

# Stainless steel strip

## Chemical Composition

### STAINLESS STEEL STRIP EN 10088 GENERAL APPLICATIONS

Stainless steel strip EN 10151 for springs

Symbol classification	Numerical	European Standard (EN)		Equivalent AISI	Chemical Composition												
		General Applications	For springs		C	Si	Mn	P	S	N	Cr	Cu	Mo	Nb	Ni	Ti	Others
X2CrTi12	1.4512	EN 10088-2	-	409	≤ 0.03	≤ 1	≤ 1	≤ 0.04	≤ 0.015	-	10.50 - 12.50	-	-	-	-	6x(C+N) - 0.65	-
X6Cr17	1.4016	EN 10088-2	EN 10151	430	≤ 0.08	≤ 1	≤ 1	≤ 0.04	≤ 0.015	-	16.00 - 18.00	-	-	-	-	-	-
X2CrTiNb18	1.4509	EN 10088-2	-	441	≤ 0.03	≤ 1	≤ 1	≤ 0.04	≤ 0.015	-	17.50 - 18.50	-	-	3xC+0.30≤ Nb≤1.00	-	0.10 - 0.60	-
X30Cr13	1.4028	EN 10088-2	EN 10151	420	0.26-0.35	≤ 1	≤ 1.5	≤ 0.04	≤ 0.015	-	12.00 - 14.00	-	-	-	-	-	-
X7CrNiAl17-7	1.4568	EN 10088-2	EN 10151	631	≤ 0.09	≤ 0.7	≤ 1	≤ 0.04	≤ 0.015	-	16.00 - 18.00	-	-	-	6.50 - 7.80	-	Al: 0.70 - 1.50
X10CrNi18-8	1.4310	EN 10088-2	EN 10151	301	0.05 - 0.15	≤ 2.00	≤ 2.00	≤ 0.045	≤ 0.015	≤ 0.11	16.00 - 19.00	-	≤ 0.80	-	6.00 - 9.50	-	-
X10CrNi18-8	1.4310 Mo	EN 10088-2	EN 10151	301Mo	0.05 - 0.15	≤ 2.00	≤ 2.00	≤ 0.045	≤ 0.015	≤ 0.11	16.00 - 19.00	-	≤ 0.80 <sup>1)</sup>	-	6.00 - 9.50	-	-
X2CrNi18-9	1.4307	EN 10088-2	-	304L	≤ 0.030	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.015	≤ 0.11	17.50 - 19.50	-	-	-	8.00 - 10.00	-	-
X5CrNi18-10	1.4301	EN 10088-2	EN 10151	304	≤ 0.07	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.015	≤ 0.11	17.00 - 19.50	-	-	-	8.00 - 10.50	-	-

\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

Symbol classification	Numerical	European Standard (EN)		Equivalent	Chemical Composition												
		General Applications	For springs		AISI	C	Si	Mn	P	S	N	Cr	Cu	Mo	Nb	Ni	Ti
X6CrNiTi18-10	1.4541	EN 10088-2	-	321	≤ 0.08	≤ 1.00	≤ 2.00	0.045	≤ 0.015	-	17.00 - 19.50	-	-	-	9.00 - 12.00	5xC - 0.70	-
X5CrNiMo17-12-2	1.4401	EN 10088-2	EN 10151	316	≤ 0.070	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.015	≤ 0.11	16.50 - 18.50	-	2.00 - 2.50	-	10.00 - 13.00	-	-
X6CrNiMoTi17-12-2	1.4571	EN 10088-2	-	316Ti	≤ 0.08	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.015	-	16.50 - 18.50	-	2.00 - 2.50	-	10.50 - 13.50	5xC - 0.70	-
X2CrNiMo17-12-2	1.4404	EN 10088-2	-	316L	≤ 0.030	≤ 1.00	≤ 2.00	≤ 0.045	≤ 0.015	≤ 0.10	16.50 - 18.50	-	2.00 - 2.50	-	10.00 - 13.00	-	-
X12CrMnNiN17-7-5	1.4372	EN 10088-2	EN 10151	201	≤ 0.15	≤ 1.00	5.50 - 7.50	≤ 0.045	≤ 0.015	0.05 - 0.25	16.00 - 18.00	-	-	-	3.50 - 5.50	-	-
X12CrMnNiN18-9-5	1.4373	EN 10088-2	-	202	≤ 0.15	≤ 1.00	7.50 - 10.50	≤ 0.045	≤ 0.015	0.05 - 0.25	17.00 - 19.00	-	-	-	4.00 - 6.00	-	-
X2CrMoTi18-2	1.4521	EN 10088	-	444	≤ 0.025	≤ 1	≤ 1	≤ 0.04	≤ 0.015	-	17.00 - 20.00	-	1.80 - 2.50	-	-	-	-
X8CrNi25-21	1.4845	EN 10095	-	310S	≤ 0.1	≤ 1.5	≤ 2	≤ 0.045	≤ 0.015	≤ 0.11	24.00 - 26.00	-	-	-	19.00 - 22.00	-	-

X2CrMoTi18-2 1.4521 and X8CrNi25-21 1.4845 available under a commercial agreement.

- 1) NB:  $3XC+0.30 \leq NB \leq 1.00$
- 2) Others: AL: 0,70-1,50
- 3) Minimum value under commercial agreement. Maximum  $\leq 0.80$

## Equivalents

Symbol classification	Numerical classification	European Standard (EN)	Approximate international equivalents		
			US (AISI)	Japan (JIS)	China (GB)
X2CrTi12	1.4512	EN 10088-2	409	SUS409L	-
X6Cr17	1.4016	EN 10088-2	430	SUS430	10Cr17
X2CrTiNb18	1.4509	EN 10088-2	441	-	-
X30Cr13	1.4028	EN 10088-2	420	SUS420J1	20Cr13
X7CrNiAl17-7	1.4568	EN 10088-2	631	SUS 631	0Cr17Ni7Al
X10CrNi18-8	1.4310	EN 10088-2	301	SUS 301	1Cr17Ni7
X10CrNi18-8	1.4310 Mo	EN 10088-2	301Mo	-	-
X2CrNi18-9	1.4307	EN 10088-2	304L	SUS304L	-
X5CrNi18-10	1.4301	EN 10088-2	304	SUS 304	0Cr19Ni9
X6CrNiTi18-10	1.4541	EN 10088-2	321	SUS321	0Cr18Ni10Ti 1Cr18Ni11Ti H0Cr20Ni10Ti
X5CrNiMo17-12-2	1.4401	EN 10088-2	316	SUS 316	6Cr17Ni12Mo2
X5CrNiMoTi17-12 -2	1.4571	EN 10088-2	316Ti	SUS316Ti	0Cr18Ni12Mo2Ti 1Cr18Ni12Mo2Ti
X2CrNiMo17-12-2	1.4404	EN 10088-2	316L	SUS316L	0Cr18Ni12Mo2Ti 1Cr18Ni12Mo2Ti
X12CrMnNiN17-7 -5	1.4372	EN 10088-2	201	SUS201	-
X12CrMnNiN18-9 -5	1.4373	EN 10088-2	202	SUS202	-
X2CrMoTi18-2	1.4521	EN 10088	444	-	-
X8CrNi25-21	1.4845	EN 10095	310S	SUS310S	1Cr25Ni20Si2

X2CrMoTi18-2 1.4521 and X8CrNi25-21 1.4845 available under a commercial agreement.

## Mechanical properties

### EN 10088-2 ANNEALED STATE/ EN 10151 HARDENED STATE

#### MARTENSITIC STEEL STRIPS

Steel designation			State	Hardness	Yield strength Rp <sub>0.2</sub>		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break			
Symbol classification	Numerical classification	US (AISI)			N/mm <sup>2</sup> min. (leng.)	N/mm <sup>2</sup> min. (tens.)		A <sub>80</sub> mm < 3 mm thick % min (leng. + tens.)	A ≥ 3 mm thick % min. (leng. + tens.)		
X30Cr13	1.4028	420	Annealed	-	-	235 HV max.	-	-	740 max.	15	15
			Hardened by cold rolling	+C700	-	270-320 HV	-	-	700 - 850	-	-
				+C850	1/4 Hard		-	-	850 - 1000	-	-

#### FERRITIC STEEL STRIPS

Steel designation			State	Hardness	Yield strength Rp <sub>0.2</sub>		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break			
Symbol classification	Numerical classification	US (AISI)			N/mm <sup>2</sup> min. (leng.)	N/mm <sup>2</sup> min. (tens.)		A <sub>80</sub> mm < 3 mm thick % min (leng. + tens.)	A ≥ 3 mm thick % min. (leng. + tens.)		
X2CrTi12	1.4512	409	Annealed	-	-	-	210	220	380 - 560	25	25
X6Cr17	1.4016	430	Annealed	-	-	-	260	280	430 - 600	20	20
			Hardened by cold rolling	+C700	-	200 - 300 HV	-	-	700 - 850	2	-
				+C850	1/4 Hard		-	-	850 - 1000	1	-
X2CrMoTi18-2	1.4521	444	Annealed	-	-	-	300	320	420 - 640	20	20

#### Standardised

##### Types:

X2CrTi12	1.4512	409	Annealed	-	-	-	210	220	380 - 560	25	25
X6Cr17	1.4016	430	Annealed	-	-	-	260	280	430 - 600	20	20
			Hardened by cold rolling	+C700	-	200 - 300 HV	-	-	700 - 850	2	-
				+C850	1/4 Hard		-	-	850 - 1000	1	-
X2CrMoTi18-2	1.4521	444	Annealed	-	-	-	300	320	420 - 640	20	20

Steel designation			State	Hardness	Yield strength Rp <sub>0.2</sub>		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break	
Symbol classification	Numerical classification	US (AISI)			N/mm <sup>2</sup> min. (leng.)	N/mm <sup>2</sup> min. (tens.)		A <sub>80</sub> mm < 3 mm thick % min (leng. + tens.)	A ≥ 3 mm thick % min. (leng. + tens.)

**Special types:**

X2CrTiNb18	1.4509	441	Annealed	-	-	-	230	250	430 - 630	18	18
------------	--------	-----	----------	---	---	---	-----	-----	-----------	----	----

**AUSTENITIC STEEL**

Steel designation			State	Hardness	Yield strength		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break <sup>1)</sup>	
Symbol classification	Numerical classification	US (AISI)			Rp <sub>0.2</sub> N/mm <sup>2</sup> min. (leng.)	Rp <sub>1.0</sub> N/mm <sup>2</sup> min. (tens.)		1) A <sub>80</sub> mm < 3 mm thick % min (leng. + tens.)	1) A ≥ 3 mm thick % min. (leng. + tens.)

**Standardised Types:**

X10CrNi18-8	1.4310	301 301Mo	Annealed	-	-	-	250	280	600 - 950	40	40
			Hardened by cold rolling	+C850	1/4 Hard	250 - 600 HV	-	-	850 - 1000	25	-
				+C1000	1/2 Hard		-	-	1000 - 1150	20	-
				+C1150	3/4 Hard		-	-	1150 - 1300	15	-
				+C1300	4/4 Hard		-	-	1300 - 1500	10	-
				+C1500	5/4 Hard		-	-	1500 - 1700	5	-
				+C1700	K1		-	-	1700 - 1900	2	-
				+C1900	K2		-	-	1900 - 2200	1	-

\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

Steel designation			State			Hardness	Yield strength		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break <sup>1)</sup>	
Symbol classification	Numerical classification	US (AISI)					Rp0.2 N/mm <sup>2</sup> min. (leng.)	Rp1,0 N/mm <sup>2</sup> min. (tens.)		1) A80 mm < 3 mm thick % min (leng. + tens.)	1) A ≥ 3 mm thick % min. (leng. + tens.)
				+C2100	under request						
X2CrNi18-9	1.4307	304L	Annealed	-	-	-	220	250	520 - 700	45	45
X5CrNi18-10	1.4301	304	Annealed	-	-	-	230	260	540 - 750	45	45
			Hardened by cold rolling	+C700	-	220 - 450 HV	-	-	700-850	25	-
				+C850	1/4 Hard		-	-	850-1000	12	-
				+C1000	1/2 Hard		-	-	1000-1150	5	-
				+C1150	3/4 Hard		-	-	1150-1300	3	-
+C1300	4/4 Hard	-	-	1300-1500	1	-					
X6CrNiTi18-10	1.4541	321	Annealed	-	-	-	220	250	520-720	40	40
X2CrNiMo17-12-2	1.4404	316L	Annealed	-	-	-	240	270	530 - 680	40	40
X6CrNiMoTi17-12-2	1.4571	316Ti	Annealed	-	-	-	240	270	540 - 690	40	40
X5CrNiMo17-12-2	14401	316	Annealed	-	-	-	240	270	530 - 680	40	40
			Hardened by cold rolling	+C700	-	220 - 400 HV	-	-	700 - 850	20	-
				+C850	1/4 Hard		-	-	850 - 1000	10	-
				+C1000	1/2 Hard		-	-	1000 - 1150	4	-
				+C1150	3/4 Hard		-	-	1150 - 1300	1	-
+C1300	4/4 Hard	-	-	1300 - 1500	-	-					

**Special types:**

\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

Steel designation			State			Hardness	Yield strength		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break <sup>1)</sup>	
Symbol classification	Numerical classification	US (AISI)					Rp0.2 N/mm <sup>2</sup> min. (leng.)	Rp1,0 N/mm <sup>2</sup> min. (tens.)		1) A80 mm < 3 mm thick % min (leng. + tens.)	1) A ≥ 3 mm thick % min. (leng. + tens.)
X12CrMnNiN17 -7 -5	1.4372	201	Annealed	-	-	-	350	380	680 - 880	45	45
				+C850	1/4 Hard		-	-	850 - 1000	25	-
			Hardened by cold rolling	+C1000	1/2 Hard	200 - 500 HV	-	-	1000 - 1150	13	-
				+C1150	3/4 Hard		-	-	1150 - 1300	5	-
				+C1300	4/4 Hard		-	-	1300 - 1500	2	-
				+C1500	5/4 Hard		-	-	1300 - 1500	1	-
X12CrMnNiN18 -9 -5	1.4373	202	Annealed	-	-	-	340	370	680 - 880	45	45

1) Refer to EN 10088-2 / EN 10150 for details of longitudinal or transverse elongation at break type.

### PRECIPITATION-HARDENED STEEL

Steel designation			State			Hardness	Yield strength Rp0.2		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break	
Symbol classification	Numerical classification	US (AISI)					N/mm <sup>2</sup> min. (leng.)	N/mm <sup>2</sup> min. (tens.)		A80 mm < 3 mm thick % min (leng. + tens.)	A ≥ 3 mm thick % min. (leng. + tens.)
X7CrNiAl17-7	1.4568	631	Annealed	-	-	-	-	-	≤ 1030	19	19
				+C1000	1/2 Hard	300 - 520 HV 1)	-	-	1000 - 1150	-	-
			+C1150	3/4 Hard	-		-	1150 - 1300	-	-	

\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

Steel designation			State	Hardness	Yield strength Rp <sub>0.2</sub>		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break		
Symbol classification	Numerical classification	US (AISI)			N/mm <sup>2</sup> min. (leng.)	N/mm <sup>2</sup> min. (tens.)		A <sub>80</sub> mm < 3 mm thick % min (leng. + tens.)	A ≥ 3 mm thick % min. (leng. + tens.)	
			Hardened by cold rolling							
				+C1300	4/4 Hard	-	-	1300 - 1500	-	-
				+C1500	5/4 Hard	-	-	1500 - 1700	-	-
				+C1700	K1	-	-	1700 - 1900	-	-

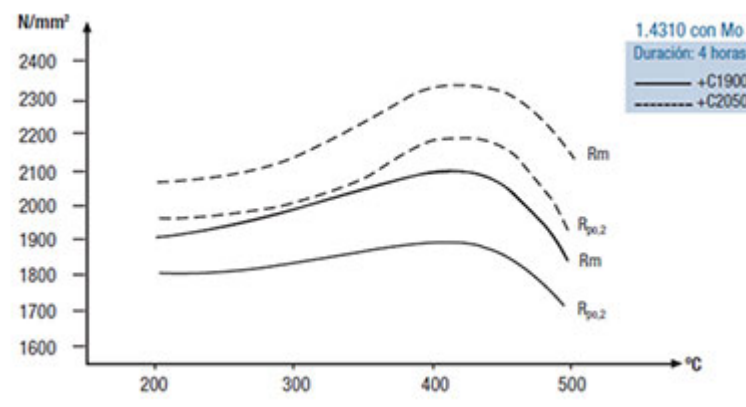
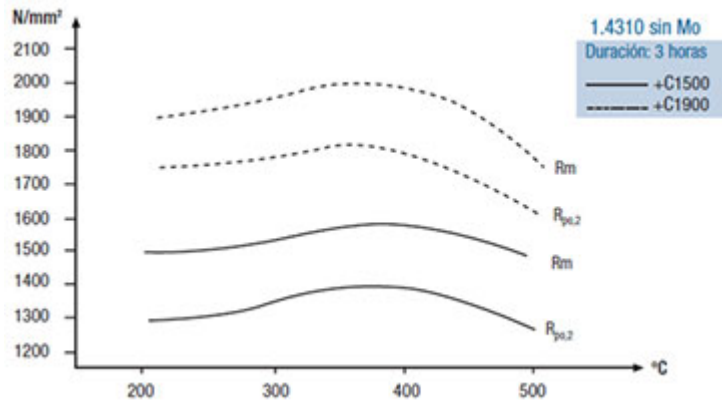
1) Approximate value.

## REFRACTORY STAINLESS STEEL

Steel designation			State			Hardness	Yield strength		Tensile strength Rm N/mm <sup>2</sup>	Elongation at break	
Symbol classification	Numerical classification	US (AISI)					Rp0,2 N/mm <sup>2</sup> min. (leng.)	Rp1,0 N/mm <sup>2</sup> min. (tens.)		A <sub>80 mm &lt; 3 mm thick</sub> % min (leng. + tens.)	A ≥ 3 mm thick % min. (leng. + tens.)
X8CrNi25-21	1.4845	310S	Annealed	-	-	192 HB max.	210	-	500 - 700	33	35

X2CrMoTi18-2 1.4521 and X8CrNi25-21 1.4845 available under a commercial agreement.

## CHARTS FOR GUIDANCE PURPOSES FOR STABILISATION (TEMPERING) CONDITIONS



\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

## Finishes

### TYPE OF PROCESS ROUTE AND SURFACE FINISH OF PLATES AND COILS EN 10088-2 <sup>1)</sup>

COLD ROLLING				
Abbreviation	Type of process route	Surface finish	Remarks	AISI
2H	Hardened by cold forming	Bright	Hardened by cold forming, to obtain the highest level of mechanical strength.	TR
2D	Cold-rolled, heat treated, pickled	Smooth	Finish with good ductility, but not as smooth as 2B or 2R.	2D
2B	Cold-rolled, heat treated, pickled and skin passed	Smoother than 2D	Normal finish for most steels. Ensures good corrosion resistance, smoothness and flatness. Also common for subsequent processes. Skin passing can be replaced by tension levelling.	2B
2R	Cold-rolled, bright annealed	Smooth, bright and reflective	Smoother and brighter finish than 2B. Also common for subsequent processing.	BA
2G	Ground		Can be specified based on the grain size of the grinding wheel or surface roughness. It has a unidirectional texture, not very reflective.	3

\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

COLD ROLLING				
Abbreviation	Type of process route	Surface finish	Remarks	AISI
2J	Brushed or polished matt	Smother than when ground 1)	The brushing grade, type of abrasive belt and surface roughness can be specified. It has a unidirectional texture, not very reflective.	6
1D	Hot rolled, heat treated, pickled	Free of scale	Normal finish for most steels in order to ensure good corrosion resistance; A finish that is also common for products that are going to undergo subsequent processing. Grinding marks permitted. Coarser finish than 2D or 2B.	1
2E	Cold-rolled, heat treated, mechanically descaled	Rough and matt	Generally applied to steel with pickling-resistant scale. Can be followed by pickling.	1
2K	Gloss polished	1)	Additional specific requirements to a "J" type finish, in order to achieve adequate corrosion resistance in marine environments and for external architectural applications. They are finishes with a transverse roughness of $Ra < 0.5\mu m$ and with a clean surface appearance.	4

1) Within the description of each finish, the properties may vary and further details may be necessary to correctly specify the desired finish (for example, the abrasive grain or surface roughness).

**Tinned or nickel plated strips can be supplied under a commercial agreement.**

## AVERAGE SURFACE ROUGHNESS EN 10151:2002

The quality of the surface of a strip is characterised by the following approximate average surface roughness values:

- Ra < 0.3 µm for tensile strength levels of +C1150 and above.
- Ra < 0.5 µm for tensile strength levels ranging from +C700 to +C1000.

## Tolerances

### STAINLESS STEEL STRIP THICKNESS TOLERANCES

A) Thickness tolerances specified **for cold-rolled stainless steel strips and strips in cut lengths obtained from precision strips.**

Specified thickness t	Thickness tolerance specified according to EN ISO 9445-1 for a nominal width of								
	w < 125			125 ≤ w < 250			250 ≤ w < 600		
	Normal	Fine (F)	Precision (P)	Normal	Fine (F)	Precision (P)	Normal	Fine (F)	Precision (P)
0.05 ≤ t < 0.10	± 0.10 t	± 0.06 t	± 0.04 t	± 0.12 t	± 0.10 t	± 0.08 t	± 0.15 t	± 0.10 t	± 0.08 t
0.10 ≤ t < 0.15	± 0.010	± 0.008	± 0.006	± 0.015	± 0.012	± 0.008	± 0.020	± 0.015	± 0.010
0.15 ≤ t < 0.20	± 0.015	± 0.010	± 0.008	± 0.020	± 0.012	± 0.010	± 0.025	± 0.015	± 0.012
0.20 ≤ t < 0.25	± 0.015	± 0.012	± 0.008	± 0.020	± 0.015	± 0.010	± 0.025	± 0.020	± 0.012
0.25 ≤ t < 0.30	± 0.017	± 0.012	± 0.009	± 0.025	± 0.015	± 0.012	± 0.030	± 0.020	± 0.015
0.30 ≤ t < 0.40	± 0.020	± 0.015	± 0.010	± 0.025	± 0.020	± 0.012	± 0.030	± 0.025	± 0.015
0.40 ≤ t < 0.50	± 0.025	± 0.020	± 0.012	± 0.030	± 0.020	± 0.015	± 0.035	± 0.025	± 0.018
0.50 ≤ t < 0.60	± 0.030	± 0.020	± 0.014	± 0.030	± 0.025	± 0.015	± 0.040	± 0.030	± 0.020
0.60 ≤ t < 0.80	± 0.030	± 0.025	± 0.015	± 0.035	± 0.030	± 0.018	± 0.040	± 0.035	± 0.025
0.80 ≤ t < 1.00	± 0.030	± 0.025	± 0.018	± 0.040	± 0.030	± 0.020	± 0.050	± 0.035	± 0.025
1.00 ≤ t < 1.20	± 0.035	± 0.030	± 0.020	± 0.045	± 0.035	± 0.025	± 0.050	± 0.040	± 0.030

\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

Specified thickness t	Thickness tolerance specified according to EN ISO 9445-1 for a nominal width of								
	w < 125			125 ≤ w < 250			250 ≤ w < 600		
	Normal	Fine (F)	Precision (P)	Normal	Fine (F)	Precision (P)	Normal	Fine (F)	Precision (P)
1.20 ≤ t < 1.50	± 0.040	± 0.030	± 0.020	± 0.050	± 0.035	± 0.025	± 0.060	± 0.045	± 0.030
1.50 ≤ t < 2.00	± 0.050	± 0.035	± 0.025	± 0.060	± 0.040	± 0.030	± 0.070	± 0.050	± 0.035
2.00 ≤ t < 2.50	± 0.050	± 0.035	± 0.025	± 0.070	± 0.045	± 0.030	± 0.080	± 0.060	± 0.040
2.50 ≤ t ≤ 3.00	± 0.060	± 0.045	± 0.030	± 0.070	± 0.050	± 0.035	± 0.090	± 0.070	± 0.045

Measurements in mm.

**B) Thickness tolerances for strips cut from standard material.**

Nominal thickness t	Normal tolerances for nominal width w			Close tolerances (S) for a nominal width w		
	w ≤ 1000	1000 < w ≤ 1300	1300 < w ≤ 2100	w ≤ 1000	1000 < w ≤ 1300	1300 < w ≤ 2100
t < 0.30	± 0.030	-	-	± 0.020	-	-
0.30 ≤ t < 0.50	± 0.040	± 0.040	-	± 0.025	± 0.030	-
0.50 ≤ t < 0.60	± 0.045	± 0.050	-	± 0.030	± 0.035	-
0.60 ≤ t < 0.80	± 0.050	± 0.050	-	± 0.035	± 0.040	-
0.80 ≤ t < 1.00	± 0.055	± 0.060	± 0.07	± 0.040	± 0.045	± 0.050
1.00 ≤ t < 1.20	± 0.060	± 0.070	± 0.08	± 0.045	± 0.045	± 0.060
1.20 ≤ t < 1.50	± 0.070	± 0.080	± 0.10	± 0.050	± 0.055	± 0.060
1.50 ≤ t < 2.00	± 0.080	± 0.090	± 0.11	± 0.055	± 0.060	± 0.070
2.00 ≤ t < 2.50	± 0.090	± 0.10	± 0.13	-	-	-
2.50 ≤ t ≤ 3.00	± 0.11	± 0.12	± 0.15	-	-	-
3.00 ≤ t ≤ 4.00	± 0.13	± 0.14	± 0.16	-	-	-
4.00 ≤ t ≤ 5.00	± 0.14	± 0.15	± 0.19	-	-	-

Measurements in mm.

\* The data contained in this catalogue are for information purposes only and are not under any circumstances, contractual supply conditions. Errors and omissions excepted.

## WIDTH TOLERANCES

Width tolerances for **cold-rolled strips and strips in cut lengths obtained from these strips.**

Specified thickness t	Standard slitting tolerances for VINCO <sup>1)</sup>				Specified width w according to EN ISO 9445-1 <sup>5)</sup>											
	3-15	15-50	50-150	>150	w ≤ 40			40 < w ≤ 125			125 < w ≤ 250			250 < w ≤ 600		
					Normal	Fine (F)	Precision (P)	Normal	Fine (F)	Precision (P)	Normal	Fine (F)	Precision (P)	Normal	Fine (F)	Precision (P)
t < 0,25	0;+0,15	0;+0,15	0;+0,15	0;+0,2	0;+0,17	0;+0,13	0;+0,10	0;+0,20	0;+0,15	0;+0,12	0;+0,25	0;+0,20	0;+0,15	0;+0,50	0;+0,50	0;+0,40
0,25 ≤ t < 0,40	0;+0,15	0;+0,15	0;+0,15	0;+0,2	0;+0,20	0;+0,15	0;+0,12	0;+0,25	0;+0,20	0;+0,15	0;+0,30	0;+0,22	0;+0,17	0;+0,60	0;+0,50	0;+0,40
0,40 ≤ t < 0,50	0;+0,17	0;+0,18	0;+0,2	0;+0,24	0;+0,20	0;+0,15	0;+0,12	0;+0,25	0;+0,22	0;+0,15	0;+0,30	0;+0,22	0;+0,17	0;+0,60	0;+0,50	0;+0,40
0,50 ≤ t < 1	0;+0,17 <sup>2)</sup>	0;+0,18 <sup>2)</sup>	0;+0,20 <sup>2)</sup>	0;+0,24 <sup>2)</sup>	0;+0,25	0;+0,22	0;+0,15	0;+0,25	0;+0,22	0;+0,17	0;+0,40	0;+0,25	0;+0,20	0;+0,70	0;+0,60	0;+0,50
1 ≤ t < 1,50	0;+0,20 <sup>3)</sup>	0;+0,2 <sup>3)</sup>	0;+0,20 <sup>3)</sup>	0;+0,3 <sup>3)</sup>	0;+0,25	0;+0,22	0;+0,15	0;+0,30	0;+0,25	0;+0,17	0;+0,50	0;+0,30	0;+0,22	0;+1,0	0;+0,70	0;+0,60
1,50 ≤ t < 2,50	As per request	0;+0,26 <sup>4)</sup>	0;+0,30 <sup>4)</sup>	0;+0,32 <sup>4)</sup>	-	-	-	0;+0,40	0;+0,25	0;+0,20	0;+0,60	0;+0,40	0;+0,25	0;+1,0	0;+0,80	0;+0,60
2,5 ≤ t ≤ 3	As per request	As per request	0;+0,32	0;+0,35	-	-	-	0;+0,50	0;+0,30	0;+0,25	0;+0,60	0;+0,40	0;+0,25	0;+1,2	0;+1,0	0;+ 0,90
3 < t ≤ 5	As per request	As per request	0;+0,32	0;+0,35	-	-	-	-	-	-	-	-	-	-	-	-

Measurements in mm.

1) Other, closer dimensional tolerances are possible under a commercial agreement.

2) Including the value t=1

3) Including the value t=1,5

4) Including the value t=2,5

5) Subject to an agreement, the tolerance can be equal in ± or all -. In both cases, the total tolerance range must be as shown in the table.

## EDGE CAMBER TOLERANCES

Nominal width (W)	Closer edge curve tolerances possible <b>under a commercial agreement</b> .		Edge curve tolerances <sup>1)</sup> for average lengths of	
	Maximum deviation 2000 mm Thickness (t)		Maximum deviation 2000 mm Thickness (t)	
	t ≤ 1.20 mm	t > 1.20 mm	Normal	Close ( R )
3 ≤ W < 6	10,00	15,00	-	-
6 < W ≤ 10	8,00	12,00	-	-
10 < W ≤ 20	4,00	6,00	16 <sup>2)</sup>	6
20 < W < 25	2,00	4,00	16	6
25 ≤ W < 40	2,00	4,00	12	5
40 ≤ W < 125	2,00	4,00	8	4
125 ≤ W < 350	2,00	4,00	6	3
350 ≤ W < 600	-	-	-	-

Measurements in mm.

1) Edge curve tolerances for cold-rolled strips and for strips in cut lengths obtained from cold-rolled strips according to EN ISO 9445.

2) For nominal widths of 10mm included.

± 0,08