

OK Flux 10.93

Basic, agglomerated flux for butt welding of stainless steels.

A suitable flux for welding of high alloyed CrNi-steels like e.g. duplex stainless steel.

The low Si addition during welding provides good mechanical properties in the weld metal.

Классификации	EN ISO 14174 : S A AF 2 56 54 DC
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Тип шлака	Fluoride basic CaF ₂ -Al ₂ O ₃ -SiO ₂
Перенос легирующего элемента	Non alloying
Плотность	nom 1.0 kg/dm ³
Показатель щелочности	nom 1.9

Flux Consumption

Volts	kg Flux / kg Wire DC+	kg Flux / kg Wire AC
26 V	0.5 kg	-
30 V	0.6 kg	-
34 V	0.8 kg	-
38 V	1.0 kg	-

Dimensions	Amps	Travel Speed
4.0 mm	580 A	33 m/h

Classifications

Wire	SFA/AWS - EN ISO	AWS - As Welded
OK Autrod 16.10	A5.9:ER308L	
OK Autrod 16.11	A5.9:ER347	
OK Autrod 16.30	A5.9:ER316L	
OK Autrod 16.38	14343-A:S 20 16 3 Mn L	
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 2307	14343-A:S 23 7 N L	
OK Autrod 2509	A5.9:ER2594/ 14343-A:S 25 9 4 N L	A5.39: F120A8-ER2594/2594
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 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	
OK Autrod 309MoL	A5.9:ER309LMo (mod)/ 14343-A:S 23 12 2 L	A5.39: F85A4-ER309LMo (mod)/309LMo (mod)
OK Autrod 309MoL	A5.9:ER309LMo (mod)/ 14343-A:S 23 12 2 L	A5.39: F85A4-ER309LMo (mod)/309LMo (mod)
OK Autrod 310MoL	14343-A:S 25 22 2 N L	
OK Autrod 312	A5.9:ER312/ 14343-A:S 29 9	
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	
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 347	A5.9:ER347/ 14343-A:S 19 9 Nb	A5.39: F90A15-ER347/347
OK Autrod 385	A5.9:ER385/ 14343-A:S 20 25 5 Cu L	
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-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)	

Approvals

Combined with Wire	ABS	BV	DNV	GL	LR	DB	CE	RINA	ClassNK	VdTUV	DNV-GL
OK Autrod 16.97	-	-	•	-	-	-	-	-	-	-	•

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Approvals

Combined with Wire	ABS	BV	DNV	GL	LR	DB	CE	RINA	ClassNK	VdTÜV	DNV-GL
OK Autrod 2209	•	•	•	•	•	-	•	•	•	•	•
OK Autrod 2509	-	-	-	-	-	-	•	-	-	•	-
OK Autrod 308L	•	•	•	-	-	•	•	-	-	•	•
OK Autrod 308L LF	-	-	-	-	-	-	•	-	-	•	-
OK Autrod 309L	•	-	•	-	•	-	•	-	-	•	•
OK Autrod 316L	•	-	•	-	-	•	•	-	-	•	-
OK Autrod 318	-	-	-	-	-	•	•	-	-	•	-
OK Autrod 347	-	-	-	-	-	•	•	-	-	•	-
OK Autrod 385	-	-	-	-	-	-	-	-	-	•	-

Typical Mechanical Properties

Combined with Wire	Condition	Yield Strength	Tensile Strength	Elongation	Charpy V-Notch
OK Autrod 16.10	As Welded DC+ hr	410 MPa	570 MPa	38 %	80 J @ -60°C 60 J @ -110°C 45 J @ -196°C
OK Autrod 16.11	As Welded DC+ hr	420 MPa	590 MPa	36 %	60 J @ -60°C 45 J @ -110°C 30 J @ -196°C
OK Autrod 16.30	As Welded DC+ hr	400 MPa	530 MPa	35 %	70 J @ -60°C 65 J @ -110°C 40 J @ -196°C
OK Autrod 16.38	As Welded DC+ hr	410 MPa	600 MPa	44 %	70 J @ -60°C 60 J @ -110°C 40 J @ -196°C
OK Autrod 16.53	As Welded DC+ hr	430 MPa	570 MPa	35 %	65 J @ -60°C 55 J @ -110°C 35 J @ -196°C
OK Autrod 16.97	As Welded DC+ hr	400 MPa	600 MPa	45 %	60 J @ -20°C
OK Autrod 2209	As Welded hr	630 MPa	780 MPa	30 %	140 J @ 20°C 125 J @ -20°C 110 J @ -40°C 80 J @ -60°C 28 J @ -110°C
OK Autrod 2209	As Welded DC+ hr	630 MPa	780 MPa	30 %	140 J @ 20°C 125 J @ -20°C 110 J @ -40°C 80 J @ -60°C
OK Autrod 2307	As Welded DC+ hr	560 MPa	730 MPa	32 %	140 J @ 20°C 125 J @ -20°C 90 J @ -40°C 60 J @ -60°C
OK Autrod 2509	As Welded DC+ hr	640 MPa	840 MPa	28 %	85 J @ 20°C 60 J @ -40°C
OK Autrod 2509	As Welded DC+ hr	670 MPa	870 MPa	24 %	65 J @ 20°C 40 J @ -60°C
OK Autrod 308L	As Welded DC+ hr	400 MPa	560 MPa	38 %	100 J @ 20°C 75 J @ -40°C 65 J @ -60°C 55 J @ -110°C 40 J @ -196°C
OK Autrod 308L	As Welded dia 2.4mm, travel speed 56cm/min 400A DC+ 28V hr	400 MPa	570 MPa	40 %	100 J @ 20°C 75 J @ -40°C 65 J @ -60°C 55 J @ -110°C 47 J @ -196°C
OK Autrod 308L	As Welded dia 4.0 mm 500A DC+ 30V hr	400 MPa	560 MPa	38 %	100 J @ 20°C 75 J @ -40°C 65 J @ -60°C 55 J @ -110°C 35 J @ -196°C
OK Autrod 308L LF	As Welded Dia 2.4 mm 45 cm/min 400A DC+ 28V hr	400 MPa	550 MPa	40 %	40 J @ -196°C
OK Autrod 309L	As Welded DC+ hr	430 MPa	570 MPa	33 %	90 J @ 20°C 70 J @ -60°C 60 J @ -110°C 35 J @ -196°C
OK Autrod 309MoL	As Welded DC+ hr	400 MPa	600 MPa	38 %	120 J @ 20°C
OK Autrod 309MoL	As Welded DC+ hr	430 MPa	610 MPa	31 %	50 J @ 20°C 35 J @ -40°C
OK Autrod 310MoL	As Welded DC+ hr	335 MPa	575 MPa	42 %	120 J @ 20°C
OK Autrod 316H	As Welded AWS 475A; 30V; H.I 2.0 kJ/mm DC+ hr	410 MPa	550 MPa	40 %	85 J @ 20°C 75 J @ 0°C

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Typical Mechanical Properties					
Combined with Wire	Condition	Yield Strength	Tensile Strength	Elongation	Charpy V-Notch
OK Autrod 316L	As Welded DC+ hr	390 MPa	565 MPa	42 %	100 J @ 20°C 95 J @ -40°C 90 J @ -60°C 75 J @ -110°C 40 J @ -196°C
OK Autrod 316LMn	As Welded 420A, 30V, 30m/h DC+ hr	410 MPa	600 MPa	30 %	70 J @ -60°C 60 J @ -110°C 40 J @ -196°C
OK Autrod 316LMn	As Welded 420A, 30V, 30m/h DC+ hr	410 MPa	600 MPa	44 %	70 J @ -60°C 60 J @ -110°C 40 J @ -196°C
OK Autrod 317L	As Welded DC+ hr	440 MPa	615 MPa	28 %	80 J @ 20°C 50 J @ -60°C
OK Autrod 318	As Welded DC+ hr	440 MPa	600 MPa	40 %	100 J @ 20°C 90 J @ -60°C 40 J @ -110°C
OK Autrod 318	As Welded DC+ hr	440 MPa	600 MPa	42 %	100 J @ 20°C 90 J @ -60°C 40 J @ -110°C
OK Autrod 347	As Welded 420A DC+ Feed speed: 30m/h 27V hr	455 MPa	635 MPa	36 %	105 J @ 20°C 85 J @ -60°C 60 J @ -110°C 30 J @ -196°C
OK Autrod 347	As Welded DC+ hr	455 MPa	635 MPa	36 %	90 J @ 20°C 85 J @ -60°C 38 J @ -110°C 25 J @ -196°C
OK Autrod 385	As Welded DC+ hr	310 MPa	530 MPa	35 %	80 J @ 20°C
OK Autrod 410NiMo	As Welded DC+, 450A, 28V hr	900 MPa	1000 MPa	15.5 %	30 J @ 0°C 30 J @ -20°C
OK Autrod 410NiMo	Stress Relieved DC+, 450A, 28V Stress relieved 600°C, 2h hr	770 MPa	850 MPa	19 %	55 J @ 0°C 55 J @ -20°C
OK Autrod 410NiMo	Stress Relieved DC+, 500A, 30V Stress relieved 580°C, 4h hr	785 MPa	860 MPa	18 %	55 J @ 0°C 50 J @ -20°C
OK Autrod NiCrMo-3	As Welded DC+ hr	450 MPa	710 MPa	45 %	90 J @ -60°C 80 J @ -196°C 80 J @ -196°C
OK Autrod NiCrMo-4	As Welded HI 1.6-1.8 kJ/mm DC+	450 MPa	700 MPa	45 %	100 J @ -60°C 80 J @ -196°C

Хим. состав наплавленного металла

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	0.015	0.025	8.50	18.30	0.10	-	0.15
OK Autrod 16.30 DC+, As welded									
0.02	1.40	0.50	0.015	0.025	10.60	17.50	2.00	-	0.10
OK Autrod 16.53 DC+, As welded									
0.02	1.40	0.50	0.015	0.025	11.60	22.10	0.10	-	0.10
OK Autrod 16.97									
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	0.01	0.02	9.0	22.5	3.1	-	0.1
OK Autrod 2509 Current: DC+, 350A, 28V, 48cm/min									
0.02	0.4	0.5	0.01	0.02	9.5	24.6	3.5	-	0.2
OK Autrod 308H DC+									
0.05	1.5	0.6	0.01	0.02	9.9	19.9	0.1	-	0.1
OK Autrod 308L DC+, As welded									
0.02	1.6	0.5	0.01	0.02	10.0	19.5	0.2	-	0.1
OK Autrod 309L Current: DC+, 420 A, 27 V									
0.02	1.3	0.5	0.01	0.02	12.5	23.0	0.2	-	0.2
OK Autrod 309MoL DC+, 380 A, 28 V, 50cm/min									
0.02	1.2	0.5	0.02	0.02	14.5	20.8	2.8	-	0.1
OK Autrod 312 Current: DC+, 420A, 27V									
0.1	1.5	0.5	-	-	9.5	29.0	0.1	-	0.1

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Хим. состав наплавленного металла									
C	Mn	Si	S	P	Ni	Cr	Mo	V	Cu
OK Autrod 316H DC+									
0.04	1.5	0.6	0.01	0.02	11.2	18.4	2.1	-	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 Current: DC+, 420 A, 27 V									
0.02	1.5	0.5	0.01	0.02	13.5	18.5	3.2	-	0.1
OK Autrod 318 Current: DC+, 440A, 30V									
0.035	1.2	0.5	0.01	0.02	12.0	18.5	2.6	-	0.2
OK Autrod 347 Current: DC+, 420A, 27V, welding speed 48cm/min									
0.035	1.1	0.5	0.01	0.02	9.6	19.2	0.1	-	0.2
OK Autrod 385 Current: DC+, 420A, 27V									
0.02	1.5	0.5	0.01	0.01	25.0	19.0	4.0	-	1.5
OK Autrod 410NiMo DC+, 450A, 28V									
0.02	0.4	0.5	0.01	0.02	4.1	11.7	0.51	-	0.10
OK Autrod NiCrMo-3 Current: DC+, 400A, 28V, travel speed: 25 m/h.									
0.02	0.2	0.4	0.005	0.015	-	22	9	-	0.1
OK Autrod NiCrMo-4 DC+									
0.01	0.4	0.20	-	-	Bal	15.1	15.6	0.1	-

N	Nb	Co	Fe	Nb+Ta	W	FN WRC-92
OK Autrod 16.10						
-	-	-	-	-	-	-
OK Autrod 16.11 DC+, As welded						
-	0.50	-	-	-	-	-
OK Autrod 16.30 DC+, As welded						
-	-	-	-	-	-	-
OK Autrod 16.53 DC+, As welded						
-	-	-	-	-	-	-
OK Autrod 16.97						
-	-	-	-	-	-	-
OK Autrod 2209 Current: DC+, 420A, 27V						
0.17	-	-	-	-	-	45
OK Autrod 2509 Current: DC+, 350A, 28V, 48cm/min						
0.20	-	-	-	-	<0.002	58
OK Autrod 308H DC+						
-	-	-	-	-	-	-
OK Autrod 308L DC+, As welded						
0.06	-	-	-	-	-	9
OK Autrod 309L Current: DC+, 420 A, 27 V						
-	-	-	-	-	-	-
OK Autrod 309MoL DC+, 380 A, 28 V, 50cm/min						
-	-	-	-	-	-	-
OK Autrod 312 Current: DC+, 420A, 27V						
-	-	-	-	-	-	-
OK Autrod 316H DC+						
-	-	-	-	-	-	-
OK Autrod 316L						
-	-	-	-	-	-	8
OK Autrod 316LMn						
0.13	-	-	-	-	-	-
OK Autrod 317L Current: DC+, 420 A, 27 V						
-	-	-	-	-	-	-
OK Autrod 318 Current: DC+, 440A, 30V						
-	0.3	-	-	-	-	9
OK Autrod 347 Current: DC+, 420A, 27V, welding speed 48cm/min						
-	0.5	-	-	-	-	8
OK Autrod 385 Current: DC+, 420A, 27V						