353 MA basic

Covered electrodes

www.avestawelding.com

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 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.

Weld deposit data at maximum welding current

Diam. mm	Length mm	N	B	H	T	Metal recovery, approx. %
2.5	300	0.59	71	0.85	59	136
3.25	350	0.67	34	1.46	73	147
4.0	350	0.67	24	1.83	83	137

Packaging data

Diam. mm	Length mm	Weight/ capsule, kg	Approx. No. of electrodes/ capsule	Weight/ carton, kg
2.5	300	3.20	134	9.60
3.25	350	4.10	93	12.30
4.0	350	4.54	72	13.62

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)		Min. values EN 1600	
Yield strength, $Rp_{0,2}$	385	N/mm²	–	N/mm²
Tensile strength, R_m	565	N/mm²	–	N/mm²
Elongation, A_5	33	%	–	%
Impact strength, KV				
+20°C	85	J		
Hardness approx.	200	Brinell		

Welding data

DC+	Diam., mm	Current, A
	2.5	45– 70
	3.25	70–110
	4.0	100–140

Interpass temperature: Max. 100°C.

Heat input: Max. 1.0 kJ/mm.

Heat treatment: Generally none.

Structure: Fully austenitic.

Scaling temperature: Approx.1175°C (air)

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

Approvals: –

Welding positions