Outokumpu Stainless Steel Grades

		Steel designations		Outokumpu steel names	Typical chemical composition, %						National steel designations superseded by EN				Outokumpu products	Welding consumables Covered electrodes EN 1600
		EN	ASTM/UNS		C	N	Cr	Ni	Mo	Others	BS/UK	DIN/Germany	NF/France	SS/Sweden		
WET CORROSION AND GENERAL SERVICE	Ferritic	1.4003	S40977	4003	0.02	–	11.5	0.5	–	–	–	1.4003	–	–	P H C	13 or 19 9L
		1.4000	410S	4000	0.03	0.01	12.5	–	–	–	403S17	1.4000	Z8 C12	2301	P	13 or 19 9L
		1.4016	430	4016	0.04	–	16,5	–	–	–	430S17	1.4016	Z8 C17	2320	H C N B R	19 9L or 23 12L
		1.4509	S43932	4509	0.02	–	18	–	–	Nb, Ti	–	1.4509	Z3 CT Nb 18	–	C	19 9 Nb or 18 8 Mn
		1.4521	444	4521	0.02	0.01	17.8	–	2.1	Ti	–	1.4521	Z3 CDT 18-02	2326	P N	19 12 3L or 23 12 2L
	Martensitic	1.4006	410	4006	0.12	0.04	12	–	–	–	410S21	1.4006	Z10 C13	2302	P B R	13, 19 9 or 248 SV*
		1.4005	416	4005	0.10	0.04	13	–	–	S	416S21	1.4005	Z11 CF13	2380	B R	248 SV*
		1.4021	420	4021	0.20	–	13	–	–	–	420S29	1.4021	Z20 C13	2303	B R	248 SV*
		1.4028	420	4028	0.30	–	12.5	–	–	–	420S45	1.4028	Z33 C13	2304	R	248 SV*
		1.4313	S41500	4313	0.03	0.04	12.5	4.1	0.6	–	–	1.4313	Z6 CN 13-04	2385	P	248 SV*
		1.4548[1]	–	4548	0.05	0.07	15.5	4.2	–	Mn	–	–	–	–	R	248 SV*
		1.4418	–	248 SV	0.03	–	16	5	1	–	–	1.4418	Z6 CND 16-05-01	2387	(P) B	248 SV*
	Duplex	1.4162[1]	S32101	LDX 2101®	0.03	0.22	21.5	1.5	0.3	5Mn	–	–	–	–	P H C R T F D	LDX 2101* or 22 9 3 NL
		1.4362	S32304	2304	0.02	0.10	23	4.8	0.3	–	–	1.4362	Z3 CN 23-04 Az	2327	P H C R T F D	2304* or 22 9 3 NL
		1.4462	S32205[2]	2205	0.02	0.17	22	5.7	3.1	–	318S13	1.4462	Z3 CND 22-05 Az	2377	P H C N B R T F D	22 9 3 NL
		1.4501	S32760	4501	0.02	0.27	25.4	6.9	3.8	W	–	–	–	–	P	25 9 4 NL
		1.4410	S32750	2507	0.02	0.27	25	7	4	–	–	–	Z3 CND 25-06 Az	2328	P C N H T	25 9 4 NL
	Austenitic	1.4310	301	4310	0.10	–	17	7	–	–	301S21	1.4310	Z11 CN 18-08	2331	H C N B R	19 9L
		1.4318	301LN	4318	0.02	0.14	17.7	6.5	–	–	–	–	Z3 CN 18-07 Az	–	H C	19 9L
		1.4372	201	4372	0.05	0.20	17	4	–	7Mn	284S16	–	Z12 CMN 17-07 Az	–	H C N R	18 9 Mn Mo or 23 12L
		1.4568	631	4568	0.08	0.02	16.6	7.6	–	Al	–	1.4568	Z9 CNA 17-07	2388	R	19 9L
		1.4301	304	4301	0.04	–	18.1	8.1	–	–	304S31	1.4301	Z7 CN 18-09	2333	P H C N B R T F	19 9L
		1.4307	304L	4307	0.02	–	18.1	8.1	–	–	304S11	1.4307	Z3 CN 18-10	2352	P H C N B R T F	19 9L
		1.4311	304LN	4311	0.02	0.14	18.5	9.2	–	–	304S61	1.4311	Z3 CN 18-10 Az	2371	P H C N B R	19 9L
		1.4541	321	4541	0.04	–	17.3	9.1	–	Ti	321S31	1.4541	Z6 CNT 18-10	2337	P H C N B R T F	19 9L
		1.4550	347	4550	0.05	0.04	17.5	9.5	–	Nb	347S31	1.4550	Z6 CNNb 18-10	2338	P C N R	19 9 Nb or 19 9L
		1.4305	303	4305	0.05	–	17.3	8.2	–	S	303S31	1.4305	Z8 CNF 18-09	2346	P B R	19 9L
		1.4303	305	4303	0.04	–	17.7	12.5	–	–	305S19	1.4303	Z1 CN 18-12	–	P H C N B R	19 9L
		1.4306	304L	4306	0.02	–	18.2	10.1	–	–	304S11	1.4306	Z3 CN 18-10	2352	P H C N B R T F	19 9L
		1.4567	S30430	4567	0.01	–	17.7	9.7	–	3Cu	304S17	1.4567	Z3 CNU 18-09 FF	–	B R	19 9L
		1.4401	316	4401	0.04	–	17.2	10.1	2.1	–	316S31	1.4401	Z7 CND 17-11-02	2347	P H C N B R T F	19 12 3L
		1.4404	316L	4404	0.02	–	17.2	10.1	2.1	–	316S11	1.4404	Z3 CND 17-11-02	2348	P H C N B R T F	19 12 3L
		1.4427[1]	–	4427	0.02	0.05	16.9	10.7	2.6	S	–	–	–	–	P	19 12 3L
		1.4436	316	4436	0.04	–	16.9	10.7	2.6	–	316S33	1.4436	Z7 CND 18-12-03	2343	P H C N B R T F	19 12 3L
		1.4432	316L	4432	0.02	–	16.9	10.7	2.6	–	316S13	1.4432	Z3 CND 18-14-03	2353	P H C N B R T F	19 12 3L
		1.4406	316LN	4406	0.02	0.14	17.2	10.3	2.1	–	316S61	1.4406	Z3 CND 17-11 Az	–	P H C N B R	19 12 3L
		1.4429	S31653	4429	0.02	0.14	17.3	12.5	2.6	–	316S63	1.4429	Z3 CND 17-12 Az	2375	P R	19 12 3L
		1.4571	316Ti	4571	0.04	–	16.8	10.9	2.1	Ti	320S31	1.4571	Z6 CNDT 17-12	2350	P H C N B R T F	19 12 3 Nb or 19 12 3L
		1.4435	316L	4435	0.02	–	17.3	12.6	2.6	–	316S13	1.4435	Z3 CND 18-14-03	2353	P H C N B R T F	19 12 3L
		1.3952[1]	–	3952	0.02	0.18	16.9	13.2	2.7	–	–	–	–	–	P	20 16 3 Mn L
		1.4438	317L	4438	0.02	–	18.2	13.7	3.1	–	317S12	1.4438	Z3 CND 19-15-04	2367	P C N B R	317L/SNR*
		1.4439	317LMN[3]	4439	0.02	0.14	17.3	13.7	4.1	–	–	1.4439	Z3 CND 18-14-05 Az	–	P C	20 25 5 Cu L
		1.4466	S31050	725LN	0.01	0.12	25	22.3	2.1	–	–	1.4466	Z2 CND 25-22 Az	–	P	25 22 2 N L
		1.3964[1]	–	3964	0.02	0.27	20.5	15.4	3.2	Mn, Nb	–	–	–	–	P	20 16 3 Mn L
		1.4539	904L	904L	0.01	–	20	25	4.3	1.5Cu	904S13	1.4539	Z2 NCDU 25-20	2562	P H C N B R T F	20 25 5 Cu L or P12*
		1.4529	N08926	4529	0.01	0.20	20.5	24.8	6.5	Cu	–	–	–	–	P	P12* or P16* or P54*
		1.4547	S31254	254 SMO®	0.01	0.20	20	18	6.1	Cu	–	–	–	2378	P H C N B R T F	P12* or P16* or P54*
		1.4565	S34565	4565	0.02	0.45	24	17	4.5	5.5Mn	–	1.4565	–	–	P	P16* or P54*
HEAT AND CREEP	Ferritic	1.4713	–	4713	0.07	0.02	6.5	–	–	0.7Al	–	1.4713	–	–	P	18 9 Mn Mo or 23 12
		1.4724	–	4724	0.08	0.02	12.3	–	–	0.8Al	–	1.4724	Z13 C13	–	P	23 12
		1.4742	–	4742	0.08	0.02	17.5	–	–	1Al	–	1.4742	Z12 CAS 18	–	P	23 12 or 253 MA*
		1.4762	–	4762	0.08	0.02	23.4	–	–	1.4Al	–	1.4762	Z12 CAS 25	–	P	25 20 or 23 12
	Austenitic	1.4948	304H	4948	0.05	–	18.1	8.3	–	–	304S51	1.4948	Z6 CN 18-09	2333	P H C B R	19 9
		1.4878	321	4878	0.05	–	17.3	9.1	–	Ti	321S51	1.4878	Z6 CNT 18-10	2337	P H C N B R	19 9 Nb
		1.4818	S30415	153MA™	0.05	0.15	18.5	9.5	–	1.3Si, Ce	–	–	–	2372	P C N B R T	253 MA* 253 MA-NF*
		1.4833	309S	4833	0.06	–	22.3	12.6	–	–	309S16	1.4833	Z15 CN 24-13	–	P H C N B R	23 12 or 253 MA-NF*
		1.4828	–	4828	0.04	–	20	12	–	2Si	–	1.4828	Z17 CNS 20-12	–	P H C N B R	253 MA* or 253 MA-NF*
		1.4835	S30815	253MA®	0.09	0.17	21	11	–	1.6Si, Ce	–	–	–	2368	P H C N B R T	253 MA* or 253 MA-NF*
		1.4845	310S	4845	0.05	–	25	20	–	–	310S16	1.4845	Z8 CN 25-20	2361	P H C N B R	25 20
		1.4841	314	4841	0.07	0.05	24.5	19.5	–	2Si	314S25	1.4841	Z15 CNS 25-20	–	P	25 20

[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

Outokumpu is a global leader in stainless steel. Our vision is to be the undisputed number one in stainless, with success based on operational excellence. Customers in a wide range of industries use our stainless steel and services worldwide. Being fully recyclable, maintenance-free, as well as very strong and durable material, stainless steel is one of the key building blocks for sustainable future.

What makes Outokumpu special is total customer focus - all the way, from R&D to delivery. You have the idea. We offer world-class stainless steel, technical know-how and support. We activate your ideas.

1045EN-GB:5. Centrumtryck AB, Avesta, Sweden. June 2008

Information about Standards

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OUTOKUMPU

Stainless Steel Grades

EN • ASTM • BS • DIN • NF • SS

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 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 engneering
EN 10253-3	Butt-welding pipe fittings, without specific requirements
EN 10253-4	Butt-welding pipe fittings, with specific requirements

Outokumpu Products

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

LDX 2101®, 254 SMO®, 153 MA™ and 253 MA® are trademaks owned by Outokumpu

Outokumpu Special Steel Conditions

LIC	for improved steel cleanness
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

EN tolerances on Dimensions and Shape

EN 10029	Hot rolled steel plate (Quarto)
EN 10051	Hot rolled steel strip/sheet (CPP)
EN ISO 9445	Cold rolled stainless narrow strip, wide strip, plate/sheet and cut lengths

Outokumpu sells in accordance with national and international standards required by customers and these are met in full.

Product Conditions

EN		ASTM	DIN	BS
1D	Hot rolled, heat treated, pickled	1	c2(IIa)	1
1G	Hot rolled, ground			
1Q	Hot rolled, quenched and tempered, pickled			
2H	Work hardened	TR	f (IIIa)	
2E	Cold rolled, heat treated, mech. desc. pickl.			
2D	Cold rolled, heat treated, pickled	2D	h (IIIb)	2D
2B	Cold rolled, heat treated, pickled, skin passed	2B	n (IIIc)	2B
2F	Cold rolled, heat treated, pickled, skin passed on roughened rolls			
2R	Cold rolled, bright annealed	BA	m (IIId)	2A
2G	Ground		o (IV)	3A
2J	Brushed or dull polished	6	q	3B,4
2K	Satin polished	3,4	p (V)	5
2M	Patterned			
2W	Profile rolled			
2L	Coloured			