

Surface aspects

Standard finishes with the most innovative appearances, available from our service centres and mills.

Conditions	Designation Stainless Europe	Description of surface finish	International equivalents	
			ASTM	EN 10088
HR	HRAP	Hot-rolled, annealed and pickled	N°1	1D
	DIN embossed	Hot-rolled with embossed DIN tear-plate pattern, annealed and pickled		1M
	ASTM embossed	Hot-rolled with embossed ASTM tear-plate pattern, annealed and pickled	pattern B	
CR annealed	HRC	Cold-rolled, rough, matt		2E
	2D	Cold-rolled, annealed and pickled, not skinpassed	2D	2D
	2B	Cold-rolled, annealed, pickled and skinpassed	2B	2B
	2R	Cold-rolled, bright-annealed and skinpassed	BA	2R
CR work hardened	Work hardened ⁽⁹⁾	Cold-rolled without subsequent anneal for various hardness levels	TR	2H
CR annealed	N°3 or P80D	No. 3 polished / Dry polished with 80-grit abrasive belts	N°3	2G
	N°4 or P120D-P150D	No. 4 polished / Dry polished with 120/150-grit abrasive belts	N°4	2G
	N°5 or P180D-P220D	No. 5 polished / Dry polished with 180/220-grit abrasive belts		2G
	N°6 or P240D	No. 6 polished / Dry polished with 240-grit abrasive belts		2G
	N°7 or P320D	No. 7 polished / Dry polished with 320-grit abrasive belts		2G
	P400D	Dry polished with 400-grit abrasive belts		2G
	Duplo P220	Dry polished with 220-grit abrasive belts + brushed with wire rolls		2G
	Duplo P320	Dry polished with 320-grit abrasive belts + brushed with wire rolls		2G
	Uginox Rolled-On	240-grit polish look like obtained by rolled-on process		2J
	Scotch-Brite	Lightly brushed with wire rolls		2J
CR annealed	Uginox Linen	Etched linen finish obtained by cold rolling with special rolls, followed by a final anneal		2M
	Uginox Squares	Etched chequer patterned finish obtained by cold rolling with special rolls, followed by a final anneal		2M
	Uginox Lozenge	Etched lozenge patterned finish obtained by cold rolling with special rolls, followed by a final anneal		2M
	Uginox Sand	Finish obtained by etching with special rolls	-	-
	Uginox Access	Matt finish obtained by cold rolling with special rolls	2D	2D
	Uginox Bright	2R finish for construction industry	BA	2R
	Uginox Mat	2B finish for construction industry	2B	2B
	Uginox Top	Matt low-reflectance finish obtained by cold rolling with special rolls	2D	2F
CR work hardened	Uginox Patina	Surface coated with a continuous layer of tin in accordance with standard NFA 36332		2S
	Uginox Leather	Etched textured finish obtained by cold rolling with special rolls		2M

⁽⁹⁾ Special finishes possible - consult us.

This table does not take into account the availability of grades or dimensional restrictions.
 > Check with your sales contact.

Committed to your project's success

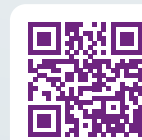
To ensure your project's success, we offer you a solution tailored to your exact requirements and with the properties you need.

This commitment includes:

- > Ongoing support,
- > Solutions tailored to each market,
- > Expert advice on choosing of the right grade,
- > Responsive technical assistance,
- > Logistical offers and pooled expertise to work on joint development projects,
- > The most complete and innovative range on the market,
- > Specialities: ferritic and bright annealed stainless steels, proven hot-rolled quality and strip width of up to 2,000 mm.

Contacts

All our commercial contacts can be found on our website.



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Our stainless steel solutions:
 the most complete range available on the market

Our grades

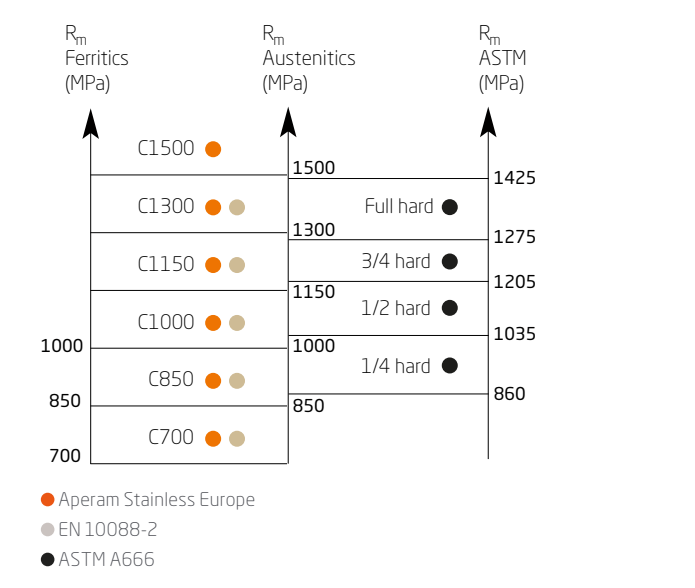
Grade designations	Standards			Chemical composition (typical values)							Mechanical properties annealed condition (typical values)			Standard cold worked conditions according to EN 10088-2 (3)					
	AISI	UNS	EN	C	Si	Mn	Cr	Mo	Ni	Others	R _m	R _{0.2}	A%	C700 (R _m)	C850 (R _m)	C1000 (R _m)	C1150 (R _m)	C1300 (R _m)	
Ferritic stainless steels KARA key for value	K03 (F12N)	S41003	1.4003	0.020	0.50	0.60	11.00		0.40		350	27							
	K09 (F12T)	409	S40900	1.4512	0.010	0.45	0.30	11.30		Ti = 0.190	440	33							
	K09D (F12TD)	409	S40900	1.4512	0.010	0.45	0.30	11.30		Ti = 0.190	440	33							
	K09X (F12T)	409	S40900	1.4512	0.010	0.45	0.30	11.30		Ti = 0.190 - N = 0.010	440	33							
	K30 (F17)	430	S43000	1.4016	0.040	0.35	0.30	16.50			500	27		700-850	Consult us				
	K30ED (F17)	430	S43000	1.4016	0.015	0.35	0.40	16.50			460	31							
	K30H (F17)	430	S43000	1.4016	0.070	0.45	0.40	16.20			540	23							
	K33X (FNT)	433	S43690	1.4513	0.015	0.50	0.25	17.30	0.90	N = 0.015 - Ti = 0.35	470	31							
	K36 (F17MnNb)	436	S43600	1.4526	0.020	0.40	0.25	17.50	1.25	Nb = 0.50	510	30							
	K36X (F17MnNb)	436	S43600	1.4526	0.020	0.40	0.25	17.50	1.25	N = 0.015 - Nb = 0.50	510	30							
	K39 (F18T)	439	S43035	1.4510	0.020	0.40	0.30	17.50		Ti = 0.35	460	32							
	K39M (F17T)	430Ti	S43037	1.4510	0.020	0.40	0.30	16.50		Ti = 0.40	460	30							
	K41 (F18Tnb)	441 (3)	S43932/S43940	1.4509	0.015	0.60	0.30	17.80		Ti + Nb = 0.65	490	30							
	K41X (F18Tnb)	441 (3)	S43932	1.4509	0.015	0.60	0.30	17.80		N = 0.015 - Ti + Nb = 0.65	490	30							
	K44 (F18MT)	444	S44400	1.4521	0.015	0.50	0.30	17.70	1.85	Ti + Nb = 0.45	530	28							
K44M (F19MnNb)	444	S44400	1.4521	0.015	0.40	0.30	19.00	1.90	N = 0.015 - Nb = 0.60	540	30								
K44X (F19MnNb)	444	S44400	1.4521	0.015	0.40	0.30	19.00	1.90	N = 0.015 - Nb = 0.60	540	30								
K45 (F20NbCu)	445 (3)	S44500	1.4621	0.015	0.25	0.25	20.20		Nb = 0.45 - Cu = 0.45	490	31								
Austenitic stainless steels containing manganese	Aperam 201 (16-4Mn)	201	S20100	1.4372	0.090	0.50	6.50	16.30		4.15	790	53	0.050						
	Aperam 201D (17-4Mn)	201-1	S20100	1.4618	0.050	0.35	6.00	16.80		4.60	670	51							
	Aperam 201LN (16-5MnL)	201LN	S20153	1.4371	0.025	0.50	7.00	16.30		4.75	730	52							
Duplex	DX1803	22-05	S31803	1.4462	0.020	0.30	1.80	22.10	2.70	5.10	820	29	2.70						
	DX2202	22-02	S32202	1.4062	0.025	0.40	1.30	23.00	0.30	2.50	750	32	0.30						
	DX2205	22-05	S32205	1.4462	0.020	0.30	1.80	22.80	3.10	5.50	830	29	3.10						
	DX2304	23-04	S32304	1.4362	0.020	0.40	1.50	23.00	0.30	4.90	740	30	0.50						
Austenitic stainless steels	Aperam 301 (17-7A)	301	S30100	1.4310	0.100	0.90	1.30	16.80		6.60	810	55							
	Aperam 301L (18-7L)	301L/301LN	S30103/S30153	1.4318	0.025	0.50	1.70	17.50		6.60	760	48		850-1000 (4)		1000-1150 (4)	1150-1300 (4)	1300-1500 (4)	
	Aperam 301M (17-7C)	301	S30100	1.4310	0.100	0.60	0.90	17.30		7.30	730	57		850-1000 (4)		1000-1150 (4)	1150-1300 (4)	1300-1500 (4)	
	Aperam 301R (17-7E)	(301)	S30100	1.4310	0.100	1.15	1.20	16.70	0.70	6.65	800	56		850-1000 (4)		1000-1150 (4)	1150-1300 (4)	1300-1500 (4)	
	Aperam 304 (18-9E)	304	S30400	1.4301	0.050	0.40	1.10	18.20		8.05	630	54		850-1000 (4)		1000-1150 (4)	1150-1300 (4)	1300-1500 (4)	
	Aperam 304D (18-9ED)	304	S30400	1.4301	0.040	0.40	1.20	18.20		8.10	630	58							
	Aperam 304ED (18-9DDQ)	304	S30400	1.4301	0.045	0.40	1.10	18.20		9.10	610	57							
	Aperam 304H (18-9H)	304H	S30409	1.4301/1.4948	0.050	0.40	1.10	18.20		8.05	660	54							
	Aperam 304L (18-9L)	304L	S30403	1.4307	0.025	0.40	1.40	18.20		8.05	630	54							
	Aperam 304M (18-10L)	304L	S30403	1.4306	0.025	0.40	1.30	18.20		10.10	580	54							
	Aperam 305 (18-12D)	305	S30500	1.4303	0.025	0.40	1.30	18.50		12.60	570	52							
	Aperam 321 (18-10T)	321	S32100	1.4541	0.025	0.40	1.10	17.15		9.10	620	52							
	Aperam 321H (18-10TH)	321H	S32109	1.4541/1.4878	0.045	0.40	1.10	17.15		9.10	620	52							
	Aperam 316B (18-13MS)	316L	S31603	1.4435	0.020	0.40	1.35	17.30	2.60	12.70	590	49							
	Aperam 316C (18-12MS)	316L	S31603	1.4432	<0.03	0.40	1.35	16.80	2.60	11.10	620	49							
Aperam 316L (18-11ML)	316/316L	S31600/S31603	1.4401/1.4404	0.025	0.40	1.20	18.20	2.10	10.10	610	52								
Aperam 316T (17-11MT)	316Ti	S31635	1.4571	0.035	0.40	1.20	16.80	2.10	10.70	600	50								
Heat resisting stainless steels	Aperam 309 (R20-12)			1.4828	0.050	1.60	1.35	19.30		11.40	630	54							
	Aperam 309S (R24-13S) (2)	309S / 309H	S30908	1.4833	0.060	0.40	1.30	22.20		13.60	600	51							
Martensitic stainless steels	Aperam MA2			1.4021	0.220	0.35	0.35	13.30			580	25							
	Aperam MA3	420	S42000	1.4028	0.320	0.35	0.30	13.70			610	24							
	Aperam MA3M			1.4419	0.380	0.30	0.30	14.00	0.80		680	21							
	Aperam MA4			1.4034	0.460	0.40	0.30	13.80			670	21							
	Aperam MA5				0.350	0.35	0.35	16.00			680	21							

D: Drawing; ED: Extra Drawing; H: Hardening; M: Modified;
R: Resistance improved; B: Basler norm; C: Corrosion resistance improved

- (1) Common designation.
- (2) Available under certain conditions; check with your sales contact.
- (3) Tensile values given in the rolling direction, according to ISO 6892-1. Cold worked properties according to customer specifications available on request.
- (4) In addition for this grade: C1500; Rm 1500-1700.

Our wide-range of choices includes:
 > Alternative solutions: KARA nickel-free ferritics, austenitic containing manganese grades and the Duplex family,
 > Traditional solutions: austenitics and martensitics.

R_m: Tensile strength (MPa)
 R_{0.2}: Proof strength at 0.2 % (MPa)
 A: Elongation (%)
 Sample according to ISO 6892-1: 20x80 mm (thickness < 3 mm)
 Lo = 5.65 √ S₀ (thickness ≥ 3 mm)
 Sample according to ASTM A370: 12.5x50 mm
 1 MPa: = 1 N/mm²
 = 145 PSI
 = 0.1 kg/mm²



Size range

Size range	Surface condition and appearance		
	Thickness in mm	Width in mm	
Ferritic stainless steels KARA key for value	HRAP	1.50 - 2.49	1 000
		2.50 - 2.99	1 250
		3.00 - 6.50	1 524
2B - 2D	0.40 - 0.59	1 250	
	0.60 - 4.00	1 524	
	0.30 - 0.39	1 000	
2R	0.40 - 0.69	1 250	
	0.70 - 2.00	1 500	
	2.00 - 2.50	1 000	
Austenitic stainless steels containing manganese	HRAP	2.50 - 3.50	1 250
		3.50 - 5.00	1 500
		5.00 - 13.00	2 000
HRC	4.00 - 4.99	2 000	
	0.60 - 2.80	1 250	
	0.80 - 1.00 (3)	1 500	
2D - 2B	1.00 - 8.00	2 000	
	4.00 - 10.00	1 500	
	7.00 - 10.00	2 000	
2B - 2E	1.00 - 6.00	1 500	
	2.00 - 6.00	2 000	
	1.85 - 2.49	1 000	
Duplex	HRAP	2.50 - 2.99	1 250
		3.00 - 4.99	1 524
		5.00 - 13.00	2 000
HRC	4.00 - 4.99	2 000	
	0.40 - 0.59	1 250	
	0.60 - 0.79	1 500	
2B - 2D	0.80 - 0.99	1 524	
	1.00 - 8.00	2 000	
	0.30 - 0.39	1 000	
2R	0.40 - 0.79	1 250	
	0.80 - 2.00	1 524	
	2.50 - 2.99	1 000	
Austenitic stainless steels	HRAP	3.00 - 4.39	1 250
		4.40 - 6.99	1 524
		7.00 - 13.00	2 000
HRC	3.00 - 4.39	1 524	
	4.00 - 6.99	2 000	
	0.40 - 0.79	1 250	
2B - 2D	0.80 - 1.49	1 524	
	1.50 - 8.00	2 000	
	0.30 - 0.39	1 000	
2R	0.40 - 2.00	1 250	
	3.50 - 7.99	1 250	
	8.00 - 13.00	2 000	
Heat resisting stainless steels	HRAP	0.40 - 0.79	1 250
		0.80 - 1.49	1 250
		1.50 - 8.00	2 000
Martensitic stainless steels	2B - 2H	0.40 - 3.50	1 000

Strip - Coil		
Supply possibilities according to thickness and width in the annealed condition*		
Thickness in mm	Min. width in mm	Max. width in mm
0.3 ≤ t < 0.4	8	1 000
0.4 ≤ t < 0.7	8	1 250
0.8	10	1 524
1.0	10	1 524
1.5	10	2 000
2.0	10	2 000
2.5	10	2 000
4.0	15	2 000
8.0	20	2 000
10.0	30	2 000
12.0	40	2 000
13.0		