OP 121TT W

OERLIKON

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

OP 121TT W is an agglomerated basic flux used for welding high-tensile, fine-grain steels and for joints requiring high toughness at sub-zero temperatures and resistance to ageing. The neutral behaviour of OP 121TTW in terms of silicon and manganese pick-up and burn-out indicates that OP 121TTW is used in combination with wires such as OE-SD3 and can be used tandem wire and for multi-wire processes.
The slag is fast freezing and applications include circumferential joints on small-diameter components, which can be welded without the risk of slag run-off. Regularly shaped welds are deposited without undercut.
The flux can be welded on DC+ and AC, up to approximately 800 A. Grain size according to EN 760: 2-20.
Damp flux should be re-dried at 300-350°C.

Wire	Classification	
OE-S1 CrMo2	AWS	A5.23:F8P2-EB3-B3
OE-S2 CrMo1	AWS	A5.23:F8P4-EB2-B2
OE-S2 Mo	AWS	A5.23:F8A6-F8P6 EA2
OE-S2	AWS	A5.17: F7A2 - F6P3 EM12K
OE-SD3	AWS	A5.17:F7A8-F7P8 EH12K
OE-SD3NiMo1	AWS	A 5.23: F9 AP8 EG-F3
OE-SD3 2NiCrMo	AWS	A5.23: F11A6-P5-EM4-M4
OE-S2 Ni2	AWS	A5.23: F7A10-F7P10 ENi2-Ni2
OE-S2 Ni3	AWS	A5.23: F8A15-F7P15 ENi3-Ni3
	EN	760: SA FB 1 55 AC H5
OE-SD3NiMo1	EN	756: S50 5 FB S3Ni1Mo

Wire	Approvals	Grades
OE-SD3	DNV	
OE-SD3	TÜV	
OE-SD3NiMo1	TÜV	
OE-S2 Ni2	RINA	

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

Flux Analysis	
CaF2	30 %
Al2O3 + MnO	20 %
SiO2 + TiO2	15 %
CaO + MgO	35 %

Basicity to Boniszewski 3,1

Typical Applications

Wire	Materials
OE-S1 CrMo2	ASME:A387 Gr.22, Cl 1and 2, A 182 Gr.F 22, A 336 Gr.F22 EN:10CrMo9-10, 12CrMo9-10
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-S2 CrMo1	ASME: A199 and A200 grade T11, A213 Grades T11, T12 EN:'13CrMo4-5, 13CrMoSi5-5
OE-SD3	ASME: A516 all grades EN:S(P)235-S(P)420
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-SD3NiMo1	ASME: X70, X80, N-A-XTRA 55, HY80, QIN EN: 'S(P)420-S(P)500; L245-L485; 20MnMoNi5-5, 15NiCuMoNb5
OE-SD3 2NiCrMo	ASME: Q1N, HY80, HY100; USS T1, T1A and T1B; RQT 601, RQT 701 EN: S620-S690; P690; L415-L555
OE-S2 Ni1	ASME: EN:
OE-S2 Ni2	ASME: EN: 11MnNi5-3, 15NiMn-3
OE-S2 Ni3	ASME: ASTM A333 Grade 3, ASTM A334 Grade 3; A352LC3; ASTM A203 D,E EN:12Ni14, S(P)275-S(P)460

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

Wire	C	Mn	Si	Cr	Ni	Mo	Nb	N	Cu
OE-S2	0.05	0.70	0.15	-	-	-	-	-	-
OE-SD3	0.05	1.30	0.25	-	-	-	-	-	-
OE-S2Mo	0.05	0.80	0.20	-	-	0.50	-	-	-
OE-SD3NiMo1	0.06	1.50	0.30	-	1	0.60	-	-	-
OE-SD3 2NiCrMo	0.07	1.40	0.40	0.60	2.20	0.50	-	-	-
OE-S2 Ni1	0.05	1	0.25	-	1.20	-	-	-	-
OE-S2 Ni2	0.065	0.60	0.25	-	2.70	-	-	-	-
OE-S2 Ni3	0.06	0.60	0.25	-	3.50	0.15	-	-	-
OE-S2CrMo1	0.05	0.80	0.20	1	-	0.50	-	-	-
OE-S1CrMo2	0.05	0.70	0.20	2.20	-	1	-	-	-

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All-weld metal Mechanical Properties

Wire	Heat Treatment	Yield Strength N/mm^2	Tensile Strength N/mm^2	Elongation A5 (%)
OE-S2	As Welded	≥ 360	450 - 550	≥ 28
OE-SD3	As Welded	≥ 450	560 - 640	≥ 25
OE-S2Mo	As Welded	≥ 500	580-680	≥ 20
OE-SD3NiMo1	PWHT 580-620°C	≥ 540	630 - 730	≥ 22
OE-SD3NiMo1	As Welded	≥ 540	650 - 750	≥ 20
OE-SD3 2NiCrMo	PWHT 600°C X 2 H	≥ 690	780 - 820	≥ 19
OE-SD3 2NiCrMo	As Welded	≥ 720	830 - 870	≥ 18
OE-S2 Ni1	PWHT 580-620°C	≥ 380	480 - 580	≥ 26
OE-S2 Ni1	As Welded	≥ 420	500 - 600	≥ 24
OE-S2 Ni2	PWHT 580-620°C	≥ 400	480-660	≥ 22
OE-S2 Ni2	As Welded	≥ 400	480-660	≥ 22
OE-S2 Ni3	PWHT 580-620°C	≥ 430	500 - 610	≥ 26
OE-S2 Ni3	As Welded	≥ 460	565 - 645	≥ 24
OE-S2CrMo1	PWHT 920°C/air+710°C	≥ 380	530 - 630	≥ 24
OE-S1CrMo2	PWHT 940°C/air+740°C	≥ 450	550 - 650	≥ 22

All-weld metal Mechanical Properties - Cv

Wire	Heat Treatment	Charpy V Notch Impact Toughness (J)							
		0	-20	- 30	- 40	- 50	- 60	- 80	- 196
OE-S2	As Welded	160 min	100 min	-	-	-	-	-	-
OE-SD3	As Welded	160 min	140 min	-	100 min	-	70 min	-	-
OE-S2Mo	As Welded	120 min	100 min	-	70 min	-	50 min	-	-
OE-SD3NiMo1	PWHT	140 min	120 min	-	90 min	-	70 min	-	-
OE-SD3NiMo1	As Welded	120 min	90 min	-	70 min	-	47 min	-	-
OE-SD3 2NiCrMo	PWHT	-	-	-	50 min	-	-	-	-
OE-SD3 2NiCrMo	As Welded	-	-	-	50 min	-	-	-	-
OE-S2 Ni1	PWHT	90 min	-	-	-	-	-	-	-
OE-S2 Ni1	As Welded	130 min	100 min	-	70 min	-	50 min	-	-
OE-S2 Ni2	PWHT	-	-	-	160 min	-	100 min	80 min	-
OE-S2 Ni2	As Welded	-	-	-	100 min	-	70 min	50 min	-
OE-S2 Ni3	PWHT	160 min	140 min	-	120 min	-	90 min	70 min	-
OE-S2 Ni3	As Welded	140 min	120 min	-	100 min	-	70 min	50 min	-
OE-S2CrMo1	PWHT	150 min	-	-	40 min	-	-	-	-
OE-S1CrMo2	PWHT	100 min	50 min	-	-	-	-	-	-

Packaging data

25kg heavy duty sealed polythene sacks
25kg & 500kg Dry Bag packaging on demand

Further forms of delivery on request.

Current condition
DC+; AC