

SAW Rutile-Acid Fluxes C-Mn and low-alloy steels

OP 191 is an agglomerated rutile type flux for welding general structural steels. It is also used for welding fine-grain steels with a yield strength of up to 355 N/mm². Relatively high silicon pick-up is achieved with this flux and when used in conjunction with OE-S1, OE-S2 wire electrodes manganese pick-up also results. OP 191 is particularly well-suited to twin-wire, tandem and multi-wire welding at high speeds. It can also be used with the two-run technique especially when weld thin-walled spiral tubes. The good slag detachability makes OP 191 a standard for fillet welding.

OP 191 can be welded on DC+ or AC at up to 1500 A. Damp fluxes should be re-dried at 300-350°C.

Grain size according to EN 760: 2-20.

Wire	Classification	
OE-S1	AWS	A5.17: F7A0 EL 12
OE-S2	AWS	A5.17: F7A0 EM 12K
OE-S48	AWS	A 5.23: F8 AZ - EG-G
	EN	760: SA AR 1 87 AC
OE-S1	EN	756: S 4T A AR S1
OE-S2	EN	756: S 4T O AR S2
OE-S48	EN	756: S 4T O AR S0

Wire	Approvals	Grades
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Flux Analysis	
Al ₂ O ₃ + TiO ₂ + ZrO ₂	52 %
SiO ₂	19 %
MnO + FeO	17 %
CaO + CaF ₂ + MgO	17 %

Basicity to Boniszewski 0,4

Typical Applications

Wire	Materials
OE-S1	ASME: ASTM A131 Grades A, B, D, DS; A253 All grades; A529 Grades 42, 50; A570 All grades; A572 Grades 42, 50; A709 Grades 36, 50 EN: 'S(P)235-S(P)355; L245-L360
OE-S2	ASME: ASTM A131 Grades A, B, D, DS; A253 All grades; A529 Grades 42, 50; A570 All grades; A572 Grades 42, 50; A709 Grades 36, 50 EN: 'S(P)235-S(P)355; L245-L360
OE-S2NiCu	ASME: EN:'S235J0W; S235J2W; S355J0W; S355J2W; S355K2W

Analysis of all-weld metal (Typical values in %)

Wire	C	Mn	Si	Cr	Ni	Mo	Nb	N	Cu
OE-S1	0.03	0.90	0.80	-	-	-	-	-	≤ 0.35
OE-S2	0.025	1.10	0.50	-	-	-	-	-	≤ 0.35
OE-S2NiCu	0.03	1.20	0.80	0.20	0.60	-	-	-	≤ 0.50

All-weld metal Mechanical Properties

Wire	Heat Treatment	Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation A5 (%)
OE-S1	As Welded	≥ 400	520 - 650	≥ 22
OE-S2	As Welded	≥ 400	520 - 650	≥ 22
OE-S2NiCu	As Welded	≥ 470	550 - 690	≥ 22

All-weld metal Mechanical Properties - Cv

Wire	Heat Treatment	Charpy V Notch Impact Toughness (J)							
		+20	0	- 20	- 30	- 40	- 60	- 80	- 101
OE-S1	As Welded	-	-	27 min	-	-	-	-	-
OE-S2	As Welded	-	-	27 min	-	-	-	-	-
OE-S2NiCu	As Welded	-	30 min	-	-	-	-	-	-

Packaging data

25kg heavy duty sealed polythene sacks

Further forms of delivery on request.

Current condition

DC+; AC