

OP 181 is an agglomerated aluminate-rutile type flux for welding general structural steels, pressure vessel steels and pipe steels as well as fine-grain steels with a yield strength of up to 355 N/mm². High silicon and manganese pick-up is obtained with this flux and it can therefore be combined with wire electrodes OE-S1, OE-S2 and OE-S 2Si. OP 181 is well suited to high-speed welding with the twin-wire process, as well as tandem and multi-wire welding. The metallurgical behaviour of this flux mean that it can be used effectively when welding with the two-run technique, e.g. longitudinal pipeline welds or spiral tubes in thin materials. A further application is the welding of pipe-web-pipe joints or membrane wall welds. The good slag detachability makes OP 181 particularly suitable for fillet welding applications.

OP 181 can be welded with DC or AC at up to 1000 A. When using DC the wire electrode should be connected to the +pole. Damp flux should be re-dried at 300-350°C.

Grain size in accordance with EN 760: 2-16.

Wire	Classification
OE-S1	AWS A5.17: F7A0-F7PZ EL 12
OE-S2	AWS A5.17: F7A0-F7PZ EM 12K
	EN 760: A 1 88 AC

Wire	Approvals	Grades
OE-S1	TÜV	
OE-S2	ABS	
OE-S2	BV	
OE-S2	DB	
OE-S2	DNV	
OE-S2	GL	
OE-S2	LRS	
OE-S2	RS	
OE-S2	TÜV	
OE-S2Mo	TÜV	

see Appendix, Classification Society Approvals, for details pag. 521

Flux Analysis	
CaF ₂	10 %
SiO ₂ + TiO ₂	30 %
Al ₂ O ₃ + MnO	50 %

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-S2Mo	ASME: API 5L Grades A, B, X42, X46, X52, X56 EN: 16 Mo 3, S(P)355-S(P)420, L245-L450

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

Wire	C	Mn	Si	Cr	Ni	Mo	Nb	N	Cu
OE-S1	0.03	1.10	0.60	-	-	-	-	-	-
OE-S2	0.04	1.30	0.60	-	-	-	-	-	-
OE-S2Mo	0.04	1.30	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	≥ 420	520 - 620	≥ 22
OE-S2	As Welded	≥ 450	560 - 660	≥ 22
OE-S2Mo	As Welded	≥ 490	610 - 710	≥ 18

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	30 min	-	-	-	-	-	-	-
OE-S2	As Welded	30 min	-	-	-	-	-	-	-
OE-S2Mo	As Welded	50 min	-	-	-	-	-	-	-

Packaging data

25kg heavy duty sealed polythene sacks

Further forms of delivery on request.

Current condition

DC+; AC