

SAW Fluxes Stainless and Heat resistant steels

OP 33 is used for welding stainless and heat resistant steels. OP 33 is neutral in respect to the carbon content of the weld metal so that low C-steels can be welded with suitable wire electrodes. Although OP 33 is not chromium compensated here is no loss of chromium and it is neutral in respect to silicon and manganese. The welds are smooth and have a fine ripple without undercut at the toes and without slag residues (spinel). OP 33 is an aluminate-fluorite type and forms a very thin slag, therefore a low heat input per unit length of weld is recommended. OP 33 has good slag detachability and is ideal for fillet welding. Damp flux should be re-dried at 300-350°C. Grain size according to EN-ISO 14174: 2-20.

Classification

EN ISO	14174: SA AF 2
EN	760: SA AF 2 54 DC H5

	Approvals	Grade
OE-308L	DB	●
OE-308L	TÜV	●
OE-347	DB	●
OE-347	TÜV	●
OE-316L	DB	●
OE-316L	TÜV	●
OE-318	DB	●
OE-318	TÜV	●

	Approvals	Grade
OE-20 16 L	DB	●
OE-20 16 L	RINA	N50 M
OE-20 16 L	TÜV	●
OE-S 22 09	DB	●
OE-S 22 09	RINA	2209 M
OE-S 22 09	TÜV	●
OE-309L	TÜV	●
OE-309LMo	RINA	309Mo M

CE

Boniszewski Basicity 1.8

Chemical analysis (Typical values in %)

		C	Mn	Cr	Ni	Mo	Nb
All weld metal	OE-308L	≤ 0.03	1.5	18	9	-	-
All weld metal	OE-347	≤ 0.07	1.6	18	9	-	0.5
All weld metal	OE-316L	≤ 0.03	1.6	18	10	2.7	-
All weld metal	OE-318	≤ 0.07	1.3	18	10	2.7	0.5
All weld metal	OE-20 16 L	≤ 0.015	7	20	16	3	-
All weld metal	OE-S 22 09	≤ 0.03	1.8	23	9	3	-
All weld metal	OE-309LMo	≤ 0.03	1.8	21	15	3	-

All-weld metal Mechanical Properties

	Heat Treatment	Yield Strength (MPa)	Tensile Strength (MPa)	Elongation A5 (%)
OE-308L	As Welded	≥ 350	≥ 500	≥ 35
OE-347	As Welded	≥ 370	≥ 575	≥ 30
OE-316L	As Welded	≥ 350	≥ 525	≥ 30
OE-318	As Welded	≥ 370	≥ 600	≥ 30
OE-20 16 L	As Welded	≥ 390	≥ 570	≥ 35
OE-S 22 09	As Welded	≥ 550	≥ 750	≥ 25
OE-309LMo	As Welded	≥ 420	≥ 600	≥ 25

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All-weld metal Mechanical Properties - CV

	Heat Treatment	Impact Energy (J)		
		+20 °C	-60 °C	-196 °C
OE-308L	As Welded	≥ 75	60	
OE-347	As Welded	≥ 65		
OE-316L	As Welded	≥ 75	60	
OE-318	As Welded	≥ 65		
OE-20 16 L	As Welded	≥ 70		≥ 30
OE-S 22 09	As Welded		70	
OE-309LMo	As Welded	≥ 80		

Typical applications

	Materials
OE-308L	ASME: AISI 304 - 304L - 302 EN: X5CrNi18-8 (1.4301), X2CrNi18-8 (1.4300)
OE-347	ASME: AISI 347 - 321 EN: X12CrNiTi18-9 (1.4878), X10CrNiTi18-9 (1.4541), X10CrNiNb18-9 (1.4550), X5CrNiNb18-9 (1.4543),
OE-347	ASME: ASTM A336 Grades F321, F347 EN: X10CrNiTi18-9 (1.4541), X10CrNiNb18-9 (1.4550), X5CrNiNb18-9 (1.4543), X12CrNiTi18-9 (1.4870)
OE-316L	ASME: ASTM A351 Grades CF3M, CF3MA EN: X2CrNiMo18-12(1.4435), X2CrNiMo18-10 (1.4404), X5CrNiMo18-10 (1.4401)
OE-318	ASME: AISI 318L EN: X10CrNiMoTi18-12 (1.4573), X10CrNiMoNb18-12 (1.4583), X10CrNiMoTi18-10 (1.4571), X10CrNiNb18-9 (1.4450), X10CrNiMoNb18-10 (1.4580), X12CrNiTi18-9 (1.4870)
OE-20 16 L	ASME: EN: X2CrNiMoN17-13-3 (1.4429), X2CrNiMoN18-14-3 (1.3952); X2CrNiMo18-14-3 (1.4435)
OE-S 22 09	ASME: A182 Grade F51, UNS S31803 - S31500 - S31200 - S32304 EN: X2CrNiMoN22-5 (1.4462)
OE-309LMo	First layer on Carbon-Manganese steels and low alloy steels for 316L overlay.

Redrying

300-350°Cx2-4h

Current Conditions

DC+

Packaging data

Packaging Type	PE
Weight (kg)	25
-	●