

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

OP 119 is an agglomerated calcium-silicate type flux for welding of general structural steels, boiler and pipe steels, as well as fine grain structural steels. It produces silicon pick-up and when used with wire electrodes OE-S1, OE-S2 and OE-S3, also a manganese pick-up. The neutral point for manganese is about 2%, so that OP 119 can be combined with low manganese wire electrodes. OP 119 is particularly suited for twin-wire, tandem and multi-wire welding and for welding from both sides in one pass. For enhanced weld metal toughness, molybdenum alloyed wire electrodes (OE-S2Mo) should be used. OP 119 is suitable for use on either DC+ or AC up to 1000A, in single wire welding. Slag removal is easy in all cases. The fused slag is short which means that girth seams of small-diameter workpieces can be welded without the danger of the slag running off.

Damp flux should be re-dried at 300-350°C.

Grain size accordance with EN 760: 2-20.

Wire	Classification
OE-S1	AWS A5.17: F7A0 EL 12
OE-S2	AWS A5.17: F7A2 EM 12K
OE-S2Mo	AWS A5.23: F8A0-EA2-A2
	EN 760: SA CS 1 77 AC

Wire	Approvals	Grades
OE-S1	DB	
OE-S1	TÜV	
OE-S2	DB	
OE-S2	TÜV	
OE-S2Mo	DB	
OE-S2Mo	TÜV	

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

Flux Analysis	
Al ₂ O ₃ + MnO	25 %
SiO ₂ + TiO ₂	40 %
CaF ₂	10 %
CaO + MgO	20 %

Basicity to Boniszewski 1

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: X 60, X 65, EN: 16 Mo 3, S(P)355-S(P)460, L245-L450

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

Wire	C	Mn	Si	Cr	Ni	Mo	Nb	N	Cu
OE-S1	0.05	1.10	0.50	-	-	-	-	-	-
OE-S2	0.05	1.40	0.50	-	-	-	-	-	-
OE-S2Mo	0.05	1.30	0.50	-	-	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	≥ 360	420 - 520	≥ 24
OE-S2	As Welded	≥ 400	520 - 620	≥ 24
OE-S2Mo	As Welded	≥ 480	600 - 700	≥ 20

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	100 min	60 min	30 min	-	-	-	-	-
OE-S2	As Welded	100 min	80 min	50 min	-	-	-	-	-
OE-S2Mo	As Welded	90 min	50 min	35 min	-	-	-	-	-

Packaging data

25kg heavy duty sealed polythene sacks

Further forms of delivery on request.

Current condition

DC+; AC