

Outokumpu 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	Steel designations		Outokumpu steel names	Typical chemical composition, %						National steel designations superseded by EN				Outokumpu products	Welding consumables Covered electrodes EN 1600	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
		1.4521	444	4521	0.02	0.01	17.8	–	2.1	Ti	–	1.4521	Z3 CDT 18-02	2326	P	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	N B R	248 SV*
		1.4028	420	4028	0.30	–	12.5	–	–	–	420S45	1.4028	Z33 C13	2304	N 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	SAF 2507®	0.02	0.27	25	7	4	–	–	–	Z3 CND 25-06 Az	2328	P C H T	25 9 4 NL
	Austenitic	1.3805 ¹	–	3805	0.36	0.02	–	–	–	20.7Mn	–	–	–	–	P	18 8 Mn
		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	–	Mn	–	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	10.5	–	–	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 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
–		S30464	4696	0.02	0.05	19	13.5	–	B	–	–	–	–	P	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		316F	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	Mn	–	–	–	–	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	4439	0.02	0.14	17.8	12.7	4.1	–	–	1.4439	Z3 CND 18-14-05 Az	–	P	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	–	–	–	–	–	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*		
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*		
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	S44600	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	S30900	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

*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 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
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
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 MATM and 253 MA® are trademarks owned by Outokumpu
SAF 2507® is trademark owned by SANDVIK AB

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



Outokumpu Steel Grades

	Steel designations		Outokumpu steel names	Typical chemical composition, %						National steel designations for steel specifications similar to EN				Outokumpu products	Welding consumables Covered electrodes EN 1600
	EN	ASTM/UNS		C	N	Cr	Ni	Mo	Others	JIS/Japan	GB/PR China	KS/Korea	GOST/Russia		
WET CORROSION AND GENERAL SERVICE	Ferritic	1.4003	S40977	4003	0.02	–	11.5	0.5	–	–	–	–	–	P H C	13 or 19 9L
		1.4000	410S	4000	0.03	0.01	12.5	–	–	–	SUS 403	–	–	P	13 or 19 9L
		1.4016	430	4016	0.04	–	16.5	–	–	–	SUS 430	1Cr17	08Kh13	H C N B R	19 9L or 23 12L
		1.4521	444	4521	0.02	0.01	17.8	–	2.1	Ti	SUS 404	–	–	P	19 12 3L or 23 12 2L
	Martensitic	1.4006	410	4006	0.12	0.04	12	–	–	–	SUS 410	1Cr12	12Ch13	P B R	13, 19 9 or 248 SV*
		1.4005	416	4005	0.10	0.04	13	–	–	S	SUS 416	Y1Cr13	–	B R	248 SV*
		1.4021	420	4021	0.20	–	13	–	–	–	SUS 420J1	2Cr13	20Ch13	N B R	248 SV*
		1.4028	420	4028	0.30	–	12.5	–	–	–	SUS 420J2	3Cr13	30Ch13	N R	248 SV*
		1.4313	S41500	4313	0.03	0.04	12.5	4.1	0.6	–	SUS Ti6NM	–	–	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	–	–	–	–	(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	–	–	–	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	–	SUS 329J3L	00Cr22Ni5Mo3N	–	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	SAF 2507 [®]	0.02	0.27	25	7	4	–	–	–	–	P C H T	25 9 4 NL	
	Austenitic	1.3805 ¹	–	3805	0.36	0.02	–	–	–	20.7Mn	–	–	–	P	18 8 Mn
		1.4310	301	4310	0.10	–	17	7	–	–	SUS 301	1Cr17Ni7	07Ch16N6	H C N B R	19 9L
		1.4318	301LN	4318	0.02	0.14	17.7	6.5	–	–	SUS 301L	–	–	H C	19 9L
		1.4372	201	4372	0.05	0.20	17	4	–	7Mn	SUS 201	1Cr17Mn6Ni5N	–	H C N R	18 9 Mn Mo or 23 12L
		1.4568	631	4568	0.08	0.02	16.6	7.6	–	Mn	SUS 631	–	–	R	19 9L
		1.4301	304	4301	0.04	–	18.1	8.1	–	–	SUS 304	0Cr18Ni9	08Ch18Ni10	P H C N B R T F	19 9L
		1.4307	304L	4307	0.02	–	18.1	8.1	–	–	SUS 304L	00Cr19Ni10	03Ch18Ni11	P H C N B R T F	19 9L
		1.4311	304LN	4311	0.02	0.14	18.5	10.5	–	–	SUS 304LN	00Cr18Ni10N	–	P H C N B R	19 9L
		1.4541	321	4541	0.04	–	17.3	9.1	–	Ti	SUS 321	0Cr18Ni10Ti	08Ch18Ni10T	P H C N B R T F	19 9L
		1.4550	347	4550	0.05	0.04	17.5	9.5	–	Nb	SUS 347	0Cr18Ni11Nb	08Ch18Ni12B	P C R	19 9 Nb or 19 9L
		1.4305	303	4305	0.05	–	17.3	8.2	–	S	SUS 303	Y1Cr18Ni9	12Ch18Ni10E	P B R	19 9L
		1.4303	305	4303	0.04	–	17.7	12.5	–	–	SUS 305J1	1Cr18Ni12	06Ch18Ni11	P H C N B R	19 9L
		1.4306	304L	4306	0.02	–	18.2	10.1	–	–	SUS 304L	00Cr19Ni10	03Ch18Ni11	P H C N B R T F	19 9L
		1.4567	S30430	4567	0.01	–	17.7	9.7	–	3Cu	SUS XM7	0Cr18Ni9Cu3	–	B R	19 9L
		–	S30464	4696	0.02	0.05	19	13.5	–	B	–	–	–	P	19 9 L
		1.4401	316	4401	0.04	–	17.2	10.1	2.1	–	SUS 316	0Cr17Ni12Mo2	–	P H C N B R T F	19 12 3L
		1.4404	316L	4404	0.02	–	17.2	10.1	2.1	–	SUS 316L	00Cr17Ni14Mo2	03Ch17Ni14M2	P H C N B R T F	19 12 3L
		1.4427 ¹	316F	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	–	SUS 316	0Cr17Ni12Mo2	–	P H C N B R T F	19 12 3L
		1.4432	316L	4432	0.02	–	16.9	10.7	2.6	–	SUS 316L	00Cr17Ni14Mo2	03Ch17Ni14M3	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	–	SUS 316LN	00Cr17Ni12Mo2N	–	P H C N B R	19 12 3L
		1.4429	S31653	4429	0.02	0.14	17.3	12.5	2.6	–	SUS 316LN	00Cr17Ni13Mo2N	–	P R	19 12 3L
		1.4571	316Ti	4571	0.04	–	16.8	10.9	2.1	Ti	SUS 316Ti	0Cr18Ni12Mo2Ti	08Ch17Ni13M2T	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	–	SUS 316L	00Cr17Ni14Mo2	03Ch17Ni14M3	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	Mn	–	–	–	P	20 16 3 Mn L	
1.4438		317L	4438	0.02	–	18.2	13.7	3.1	–	SUS 317L	00Cr19Ni13Mo3	–	P C N B R	317L/SNR*	
1.4439		317LMN	4439	0.02	0.14	17.8	12.7	4.1	–	–	–	–	P	20 25 5 Cu L	
1.4466		S31050	725LN	0.01	0.12	25	22.3	2.1	–	–	–	–	P	25 22 2 N L	
1.3964 ¹		–	3964	0.01	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	–	–	–	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*		
1.4547	S31254	254 SMO [®]	0.01	0.20	20	18	6.1	Cu	–	–	–	P H C N B R T F	P12* or P16*		
1.4565	S34565	4565	0.02	0.45	24	17	4.5	5.5Mn	–	–	–	P	P16* or P54*		
HEAT AND CREEP	Ferritic	1.4713	–	4713	0.07	0.02	6.5	–	0.7Al	–	–	–	P	18 9 Mn Mo or 23 12	
		1.4724	–	4724	0.08	0.02	12.3	–	0.8Al	–	–	–	P	23 12	
		1.4742	–	4742	0.08	0.02	17.5	–	1Al	–	–	–	P	23 12 or 253 MA*	
		1.4762	S44600	4762	0.08	0.02	23.4	–	1.4Al	–	–	–	P	25 20 or 23 12	
	Austenitic	1.4948	304H	4948	0.05	–	18.1	8.3	–	–	SUS 304	1Cr18Ni9	08Ch18Ni10	P H C B R	19 9
		1.4878	321	4878	0.05	–	17.3	9.1	–	Ti	SUS 321	1Cr18Ni9Ti	08Ch18Ni10T	P H C N B R	19 9 Nb
		1.4818	S30415	153MA [™]	0.05	0.15	18.5	9.5	–	1.3Si, Ce	–	–	–	P C N B R T	253 MA* or 253 MA-NF*
		1.4833	309S	4833	0.06	–	22.3	12.6	–	–	SUS 309	0Cr23Ni13	20Ch23Ni13	P H C N B R	23 12 or 253 MA-NF*
		1.4828	S30900	4828	0.04	–	20	12	–	2Si	SUH 309	1Cr20Ni14Si2	08Ch20Ni14C2	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	–	–	–	P H C N B R T	253 MA* or 253 MA-NF*
1.4845	310S	4845	0.05	–	25	20	–	–	SUS 310S	0Cr25Ni20	10Ch23Ni18	P H C N B R	25 20		
1.4841	314	4841	0.07	0.05	24.5	19.5	–	2Si	–	–	20Kh25N2052	P	25 20		

¹ designation according to Stahl Eisen Liste (Register of European Steels)

² also available as S31803

*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 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
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
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 trademarks owned by Outokumpu	
SAF 2507 [®] is trademark owned by SANDVIK AB	

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	

