be maximised to 1.0 kJ/mm and the material should be allowed to cool to below 100°C between successive passes.

#### Packaging data

Diam. inch	Diam. mm	Length mm/inch	Weight/capsule, lbs	Electrodes/capsule, approx.	Weight/carton, lbs
3/32	2.5	300 / 12	7.1	134	21
1/8	3.25	350 / 14	9.1	93	27
5/32	4.0	350 / 14	10.0	72	30

#### Standard designations

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

C	Si	Mn	Cr	Ni
0.07	0.7	1.4	27.5	33.0

Ferrite 0 FN

#### Mechanical properties

Typical values (IIW)

Yield strength, Rp <sub>0.2</sub>	385 N/mm <sup>2</sup>	56 ksi
Tensile strength, R <sub>m</sub>	565 N/mm <sup>2</sup>	82 ksi
Elongation, A <sub>5</sub>	33 %	33 %
Impact strength, KV +20°C	85 J	63 ft-lb
Hardness approx.	200 Brinell	

#### Welding data

DC+	Diam., inch	Current, A
	3/32	45– 70
	1/8	70–110
	5/32	100–140

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

**Heat input:** Max. 25.4 kJ/in (1.0 kJ/mm<sup>2</sup>).

**Heat treatment:** Generally none.

**Structure:** Fully austenitic.

**Scaling temperature:** Approx. 2174°F (1175°C) (air)

**Corrosion resistance:** Superior properties for constructions running at service temperatures above 1832°F (1000°C). Not intended for applications exposed to wet corrosion.

**Approvals:** -

#### Welding positions

