

Classifications

EN ISO 14343-A	AWS A5.9 / SFA-5.9	EN ISO 14174
S 19 12 3 L	ER316L	S A FB 2 DC

Characteristics and typical fields of application

Thermanit GE-316L - Marathon 203 is a wire-flux-combination for welding of stainless steel grades such as 1.4435 / 316L. Solid SAW wire of S 19 12 3 L / ER316L type for joining and surfacing application with matching and similar unstabilized austenitic CrNi(N) and CrNiMo(N)-steels and cast steel grades. Corrosion resistance similar to matching low-carbon and stabilized austenitic CrNiMo-steels. Max. service temperature 400°C. Low temperature service down to -196°C. The former product name of the SAW wire was "BÖHLER EAS 4 M-UP".

Marathon 203 is an agglomerated basic flux with relative high basicity index, however with good welding properties with nice bead appearance and good slag detachability. For more information regarding this sub-arc welding flux, see the separate datasheet. The former product name of the SAW flux was "BÖHLER BB 203".

Base materials

1.4401 X5CrNiMo17-12-2, 1.4404 X2CrNiMo17-12-2, 1.4409 GX2CrNiMo19-11-2, 1.4429 X2CrNiMoN17-12-3, 1.4432 X2CrNiMo17-12-3, 1.4435 X2CrNiMo18-14-3, 1.4436 X3CrNiMo17-12-3, 1.4571 X6CrNiMoTi17-12-2, 1.4580 X6CrNiMoNb17-12-2, 1.4583 X10CrNiMoNb18-12
UNS S31600, S31603, S31635, S31640, S31653
AISI 316L, 316Ti, 316Cb

Typical analysis

wt.-%	C	Si	Mn	Cr	Ni	Mo
wire	0.01	0.45	1.6	18.5	12.2	2.7
all-weld metal	0.01	0.55	1.3	18.0	12.1	2.7

Mechanical properties of all-weld metal - typical values (min. values)

Condition	Yield strength $R_{p0.2}$	Tensile strength R_m	Elongation A ($L_0=5d_0$)	Impact energy ISO-V KV J	
	MPa	MPa	%	20°C	-120°C
u	(≥ 350)	(≥ 550)	(≥ 30)	(≥ 70)	(≥ 60)

u untreated, as-welded

Operating data

	Dimension mm	Current A	Voltage V
	2.0	250 – 350	28 – 32
	2.4	300 – 400	29 – 33
	3.2	350 – 500	29 – 33
	4.0	425 – 575	30 – 34

No preheating. Suggested heat input is max. 2.0 kJ/mm and interpass temperature max. 150°C. Polarity DC+.

Post-weld heat treatment generally not needed. In special cases, solution annealing can be performed at 1050°C followed by water quenching.

Approvals

TÜV (09175), CE