

Outokumpu Stainless Steel Grades

		Steel designations			Typical chemical composition, %						National steel designations superseded by EN				Outokumpu products	Welding consumables Covered electrodes ISO 3581/ISO 14172
		Outokumpu steel names	EN	ASTM/UNS	C	N	Cr	Ni	Mo	Others	BS/UK	DIN/Germany	NF/France	SS/Sweden		
WET CORROSION AND GENERAL SERVICE	Ferritic	4512	1.4512	409	0.02	–	11.5	0.2	–	Ti	409S	1.4512	Z3 CT 12	–	C	13 or 19 9L
		4003	1.4003	S40977	0.02	–	11.5	0.5	–	–	–	1.4003	–	–	P H C	13 or 19 9L
		4000	1.4000	410S	0.03	–	12.5	–	–	–	403S17	1.4000	Z8 C12	2301	P	13 or 19 9L
		4016	1.4016	430	0.04	–	16.5	–	–	–	430S17	1.4016	Z8 C17	2320	H C B R	19 9L or 23 12L
		4509	1.4509	S43932	0.02	–	18	–	–	Nb, Ti	–	1.4509	Z3 CT Nb 18	–	C	19 9 Nb or 18 8 Mn
		4521	1.4521	444	0.02	–	18	–	2.1	Ti	–	1.4521	Z3 CDT 18-02	2326	P C	19 12 3L or 23 12 2L
	Martensitic	4006	1.4006	410	0.12	0.04	12	–	–	–	410S21	1.4006	Z10 C13	2302	P B R	13 or 19 9
		4005	1.4005	416	0.10	0.04	13	–	–	S	416S21	1.4005	Z11 CF13	2380	B R	248 SV*
		4021	1.4021	420	0.20	–	13	–	–	–	420S29	1.4021	Z20 C13	2303	B R	248 SV*
		4028	1.4028	420	0.30	–	12.5	–	–	–	420S45	1.4028	Z33 C13	2304	R	248 SV*
		4313	1.4313	S41500	0.03	0.04	12.5	4.1	0.6	–	–	1.4313	Z6 CN 13-04	2385	P	248 SV*
		4548	1.4548 ¹	–	0.05	0.07	15.5	4.2	–	Mn	–	–	–	–	R	248 SV*
	Duplex	LDX 2101®	1.4162 ¹	S32101	0.03	0.22	21.5	1.5	0.3	5Mn	–	–	–	–	P H C R T F D	23 7 NL or 22 9 3 NL
		2304	1.4362	S32304	0.02	0.10	23	4.8	0.3	–	–	1.4362	Z3 CN 23-04 Az	2327	P H C R T F D	23 7 NL or 22 9 3 NL
		LDX 2404™	1.4662 ¹	S82441	0.02	0.27	24	3.6	1.6	3Mn	–	–	–	–	P H C T F	22 9 3 NL
		2205	1.4462	S32205 ²	0.02	0.17	22	5.7	3.1	–	318S13	1.4462	Z3 CND 22-05 Az	2377	P H C B R T F D	22 9 3 NL
		4501	1.4501	S32760	0.02	0.27	25.4	6.9	3.8	W, Cu	–	–	–	–	P	25 9 4 NL
		2507	1.4410	S32750	0.02	0.27	25	7	4	–	–	–	Z3 CND 25-06 Az	2328	P H C T F	25 9 4 NL
	Austenitic	4310	1.4310	301	0.10	–	17	7	–	–	301S21	1.4310	Z11 CN 18-08	2331	H C B R	19 9L
		4318	1.4318	301LN	0.02	0.14	17.7	6.5	–	–	–	–	Z3 CN 18-07 Az	–	H C	19 9L
		4372	1.4372	201	0.05	0.20	17	4	–	7Mn	284S16	–	Z12 CMN 17-07 Az	–	H C R	18 8 Mn or 23 12 L
		4568	1.4568	631	0.08	0.02	16.6	7.6	–	Al	–	1.4568	Z9 CNA 17-07	2388	R	19 9L
		4301	1.4301	304	0.04	–	18.1	8.1	–	–	304S31	1.4301	Z7 CN 18-09	2333	P H C B R T F	19 9L
		4307	1.4307	304L	0.02	–	18.1	8.1	–	–	304S11	1.4307	Z3 CN 18-10	2352	P H C B R T F	19 9L
		4311	1.4311	304LN	0.02	0.14	18.5	9.2	–	–	304S61	1.4311	Z3 CN 18-10 Az	2371	P H C B R	19 9L
		4541	1.4541	321	0.04	–	17.3	9.1	–	Ti	321S31	1.4541	Z6 CNT 18-10	2337	P H C B R T F	19 9 Nb or 19 9L
		4550	1.4550	347	0.05	0.04	17.5	9.5	–	Nb	347S31	1.4550	Z6 CNNb 18-10	2338	P C R	19 9 Nb or 19 9L
		4305	1.4305	303	0.05	–	17.3	8.2	–	S	303S31	1.4305	Z8 CNF 18-09	2346	P B R	19 9L
		4303	1.4303	305	0.04	–	17.7	12.5	–	–	305S19	1.4303	Z1 CN 18-12	–	P H C B R	19 9L
		4306	1.4306	304L	0.02	–	18.2	10.1	–	–	304S11	1.4306	Z3 CN 18-10	2352	P H C B R T F	19 9L
		4567	1.4567	S30430	0.01	–	17.7	9.7	–	3Cu	304S17	1.4567	Z3 CNU 18-09 FF	–	B R	19 9L
		4401	1.4401	316	0.04	–	17.2	10.1	2.1	–	316S31	1.4401	Z7 CND 17-11-02	2347	P H C B R T F	19 12 3L
		4404	1.4404	316L	0.02	–	17.2	10.1	2.1	–	316S11	1.4404	Z3 CND 17-11-02	2348	P H C B R T F	19 12 3L
		4427	1.4427 ¹	–	0.02	0.05	16.9	10.7	2.6	S	–	–	–	–	P	19 12 3L
		4436	1.4436	316	0.04	–	16.9	10.7	2.6	–	316S33	1.4436	Z7 CND 18-12-03	2343	P H C B R T F	19 12 3L
		4432	1.4432	316L	0.02	–	16.9	10.7	2.6	–	316S13	1.4432	Z3 CND 18-14-03	2353	P H C B R T F	19 12 3L
		4406	1.4406	316LN	0.02	0.14	17.2	10.3	2.1	–	316S61	1.4406	Z3 CND 17-11 Az	–	P H C B R	19 12 3L
		4429	1.4429	S31653	0.02	0.14	17.3	12.5	2.6	–	316S63	1.4429	Z3 CND 17-12 Az	2375	P R	19 12 3L
		4571	1.4571	316Ti	0.04	–	16.8	10.9	2.1	Ti	320S31	1.4571	Z6 CNDT 17-12	2350	P H C B R T F	19 12 3 Nb or 19 12 3L
		4435	1.4435	316L	0.02	–	17.3	12.6	2.6	–	316S13	1.4435	Z3 CND 18-14-03	2353	P H C B R T F	19 12 3L
		3952	1.3952 ¹	–	0.02	0.18	16.9	13.2	2.7	–	–	–	–	–	P	20 16 3 Mn L
		4438	1.4438	317L	0.02	–	18.2	13.7	3.1	–	317S12	1.4438	Z3 CND 19-15-04	2367	P C B R	317
		4439	1.4439	317LMN ³	0.02	0.14	17.3	13.7	4.1	–	–	1.4439	Z3 CND 18-14-05 Az	–	P C	19 13 4 NL or 20 25 5 CuL
		725LN	1.4466	S31050	0.01	0.12	25	22.3	2.1	–	–	1.4466	Z2 CND 25-22 Az	–	P	25 22 2 N L
		3964	1.3964 ¹	–	0.02	0.27	20.5	15.4	3.2	Mn, Nb	–	–	–	–	P	20 16 3 Mn L
		904L	1.4539	904L	0.01	–	20	25	4.3	1.5Cu	904S13	1.4539	Z2 NCDU 25-20	2562	P H C B R T F	20 25 5 CuL
		4529	1.4529	N08926	0.01	0.20	20.5	24.8	6.5	Cu	–	–	–	–	P	Ni Cr 21 Mo Fe Nb or NiCr25Mo16 or P54*
		254 SMO®	1.4547	S31254	0.01	0.20	20	18	6.1	Cu	–	–	–	2378	P H C B R T F	Ni Cr 21 Mo Fe Nb or NiCr25Mo16 or P54*
		4565	1.4565	S34565	0.02	0.45	24	17	4.5	5.5Mn	–	1.4565	–	–	P C	Ni Cr 21 Mo Fe Nb or NiCr25Mo16 or P54*
		654 SMO®	1.4652	S32654	0.01	0.50	24	22	7.3	3Mn, Cu	–	–	–	–	P C T	Ni Cr 25 Mo 16
HEAT AND CREEP	Ferritic	4713	1.4713	–	0.07	0.02	6.5	–	–	0.7Al	–	1.4713	–	–	P	18 8 Mn or 18 9 MnMo or 309
		4724	1.4724	–	0.08	0.02	12.3	–	–	0.8Al	–	1.4724	Z13 C13	–	P	22 12 or 25 4
		4742	1.4742	–	0.08	0.02	17.5	–	–	1Al	–	1.4742	Z12 CAS 18	–	P	22 12 L or 21 10 N
		4762	1.4762	–	0.08	0.02	23.4	–	–	1.4Al	–	1.4762	Z12 CAS 25	–	P	25 20 or 22 12
	Austenitic	4948	1.4948	304H	0.05	–	18.1	8.3	–	–	304S51	1.4948	Z6 CN 18-09	2333	P H C B R	19 9
		4878	1.4878	321H	0.05	–	17.3	9.1	–	Ti	321S51	1.4878	Z6 CNT 18-10	2337	P H C B R	19 9 Nb
		153 MA™	1.4818	S30415	0.05	0.15	18.5	9.5	–	1.3Si, Ce	–	–	–	2372	P C B R T	21 10 N or 253 MA-NF*
		4833	1.4833	309S	0.06	–	22.3	12.6	–	–	309S16	1.4833	Z15 CN 23-13	–	P H C B R	22 12 or 253 MA-NF*
		4828	1.4828	–	0.04	–	20	12	–	2Si	–	1.4828	Z17 CNS 20-12	–	P H C B R	21 10 N or 253 MA-NF*
		253 MA®	1.4835	S30815	0.09	0.17	21	11	–	1. 6Si, Ce	–	1.4835	–	2368	P H C B R T	21 10 N or 253 MA-NF*
		4845	1.4845	310S	0.05	–	25	20	–	–	310S16	1.4845	Z8 CN 25-20	2361	P H C B R	25 20 or 21 10 N
		4841	1.4841	314	0.07	0.05	24.5	19.5	–	2Si	–	1.4841	Z15 CNS 25-20	–	P	25 20 or 21 10 N

¹ designation according to Stahl Eisen Liste (Register of European Steels). ² also available as S31803. ³ 317LMN not available in all product forms

*Avesta Welding designation

EN Material Standards

EN 10088-1	Stainless steel grades general, not for ordering
EN 10088-2	Stainless steel flat products for general purposes
EN 10088-3	Stainless steel long products for general purposes
EN 10088-4	Stainless steel flat products, technical delivery conditions, steels for construction
EN 10088-5	Stainless steel long products, technical delivery conditions, steels for construction
EN 10095	Heat resisting steels and Ni alloys
EN 10302	Creep resisting steels and Ni/Co alloys
EN 10028-7	Stainless flat products for pressure purposes
EN 10272	Stainless rolled bar for pressure purposes
EN 10263-5	Stainless rod, bar and wire for cold heading and cold extrusion
EN 10151	Stainless Steel Strip for Springs
EN 10217-7	Welded tubes for pressure purposes
EN 10296-2	Welded tubes for mechanical and general engineering
EN 10253-3	Butt-welding pipe fittings, without specific requirements
EN 10253-4	Butt-welding pipe fittings, with specific requirements

EN Product Conditions

1D	Hot rolled, heat treated, pickled
1E	Hot rolled, heat treated, mechanically descaled
1G	Hot rolled, ground
1Q	Hot rolled, quenched and tempered, pickled
2H	Work hardened
2E	Cold rolled, heat treated, mech. desc. pickled
2D	Cold rolled, heat treated, pickled
2B	Cold rolled, heat treated, pickled, skin passed
2F	Cold rolled, heat treated, pickled, skin passed on roughened rolls
2R	Cold rolled, bright annealed
2G	Ground
2J	Brushed or dull polished
2K	Satin polished
2M	Patterned
2W	Profile rolled
2L	Coloured

Outokumpu Products

P	Hot rolled plate Quarto
H	Hot rolled strip/sheet CPP
C	Cold rolled strip/sheet
B	Bar
R	Rod
T	Tube/pipe
F	Fittings
D	DUPROF™, profiles in high strength stainless steel

LDX 2101®, LDX 2404™, 254 SMO®, 654 SMO®, 153 MA™ and 253 MA® are trademarks owned by Outokumpu

Outokumpu Special Steel Conditions

LIC	for improved steel cleanliness
PRODEC®	for improved machinability
HyTens®	for improved mechanical properties
CCS ®	for improved mechanical properties
VKS®	for improved thickness tolerances
RAP™2E	for improved thickness tolerances and improved surface finish
Multicertification is made on request to EN/ASTM/ASME as well as to superseded national standards	



1000EN-GB:7 Centrumtryck AB, Avesta, Sweden. September 2010

**OUTO
KUMPU**

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EN Product Conditions

1D	Hot rolled, heat treated, pickled
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2B	Cold rolled, heat treated, pickled, skin passed
2F	Cold rolled, heat treated, pickled, skin passed on roughened rolls
2R	Cold rolled, bright annealed
2G	Ground
2J	Brushed or dull polished
2K	Satin polished
2M	Patterned
2W	Profile rolled
2L	Coloured

Outokumpu Special Steel Conditions

H	Hot rolled plate Quarto	LIC	for improved steel cleanliness
H	Hot rolled strip/sheet CPP	PRODEC®	for improved machinability
C	Cold rolled strip/sheet	HyTens®	for improved mechanical properties
B	Bar	CCS®	for improved mechanical properties
R	Rod	VKS®	for improved thickness tolerances
T	Tube/pipe	RAP™2E	for improved thickness tolerances
F	Fittings		and improved surface finish
D	DUPROF™, Profiles in high strength stainless steel	Multicertification is made on request to EN/ASTM/ASME as well as to superseded national standards	

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