OK Flux 10.93

L'OK Flux 10.93 est un flux aggloméré non allié de base pour le soudage arc submergé des aciers inoxydables et des aciers CrNiMo fortement alliés incluant les aciers inoxydables duplex.

Caractéristiques	
Classements	EN ISO 14174 : S A AF 2 56 54 DC
Agréments	CE : EN 13479 DB : 51.039.10 NAKS/HAKC : RD 03-613-03 UKCA : EN 13479

Les approbations sont basées sur l'emplacement de l'usine. Veuillez contacter ESAB pour plus d'informations.

Type de laitier	Fluoride basic CaF2-Al2O3-SiO2
Transfert d'alliage	Non alloying
Densité	nom: 1.0 kg/dm3
Indice de basicité	nom: 1.9

Consommation de flux	
Tensions	**kg flux / kg fil, c.c.**
34 V	0.8 kg
30 V	0.6 kg
26 V	0.5 kg
38 V	1.0 kg

Condition : Dimension 4.0 mm , A 580 A , Vitesse de déplacement 33 m/h

Classifications		
Fil	**AWS/EN**	**AWS – brut de soudage**
OK Autrod 16.10	A5.9:ER308L	-
OK Autrod 16.11	A5.9:ER347	-
OK Autrod 16.30	A5.9:ER316L	-
OK Autrod 16.53	A5.9:ER309L	-
OK Autrod 16.97	14343-A:S 18 8 Mn	-
OK Autrod 2209	A5.9:ER2209/ 14343-A:S 22 9 3 N L	-
OK Autrod 2509	A5.9:ER2594/ 14343-A:S 25 9 4 N L	A5.39: F120A8-ER2594/2594
OK Autrod 308H	A5.9:ER308H/ 14343-A:S 19 9 H	-
OK Autrod 308L	A5.9:ER308L/ 14343-A:S 19 9 L	A5.39: F80A32-ER308L/308L
OK Autrod 309L	A5.9:ER309L/ 14343-A:S 23 12 L	A5.39: F80A10-ER309L/309L
OK Autrod 309MoL	A5.9:ER309LMo (mod)/ 14343-A:S 23 12 2 L	A5.39: F85A4-ER309LMo (mod)/309LMo (mod)
OK Autrod 316H	A5.9:ER316H/ 14343-A:S 19 12 3 H	-
OK Autrod 316L	A5.9:ER316L/ 14343-A:S 19 12 3 L	A5.39: F75A15-ER316L/316L
OK Autrod 316LMn	A5.9:ER316LMn/ 14343-A:S 20 16 3 Mn N L	-
OK Autrod 317L	A5.9:ER317L/ 14343-A:S 18 15 3 L	-
OK Autrod 318	A5.9:ER318/ 14343-A:S 19 12 3 Nb	-
OK Autrod 347	A5.9:ER347/ 14343-A:S 19 9 Nb	A5.39: F90A15-ER347/347
OK Autrod 410NiMo	14343-A:S 13 4	-
OK Autrod NiCrMo-3	A5.14:ERNiCrMo-3/ 18274:S Ni 6625 (NiCr22Mo9Nb)	A5.39: F100A32-ERNiCrMo-3/NiCrMo-3
OK Autrod NiCrMo-4	A5.14:ERNiCrMo-4/ 18274:S Ni 6276 (NiCr15Mo16Fe6W4)	-

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Homologations									
Fil	**ABS**	**BV**	**CE**	**ClassNK**	**DNV-GL**	**LR**	**VdTÜV**	**DB**	**DNV**
OK Autrod 2209	●	●	●	●	●	●	●	-	-
OK Autrod 2509	-	-	●	-	-	-	●	-	-
OK Autrod 308L	●	●	●	-	●	-	●	●	-
OK Autrod 309L	●	-	●	-	●	●	●	-	-
OK Autrod 316L	●	-	●	-	-	-	●	●	●
OK Autrod 318	-	-	●	-	-	-	●	●	-
OK Autrod 347	-	-	●	-	-	-	●	●	-

composition du fil									
C	**Mn**	**Si**	**S**	**P**	**Ni**	**Cr**	**Mo**	**Cu**	**N**
OK Autrod 16.10									
0.02	1.80	0.50	0.010	0.025	9.20	19.80	0.20	0.20	-
OK Autrod 16.11									
0.05	1.50	0.45	0.010	0.025	9.10	19.20	0.10	0.15	-
OK Autrod 16.30									
0.02	1.70	0.40	0.015	0.025	11.20	18.40	2.10	0.10	-
OK Autrod 16.53									
0.02	1.70	0.40	0.015	0.025	12.20	23.20	0.10	0.10	-
OK Autrod 16.97									
0.07	6.5	0.4	-	-	8.2	18.9	-	-	-
OK Autrod 2209									
0.01	1.5	0.5	-	-	8.5	22.7	3.2	-	0.17
OK Autrod 2509									
0.01	0.4	0.4	-	-	9.4	25.2	3.9	-	0.24
OK Autrod 308H									
0.05	1.9	0.5	-	-	9.2	19.8	-	-	0.06
OK Autrod 308L									
0.02	1.9	0.4	-	-	9.8	19.8	-	-	0.05
OK Autrod 309L									
0.02	1.8	0.4	-	-	13.4	23.2	0.10	0.1	0.05
OK Autrod 309MoL									
0.01	1.5	0.4	-	-	14.6	21.4	2.5	-	-
OK Autrod 316H									
0.05	1.7	0.4	-	-	12.5	19.3	2.2	-	-
OK Autrod 316L									
0.01	1.7	0.4	-	-	12.0	18.2	2.6	-	0.04
OK Autrod 316LMn									
0.01	6.9	0.4	-	-	15.9	19.9	3.0	-	0.18
OK Autrod 317L									
0.01	1.4	0.4	-	-	13.6	18.9	3.6	-	0.05
OK Autrod 318									
0.04	1.8	0.4	-	-	11.5	18.9	2.6	-	0.04
OK Autrod 347									
0.04	1.4	0.4	-	-	9.5	19.2	-	-	0.05
OK Autrod 410NiMo									
0.02	0.5	0.4	-	-	4.2	12.4	0.6	0.1	-

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composition du fil									
C	**Mn**	**Si**	**S**	**P**	**Ni**	**Cr**	**Mo**	**Cu**	**N**
OK Autrod NiCrMo-3									
0.02	0.04	0.06	-	-	Bal	22.7	8.6	-	-
OK Autrod NiCrMo-4									
0.01	0.45	0.05	-	-	Bal.	15.5	16.1	-	-

composition du fil					
Nb	**PRE**	**FN WRC-92**	**W**	**Fe**	**Nb+Ta**
OK Autrod 16.11					
0.70	-	-	-	-	-
OK Autrod 2209					
-	35	55	-	-	-
OK Autrod 2509					
-	42	50	-	-	-
OK Autrod 308H					
0.01	-	9	-	-	-
OK Autrod 309L					
-	-	10	-	-	-
OK Autrod 316L					
-	-	7	-	-	-
OK Autrod 317L					
-	-	7	-	-	-
OK Autrod 318					
0.7	-	11	-	-	-
OK Autrod 347					
0.6	-	7	-	-	-
OK Autrod NiCrMo-3					
-	-	-	-	0.3	3.5
OK Autrod NiCrMo-4					
-	-	-	3.5	5.8	-

analyse du métal d’apport									
C	**Mn**	**Si**	**S**	**P**	**Ni**	**Cr**	**Mo**	**V**	**Cu**
OK Autrod 16.10									
0.02	1.40	0.60	-	-	8.60	18.80	-	-	-
OK Autrod 16.11 DC+, As welded									
0.05	1.20	0.55	-	-	8.50	18.30	-	-	-
OK Autrod 16.11									
-	-	-	0.015	0.025	-	-	0.10	-	0.15
OK Autrod 16.30 DC+, As welded									
0.02	1.40	0.50	-	-	10.60	17.50	2.00	-	-
OK Autrod 16.30									
-	-	-	0.015	0.025	-	-	-	-	0.10
OK Autrod 16.53 DC+, As welded									
0.02	1.40	0.50	-	-	11.60	22.10	-	-	-
OK Autrod 16.53									
-	-	-	0.015	0.025	-	-	0.10	-	0.10
OK Autrod 16.97									

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analyse du métal d'apport									
C	**Mn**	**Si**	**S**	**P**	**Ni**	**Cr**	**Mo**	**V**	**Cu**
0.06	6.3	1.2	0.01	0.02	8.0	18.0	0.1	-	0.1
OK Autrod 2209 Current: DC+, 420A, 27V									
0.02	1.3	0.5	-	-	9.0	22.5	3.1	-	-
OK Autrod 2209									
-	-	-	0.01	0.02	-	-	-	-	0.1
OK Autrod 2509 Current: DC+, 350A, 28V, 48cm/min									
0.02	0.4	0.5	-	-	9.5	24.6	3.5	-	-
OK Autrod 2509									
-	-	-	0.01	0.02	-	-	-	-	0.2
OK Autrod 308H DC+									
0.05	1.5	0.6	-	-	9.9	19.9	-	-	-
OK Autrod 308H									
-	-	-	0.01	0.02	-	-	0.1	-	0.1
OK Autrod 308L									
-	-	-	0.01	0.02	-	-	0.2	-	0.1
OK Autrod 308L DC+, As welded									
0.02	1.6	0.5	-	-	10.0	19.5	-	-	-
OK Autrod 309L									
-	-	-	0.01	0.02	-	-	0.2	-	0.2
OK Autrod 309L Current: DC+, 400 A, 28 V, welding speed 48cm/min									
0.02	1.3	0.5	-	-	12.5	23.0	-	-	-
OK Autrod 309MoL									
-	-	-	0.02	0.02	-	-	-	-	0.1
OK Autrod 309MoL DC+, 380 A, 28 V, 50cm/min									
0.02	1.2	0.5	-	-	14.5	20.8	2.8	-	-
OK Autrod 316H DC+									
0.04	1.5	0.6	-	-	11.2	18.4	2.1	-	-
OK Autrod 316H									
-	-	-	0.01	0.02	-	-	-	-	0.1
OK Autrod 316L									
0.02	1.4	0.5	0.01	0.02	12.5	18.0	2.6	-	0.1
OK Autrod 316LMn									
0.02	5.4	0.7	0.01	0.01	15.5	20.0	2.5	-	0.2
OK Autrod 317L									
-	-	-	0.01	0.02	-	-	-	-	0.1
OK Autrod 317L Current: DC+, 420 A, 27 V									
0.02	1.5	0.5	-	-	13.5	18.5	3.2	-	-
OK Autrod 318 Current: DC+, 440A, 30V									
0.035	1.2	0.5	-	-	12.0	18.5	2.6	-	-
OK Autrod 318									
-	-	-	0.01	0.02	-	-	-	-	0.2
OK Autrod 347									
-	-	-	0.01	0.02	-	-	0.1	-	0.2
OK Autrod 347 Current: DC+, 420A, 27V, welding speed 48cm/min									
0.035	1.1	0.5	-	-	9.6	19.2	-	-	-
OK Autrod 410NiMo									
-	-	-	0.01	0.02	-	-	-	-	0.10

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analyse du métal d'apport									
C	**Mn**	**Si**	**S**	**P**	**Ni**	**Cr**	**Mo**	**V**	**Cu**
OK Autrod 410NiMo DC+, 450A, 28V									
0.02	0.4	0.5	-	-	4.1	11.7	0.51	-	-
OK Autrod NiCrMo-3 Current: DC+, 400A, 28V, travel speed: 25 m/h.									
0.02	0.2	0.4	-	-	-	22	9	-	-
OK Autrod NiCrMo-3									
-	-	-	0.005	0.015	-	-	-	-	0.1
OK Autrod NiCrMo-4									
0.01	0.4	0.20	0.002	0.006	Bal	15.1	15.6	0.1	0.03

analyse du métal d'apport						
N	**Nb**	**Co**	**FN WRC-92**	**W**	**Fe**	**Nb+Ta**
OK Autrod 16.11 DC+, As welded						
-	0.50	-	-	-	-	-
OK Autrod 2209 Current: DC+, 420A, 27V						
0.17	-	-	45	-	-	-
OK Autrod 2509 Current: DC+, 350A, 28V, 48cm/min						
0.20	-	-	58	<0.002	-	-
OK Autrod 308L						
0.06	-	-	9	-	-	-
OK Autrod 309L						
-	-	-	8	-	-	-
OK Autrod 316L						
0.047	-	-	9	-	-	-
OK Autrod 316LMn						
0.13	-	-	-	-	-	-
OK Autrod 318 Current: DC+, 440A, 30V						
-	0.3	-	-	-	-	-
OK Autrod 318						
-	-	-	9	-	-	-
OK Autrod 347 Current: DC+, 420A, 27V, welding speed 48cm/min						
-	0.5	-	8	-	-	-
OK Autrod NiCrMo-3 Current: DC+, 400A, 28V, travel speed: 25 m/h.						
-	-	-	-	-	5	-
OK Autrod NiCrMo-3						
-	-	-	-	-	-	3
OK Autrod NiCrMo-4						
-	-	0.1	-	3.6	5.8	-

Propriétés mécaniques types					
Fil	**Condition**	**Limite d'élasticité**	**Résistance la traction**	**Allongement**	**Charpy entaille en V**
OK Autrod 16.10	Brut de soudage DC+	410 MPa (59 ksi)	570 MPa (83 ksi)	38 %	80 J @ -60 °C (59 ft-lb @ -76 °F) 60 J @ -110 °C (44 ft-lb @ -166 °F) 45 J @ -196 °C (33 ft-lb @ -320.8 °F)
OK Autrod 16.11	Brut de soudage DC+	420 MPa (61 ksi)	590 MPa (86 ksi)	36 %	60 J @ -60 °C

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Propriétés mécaniques types					
Fil	**Condition**	**Limite d'élasticité**	**Résistance la traction**	**Allongement**	**Charpy entaille en V**
					(44 ft-lb @ -76 °F) 45 J @ -110 °C (33 ft-lb @ -166 °F) 30 J @ -196 °C (22 ft-lb @ -320.8 °F)
OK Autrod 16.30	Brut de soudage DC+	400 MPa (58 ksi)	530 MPa (77 ksi)	35 %	70 J @ -60 °C (52 ft-lb @ -76 °F) 65 J @ -110 °C (48 ft-lb @ -166 °F) 40 J @ -196 °C (30 ft-lb @ -320.8 °F)
OK Autrod 16.53	Brut de soudage DC+	430 MPa (62 ksi)	570 MPa (83 ksi)	35 %	65 J @ -60 °C (48 ft-lb @ -76 °F) 55 J @ -110 °C (41 ft-lb @ -166 °F) 35 J @ -196 °C (26 ft-lb @ -320.8 °F)
OK Autrod 16.97	Brut de soudage DC+	400 MPa (58 ksi)	600 MPa (87 ksi)	45 %	60 J @ -20 °C (44 ft-lb @ -4 °F)
OK Autrod 2209	Brut de soudage	630 MPa (91 ksi)	780 MPa (113 ksi)	30 %	140 J @ 20 °C (104 ft-lb @ 68 °F) 125 J @ -20 °C (93 ft-lb @ -4 °F) 110 J @ -40 °C (81 ft-lb @ -40 °F) 80 J @ -60 °C (59 ft-lb @ -76 °F) 28 J @ -110 °C (21 ft-lb @ -166 °F)
OK Autrod 2509	Brut de soudage DC+	670 MPa (97 ksi)	870 MPa (126 ksi)	24 %	65 J @ 20 °C (48 ft-lb @ 68 °F) 40 J @ -60 °C (30 ft-lb @ -76 °F)
OK Autrod 308L	Brut de soudage dia 2.4mm, travel speed 56cm/min 400A DC+ 28V	400 MPa (58 ksi)	570 MPa (83 ksi)	40 %	100 J @ 20 °C (74 ft-lb @ 68 °F) 75 J @ -40 °C (56 ft-lb @ -40 °F) 65 J @ -60 °C (48 ft-lb @ -76 °F) 55 J @ -110 °C (41 ft-lb @ -166 °F) 47 J @ -196 °C (35 ft-lb @ -320.8 °F)
OK Autrod 309L	Brut de soudage DC+	430 MPa (62 ksi)	570 MPa (83 ksi)	33 %	90 J @ 20 °C (67 ft-lb @ 68 °F) 70 J @ -60 °C (52 ft-lb @ -76 °F) 60 J @ -110 °C (44 ft-lb @ -166 °F) 25 J @ -196 °C (19 ft-lb @ -320.8 °F)
OK Autrod 309MoL	Brut de soudage DC+	430 MPa (62 ksi)	610 MPa (88 ksi)	31 %	50 J @ 20 °C (37 ft-lb @ 68 °F)

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Propriétés mécaniques types					
Fil	**Condition**	**Limite d'élasticité**	**Résistance la traction**	**Allongement**	**Charpy entaille en V**
					35 J @ -40 °C (26 ft-lb @ -40 °F)
OK Autrod 316H	Brut de soudage AWS 475A; 30V; H.I 2.0 kJ /mm DC+	410 MPa (59 ksi)	550 MPa (80 ksi)	40 %	85 J @ 20 °C (63 ft-lb @ 68 °F) 75 J @ 0 °C (56 ft-lb @ 32 °F)
OK Autrod 316L	Brut de soudage ø2. 4mm, Feed Speed 48cm/min 350A DC+ 28V	420 MPa (61 ksi)	550 MPa (80 ksi)	42 %	100 J @ 20 °C (74 ft-lb @ 68 °F) 65 J @ -60 °C (48 ft-lb @ -76 °F) 52 J @ -110 °C (38 ft-lb @ -166 °F) 27 J @ -196 °C (20 ft-lb @ -320.8 °F)
OK Autrod 316LMn	Brut de soudage 420A, 30V, 30m/h DC+	410 MPa (59 ksi)	600 MPa (87 ksi)	30 %	70 J @ -60 °C (52 ft-lb @ -76 °F) 60 J @ -110 °C (44 ft-lb @ -166 °F) 40 J @ -196 °C (30 ft-lb @ -320.8 °F)
OK Autrod 317L	Brut de soudage DC+	440 MPa (64 ksi)	615 MPa (89 ksi)	28 %	80 J @ 20 °C (59 ft-lb @ 68 °F) 50 J @ -60 °C (37 ft-lb @ -76 °F)
OK Autrod 318	Brut de soudage DC+	440 MPa (64 ksi)	600 MPa (87 ksi)	40 %	100 J @ 20 °C (74 ft-lb @ 68 °F) 90 J @ -60 °C (67 ft-lb @ -76 °F) 40 J @ -110 °C (30 ft-lb @ -166 °F)
OK Autrod 347	Brut de soudage DC+	455 MPa (66 ksi)	635 MPa (92 ksi)	36 %	90 J @ 20 °C (67 ft-lb @ 68 °F) 85 J @ -60 °C (63 ft-lb @ -76 °F) 38 J @ -110 °C (28 ft-lb @ -166 °F) 25 J @ -196 °C (19 ft-lb @ -320.8 °F)
OK Autrod 410NiMo	Brut de soudage DC+, 450A, 28V	900 MPa (131 ksi)	1000 MPa (145 ksi)	15.5 %	30 J @ 0 °C (22 ft-lb @ 32 °F) 30 J @ -20 °C (22 ft-lb @ -4 °F)
OK Autrod NiCrMo-3	Brut de soudage DC+	450 MPa (65 ksi)	710 MPa (103 ksi)	45 %	90 J @ -60 °C (67 ft-lb @ -76 °F) 80 J @ -196 °C (59 ft-lb @ -320.8 °F)
OK Autrod NiCrMo-4	Brut de soudage 350A DC+	460 MPa (67 ksi)	705 MPa (102 ksi)	45 %	90 J @ -60 °C (67 ft-lb @ -76 °F) 85 J @ -110 °C (63 ft-lb @ -166 °F) 75 J @ -196 °C (56 ft-lb @ -320.8 °F)