

## SAW Basic and Semi-basic Fluxes C-Mn and low alloy steels

OP 123 is an agglomerated aluminate-basic type flux for welding general structural steels, pipe steels, pressure vessel steels as well as fine-grain steels. The slag characteristic results in slight silicon and medium manganese pick up. On account of its metallurgical behaviour, OP 123 can be used with OE-S1, OE-S2, OE-S2 Mo wire electrodes.

It is suitable for submerged-arc single-wire, tandem and multi-wire welding as well as when using the two-run technique, for example in the production of large pipes.

OP 123 has a fast freezing slag i.e. circumferential welding can be carried out on small-diameter workpieces. OP 123 can be welded on DC+ and AC at up to 1000A.

Damp flux should be re-dried at 300-350°C. Grain size according to EN 760: 2-20.

Wire	Classification
OE-S1	AWS A5.17:F7AZ-F7PZ EL 12
OE-S2	AWS A5.17:F7AZ-F7PZ EM 12K
OE-S2Mo	AWS A5.23:F8A2-EA2-A2
	EN 760: SA AB 1 67 AC

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

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

Flux Analysis	
CaO + MgO	20 %
CaF <sub>2</sub>	10 %
SiO <sub>2</sub> + TiO <sub>2</sub>	20 %
Al <sub>2</sub> O <sub>3</sub> + MnO	45 %

**Basicity to Boniszewski** 1,0

### 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-SD3	ASME: EN: 'S(P)235-S(P)355; L245-L360
OE-S2Mo	ASME: X 60, X 65, ASTM A355 Gr. P1; A182M Gr. F1 EN:16 Mo 3, S(P)355-S(P)460, L245-L450
OE-S2CrMo1	ASME: A199 and A200 grade T11, A213 Grades T11, T12 EN:'13CrMo4-5, 13CrMoSi5-5

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

Wire	C	Mn	Si	Cr	Ni	Mo	Nb	N	Cu
OE-S1	0.05	0.70	0.20	-	-	-	-	-	-
OE-S2	0.05	1.20	0.20	-	-	-	-	-	-
OE-S2Mo	0.05	1.20	0.20	-	-	0.50	-	-	-

### All-weld metal Mechanical Properties

Wire	Heat Treatment	Yield Strength N/mm <sup>2</sup>	Tensile Strength N/mm <sup>2</sup>	Elongation A5 (%)
OE-S1	As Welded	≥ 360	420 - 520	≥ 24
OE-S2	As Welded	≥ 400	500 - 600	≥ 22
OE-S2Mo	As Welded	≥ 450	600 - 700	≥ 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	90 min	50 min	35 min	-	-	-	-	-
OE-S2	As Welded	90 min	50 min	35 min	-	-	-	-	-
OE-S2Mo	As Welded	65 min	50 min	35 min	-	-	-	-	-

### Packaging data

25kg heavy duty sealed polythene sacks

Further forms of delivery on request.

### Current condition

**DC+; AC**