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

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 [5]	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
	Uginox Patina	Surface coated with a continuous layer of tin in accordance with standard NFA 36332		2S
CR work hardened	Uginox Leather	Etched textured finish obtained by cold rolling with special rolls		2M

[5] Special finishes possible - consult us.

This table does not take into account the availability of grades or dimensional restrictions.

> Check with your sales contact.

Our grades

	Grade designations	Standards			Chemical composition (typical values)						
		AISI	UNS	EN	C	Si	Mn	Cr	Mo	Ni	Others
Ferritic stainless steels KARA key for value	K03 (F12N)		S41003	1.4003	0.020	0.50	0.60	11.00		0.40	
	K09 (F12T)	409	S40900	1.4512	0.010	0.45	0.30	11.30			Ti = 0.190
	K09D (F12TD)	409	S40900	1.4512	0.010	0.45	0.30	11.30			Ti = 0.190
	K09X (F12T)	409	S40900	1.4512	0.010	0.45	0.30	11.30			Ti = 0.190 - N = 0.010
	K30 (F17)	430	S43000	1.4016	0.040	0.35	0.30	16.50			
	K30ED (F17)	430	S43000	1.4016	0.015	0.35	0.40	16.50			
	K30H (F17)	430	S43000	1.4016	0.070	0.45	0.40	16.20			
	K33X (FNT)	433	S43690	1.4513	0.015	0.50	0.25	17.30	0.90		N = 0.015 - Ti = 0.35
	K36 (F17MNb)	436	S43600	1.4526	0.020	0.40	0.25	17.50	1.25		Nb = 0.50
	K36X (F17MNb)	436	S43600	1.4526	0.020	0.40	0.25	17.50	1.25		N = 0.015 - Nb =0.50
	K39 (F18T)	439	S43035	1.4510	0.020	0.40	0.30	17.50			Ti = 0.35
	K39M (F17T)	430Ti	S43036	1.4510	0.020	0.40	0.30	16.50			Ti = 0.40
	K41 (F18TNb)	441 (1)	S43932/S43940	1.4509	0.015	0.60	0.30	17.80			Ti + Nb = 0.65
	K41X (F18TNb)	441 (1)	S43932	1.4509	0.015	0.60	0.30	17.80			N = 0.015 - Ti + Nb = 0.65
	K44 (F18MT)	444	S44400	1.4521	0.015	0.50	0.30	17.70	1.85		Ti + Nb = 0.45
	K44M (F19MNb)	444	S44400	1.4521	0.015	0.40	0.30	19.00	1.90		N = 0.015 - Nb = 0.60
	K44X (F19MNb)	444	S44400	1.4521	0.015	0.40	0.30	19.00	1.90		N = 0.015 - Nb = 0.60
	K45 (F20NbCu)	445 (1)	S44500	1.4621	0.015	0.25	0.25	20.20			Nb = 0.45 - Cu = 0.45
Austenitic stainless steels containing manganese	Aperam 201 (16-4Mn)	201	S20100	1.4372	0.090	0.50	6.50	16.30		4.15	
	Aperam 201D (17-4Mn)	201-1	S20100	1.4618	0.050	0.35	6.00	16.80		4.60	N = 0.10 - Cu = 1.6 - S ≤ 0.002
	Aperam 201LN (16-5MnL)	201LN	S20153	1.4371	0.025	0.50	7.00	16.30		4.75	N = 0.18 - Cu = 0.30
Duplex	DX1803	22-05	S31803	1.4462	0.020	0.30	1.80	22.10	2.70	5.10	N = 0.17
	DX2202	22-02	S32202	1.4062	0.025	0.40	1.30	23.00	0.30	2.50	N = 0.21
	DX2205	22-05	S32205	1.4462	0.020	0.30	1.80	22.80	3.10	5.50	N = 0.17
	DX2304	23-04	S32304	1.4362	0.020	0.40	1.50	23.00	0.30	4.90	Cu = 0.40 - N = 0.10
Austenitic stainless steels	Aperam 301 (17-7A)	301	S30100	1.4310	0.100	0.90	1.30	16.80		6.60	
	Aperam 301L (18-7L)	301L/301LN	S30103/S30153	1.4318	0.025	0.50	1.70	17.50		6.60	N = 0.110
	Aperam 301M (17-7C)	301	S30100	1.4310	0.100	0.60	0.90	17.30		7.30	
	Aperam 301R (17-7E)	(301)	S30100	1.4310	0.100	1.15	1.20	16.70	0.70	6.65	
	Aperam 304 (18-9E)	304	S30400	1.4301	0.050	0.40	1.10	18.20		8.05	
	Aperam 304D (18-9ED)	304	S30400	1.4301	0.040	0.40	1.20	18.20		8.10	
	Aperam 304ED (18-9DDQ)	304	S30400	1.4301	0.045	0.40	1.10	18.20		9.10	
	Aperam 304H (18-9H)	304H	S30409	1.4301/1.4948	0.050	0.40	1.10	18.20		8.05	C mini 0.04
	Aperam 304L (18-9L)	304L	S30403	1.4307	0.025	0.40	1.40	18.20		8.05	
	Aperam 304M (18-10L)	304L	S30403	1.4306	0.025	0.40	1.30	18.20		10.10	
	Aperam 305 (18-12D)	305	S30500	1.4303	0.025	0.40	1.30	18.50		12.60	
	Aperam 321 (18-10T)	321	S32100	1.4541	0.025	0.40	1.10	17.15		9.10	Ti = 0.30
	Aperam 321H (18-10TH)	321H	S32109	1.4541/1.4878	0.045	0.40	1.10	17.15		9.10	Ti = 0.30
Austenitic stainless steels containing molybdenum	Aperam 316B (18-13MS)	316L	S31603	1.4435	0.020	0.40	1.35	17.30	2.60	12.70	
	Aperam 316C (18-12MS)	316L	S31603	1.4432	≤0.03	0.40	1.35	16.80	2.60	11.10	
	Aperam 316L (18-11ML)	316/316L	S31600/S31603	1.4401/1.4404	0.025	0.40	1.20	18.20	2.10	10.10	
	Aperam 316T (17-11MT)	316Ti	S31635	1.4571	0.035	0.40	1.20	16.80	2.10	10.70	Ti = 0.350
Heat resisting stainless steels	Aperam 309 (R20-12)			1.4828	0.050	1.60	1.35	19.30		11.40	
	Aperam 309S (R24-13S) (2)	309S / 309H	S30908	1.4833	0.060	0.40	1.30	22.20		13.60	
Martensitic stainless steels	Aperam MA2			1.4021	0.220	0.35	0.35	13.30			
	Aperam MA3	420	S42000	1.4028	0.320	0.35	0.30	13.70			
	Aperam MA3M			1.4419	0.380	0.30	0.30	14.00	0.80		
	Aperam MA4			1.4034	0.460	0.40	0.30	13.80			
	Aperam MA5				0.350	0.35	0.35	16.00			N = 0.15

Mechanical properties annealed condition (typical values)			Standard cold worked conditions according to EN 10088-2 [3]				
R_m	$R_{p0.2}$	A%	C700 (R_m)	C850 (R_m)	C1000 (R_m)	C1150 (R_m)	C1300 (R_m)
500	350	27				0.40	
440	260	33				0.007	
440	260	33				0.007	
440	260	33				0.007	
500	330	27	700-850	Consult us		0.040	
460	300	31				0.015	
540	360	23				0.015	
470	300	31					
510	350	30					
510	350	30					
460	310	32				0.020	
460	300	30				0.018	
490	320	30				0.015	
490	320	30					
530	370	28				0.015	0.45
540	360	30					
540	360	30				4.15	0.090
490	340	31				4.75	N = 0.175 - Cu=0.3
790	430	53	0.050			4.60	N = 0.09 - Cu = 1.6
670	330	51					
730	370	52					
820	600	29	2.70			5.10	N = 0.17
750	560	32	0.30			2.50	N = 0.21
830	620	29	3.10			5.50	N = 0.17
740	550	30	0.50			4.90	N = 0.1
810	320	55		850-1000 [4]	1000-1150 [4]	1150-1300 [4]	1300-1500 [4]
760	350	48		850-1000	1000-1150		6.60
730	320	57		850-1000 [4]	1000-1150 [4]	1150-1300 [4]	1300-1500 [4]
800	340	56		850-1000 [4]	1000-1150 [4]	1150-1300 [4]	1300-1500 [4]
630	310	54		850-1000	1000-1150		8.05
630	280	58				8.15	0.040
610	270	57				9.05	0.040
660	300	54				8.05	0.05
630	310	54	Consult us			8.05	0.025
580	250	54				10.10	0.025
570	250	52				12.60	0.030
620	290	52				9.10	Ti = 0.300
620	290	52		Consult us		9.10	Ti = 0.300
590	290	49				12.70	0.020
620	320	49				11.10	≤0.03
610	300	52				10.05	0.020
600	290	50			Hardness after oil quenching of finished components (typical values)		
630	290	54	Heat treatment				
600	310	51			HRC Hardness		R_m
580	340	25	Quenched at 1050 °C Tempered at 250 °C		45		1500
610	330	24			51		1700
680	400	21			55		1800
670	390	21			55		1800
680	390	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:

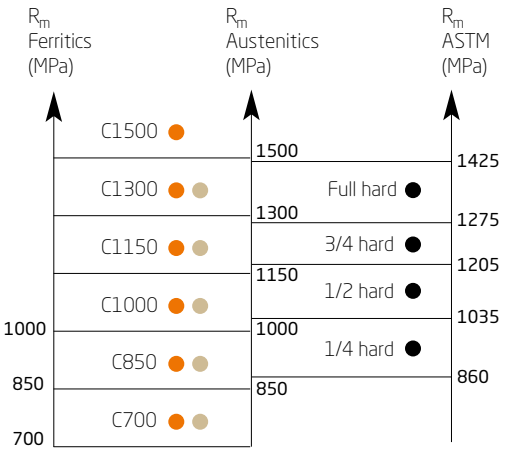
> Alternative solutions: KARA nickel-free ferritics, austenitic containing manganese grades and the Duplex family,
> Traditional solutions: austenitics and martensitics.

Rm: Tensile strength (MPa)

$R_{p0.2}$: Proof strength at 0.2 % (MPa)

A: Elongation (%)
Sample according to ISO 6892-1:
20x80 mm (thickness < 3 mm)
$Lo = 5.65 \sqrt{S_o}$ (thickness ≥ 3 mm)
Sample according to ASTM A370:
12.5x50 mm

1 MPa: =1 N/mm²
= 145 PSI
= 0.1 kg/mm²



● Aperam Stainless Europe
● EN 10088-2
● ASTM A666

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
	2R	0.30 - 0.39	1 000
		0.40 - 0.69	1 250
		0.70 - 2.00	1 500
Austenitic stainless steels containing manganese	HRAP	2.00 - 2.50	1 000
		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
	2D - 2B	0.60 - 2.80	1 250
		0.80 - 1.00[5]	1 500
		1.00 - 8.00	2 000
Duplex	HRAP	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
Austenitic stainless steels	HRAP	1.85 - 2.49	1 000
		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
	2B - 2D	0.40 - 0.59	1 250
		0.60 - 0.79	1 500
		0.80 - 0.99	1 524
		1.00 - 8.00	2 000
	2R	0.30 - 0.39	1 000
		0.40 - 0.79	1 250
		0.80 - 2.00	1 524
Austenitic stainless steels containing molybdenum	HRAP	2.50 - 2.99	1 000
		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
	2B - 2D	0.40 - 0.79	1 250
		0.80 - 1.49	1 524
		1.50 - 8.00	2 000
	2R	0.30 - 0.39	1 000
		0.40 - 2.00	1 250
Heat resisting stainless steels	HRAP	3.50 - 7.99	1 250
		8.00 - 13.00	2 000
	2D - 2B	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

A unique offer:
from 0.3 to 13 mm thick and up to 2 m wide.

[5] Consult us for thicker than 1.0 mm.
For precise information on specific grades and surface finishes: consult your correspondent.

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	40	2 000

* 2B - 2D - 2E - 2H - 2R (excluding HRAP)

Discs (Press blanked discs)
Around 200 diameters are available

Thickness in mm	Minimal diameter in mm	Maximum diameter in mm
0.37 ≤ t ≤ 2.50	80	704

Please consult us for other dimensions (between Ø 704 mm and Ø 1500 mm and/or thicknesses between 2.50 mm and 5 mm)

Blank - Sheet - Plate
Thickness according to width

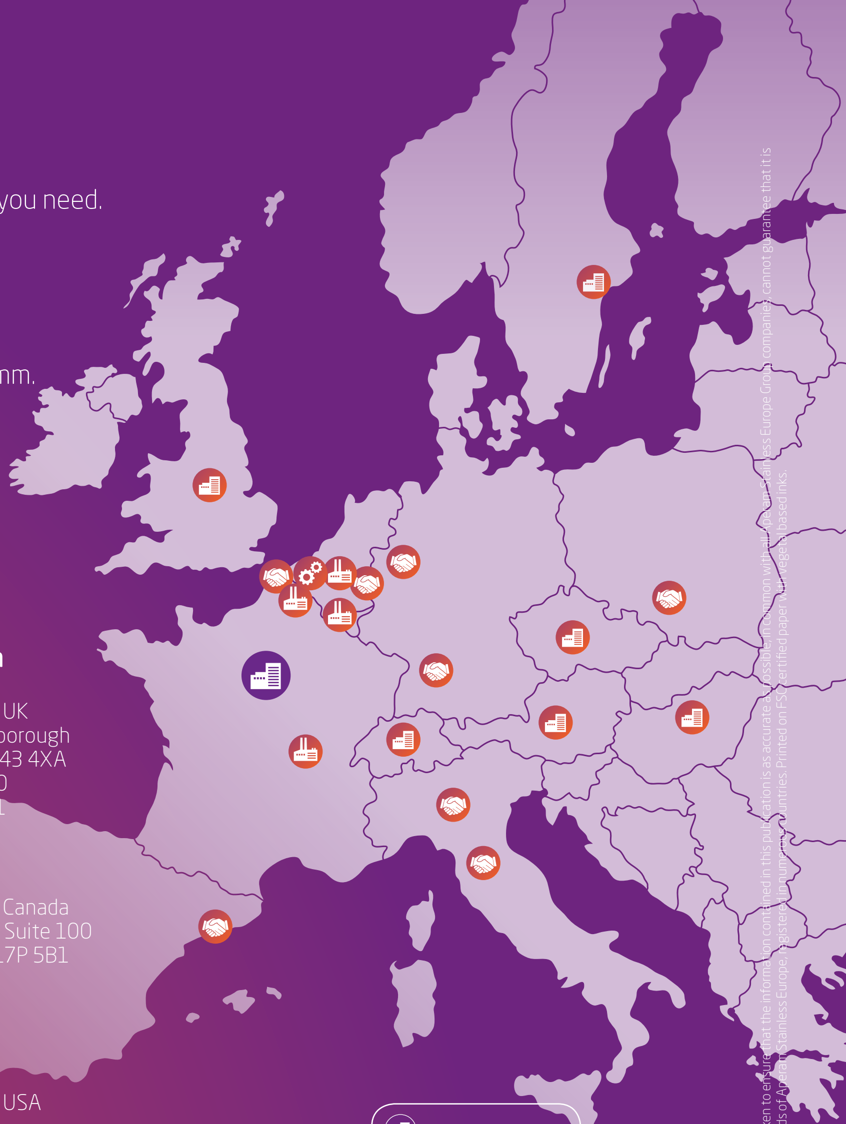
Thickness in mm	Min. width in mm	Max. width in mm
0.30 - 0.74	80	1 250
0.75 - 2.00	80	1 524
2.01 - 8.00 LAF	670	2 000
3.00 - 13.00 LAC	500	2 000

Length: min. 275 mm/max. 16,000 mm

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.



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