AVESTA 253 MA

www.avestawelding.com

Welding wire MIG

For welding steel such as:

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

* Obsolete national standards, replaced by EN 10088.

CHARACTERISTICS

AVESTA 253 MA is designed for welding the Outokumpu high temperature steel 253 MA. The steel as well as the consumable provides excellent properties at temperatures 1562-2012°F (850 - 1100°C). The resistance to carbon and nitrogen pick-up at elevated temperatures is good. This is achieved, among other things, by alloying with Si and rare earth metals (REM).

AVESTA 253 MA can also be used for welding the somewhat lower alloyed Outokumpu 153 MA.

The composition of the consumable is balanced to ensure a crack resistant weld metal with a ferrite content of 3-10%.

WELDING DIRECTIONS

MIG welding of 253 MA is best performed using spray arc or pulsed arc. The weldability using short arc is somewhat limited and the welding of thin gauges <0.12″ (<3 mm) and in-position is best performed using pulsed arc.

253 MA has a tendency of getting a thick oxide layer during hot rolling and welding. Black plates as well as 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.

WELDING DATA

	∅ (inch)	∅ (mm)	Current (A)	Voltage (V)
Short arc	0.035″	0.89	110–140	19–22
Spray arc	0.035″	0.89	160–220	25–29
	0.045″	1.14	200–270	26–30
Pulsed arc	0.045″	1.14	I_{peak} = 350–450 A I_{bkg} = 50–150 A Freq = 80–120 Hz	

For further recommendations, please contact Avesta Welding

Shielding gas recommendations

Ar + 30% He or Ar + 30% He + 2.5% CO_2.

The helium addition improves the fluidity and gives a slightly wider penetration. Helium increases the energy in the arc and the heat should therefore be kept at a lower level than when welding without helium to compensate for the higher temperature in the arc. Addition of helium will increase the blackening slightly.

Gas flow rate: 25-34 ft^3 /hour (12–16 l/min.)

Standard designations

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Chemical composition - Typical values, %

C	0.07	Ni	10.0
Si	1.6	N	0.15
Mn	0.6	Others	REM
Cr	21.0		

Ferrite: 9 FN DeLong
2 FN WRC-92

Mechanical properties – Typical values, IIW

		Typ. values	Typ. values
Yield strength, $R_{p0,2}$		440 N/mm²	64 ksi
Tensile strength, R_m		680 N/mm²	99 ksi
Elongation, A5		38 %	38 %
Impact strength, KV	+20°C	130 J	96 ft·lb
Hardness		210 Brinell	

Interpass temperature: Max. 300°F (150°C)

Heat input: Max. 38.1 kJ/in (1.5 kJ/mm)

Heat treatment: Generally none.

Structure: Austenite with 3–10 % ferrite.

Scaling temperature: Approx. 2102°F (1150°C) (air).

Corrosion resistance: Excellent resistance to high temperature corrosion. Not intended for applications exposed to wet corrosion.

Approvals: –