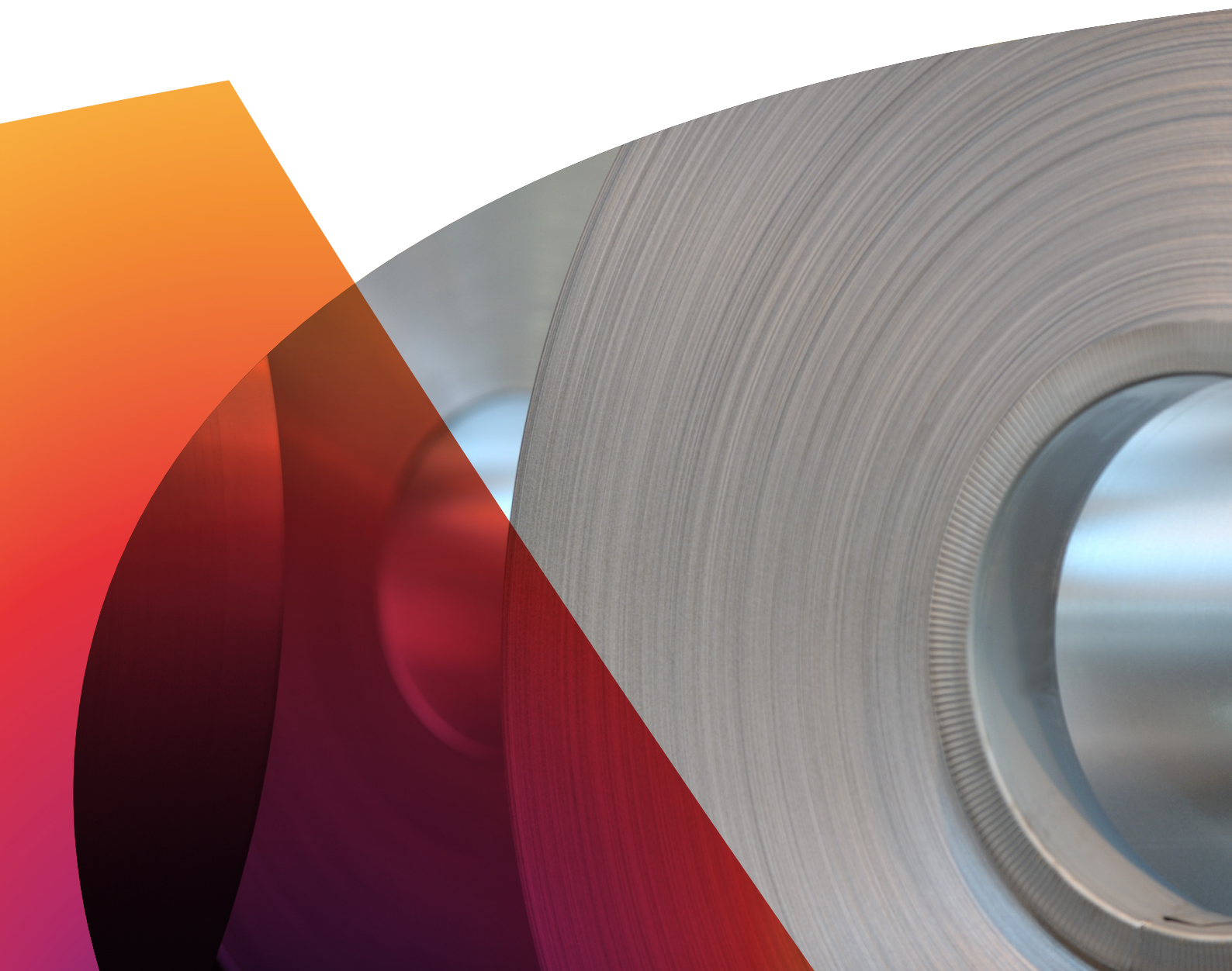
ArcelorMittal

Tolerance & conversion tables



Tolerance tables

In this section you will find designations and details of guarantees provided by ArcelorMittal in terms of tolerances in accordance with the European standards referenced.

Note: In the event of any deviation from the current standard, the latter shall prevail.



Hot rolled strip and plate/sheet products

EN 10051 defines six categories:

- Hot rolled low carbon steel sheet/plate and strip for cold forming
- Category A: $R_e \leq 300$ MPa
- Category B: 300 MPa $< R_e \leq 360$ MPa
- Category C: 360 MPa $< R_e \leq 420$ MPa
- Category D: 420 MPa $< R_e \leq 960$ MPa
- Steel grades with $R_e > 960$ MPa

Tolerances on thickness according to EN 10051

Tolerances on thickness for continuously hot rolled low carbon steel sheet/plate for cold forming according to EN 10111

	Width (mm)			
Thickness (mm)	**w ≤ 1200**	**1200 < w ≤ 1500**	**1500 < w ≤ 1800**	**w > 1800**
th ≤ 2.00	± 0.13	± 0.14	± 0.16	-
2.00 < th ≤ 2.50	± 0.14	± 0.16	± 0.17	± 0.19
2.50 < th ≤ 3.00	± 0.15	± 0.17	± 0.18	± 0.20
3.00 < th ≤ 4.00	± 0.17	± 0.18	± 0.20	± 0.20
4.00 < th ≤ 5.00	± 0.18	± 0.20	± 0.21	± 0.22
5.00 < th ≤ 6.00	± 0.20	± 0.21	± 0.22	± 0.23
6.00 < th ≤ 8.00	± 0.22	± 0.23	± 0.23	± 0.26
8.00 < th ≤ 11.00	± 0.24	± 0.25	± 0.25	± 0.28

Category A: $R_e \leq 300$ MPa

	Width (mm)			
Thickness (mm)	w ≤ 1200	1200 < w ≤ 1500	1500 < w ≤ 1800	w > 1800
th ≤ 2.00	± 0.17	± 0.19	± 0.21	-
2.00 < th ≤ 2.50	± 0.18	± 0.21	± 0.23	± 0.25
2.50 < th ≤ 3.00	± 0.20	± 0.22	± 0.24	± 0.26
3.00 < th ≤ 4.00	± 0.22	± 0.24	± 0.26	± 0.27
4.00 < th ≤ 5.00	± 0.24	± 0.26	± 0.28	± 0.29
5.00 < th ≤ 6.00	± 0.26	± 0.28	± 0.29	± 0.31
6.00 < th ≤ 8.00	± 0.29	± 0.30	± 0.31	± 0.35
8.00 < th ≤ 10.00	± 0.32	± 0.33	± 0.34	± 0.40
10.00 < th ≤ 12.50	± 0.35	± 0.36	± 0.37	± 0.43
12.50 < th ≤ 15.00	± 0.37	± 0.38	± 0.40	± 0.46
15.00 < th ≤ 25.00	± 0.40	± 0.42	± 0.45	± 0.50

Category B: 300 MPa < $R_e \leq 360$ MPa

	Width (mm)			
Thickness (mm)	w ≤ 1200	1200 < w ≤ 1500	1500 < w ≤ 1800	w > 1800
th ≤ 2.00	± 0.20	± 0.22	± 0.24	-
2.00 < th ≤ 2.50	± 0.21	± 0.24	± 0.26	± 0.29
2.50 < th ≤ 3.00	± 0.23	± 0.25	± 0.28	± 0.30
3.00 < th ≤ 4.00	± 0.25	± 0.28	± 0.30	± 0.31
4.00 < th ≤ 5.00	± 0.28	± 0.30	± 0.32	± 0.33
5.00 < th ≤ 6.00	± 0.30	± 0.32	± 0.33	± 0.36
6.00 < th ≤ 8.00	± 0.33	± 0.35	± 0.36	± 0.40
8.00 < th ≤ 10.00	± 0.37	± 0.38	± 0.39	± 0.46
10.00 < th ≤ 12.50	± 0.40	± 0.41	± 0.43	± 0.49
12.50 < th ≤ 15.00	± 0.43	± 0.44	± 0.46	± 0.53
15.00 < th ≤ 25.00	± 0.46	± 0.48	± 0.52	± 0.58

Category C: 360 MPa < $R_e \leq 420$ MPa

	Width (mm)			
Thickness (mm)	w ≤ 1200	1200 < w ≤ 1500	1500 < w ≤ 1800	w > 1800
th ≤ 2.00	± 0.22	± 0.25	± 0.27	-
2.00 < th ≤ 2.50	± 0.23	± 0.27	± 0.30	± 0.33
2.50 < th ≤ 3.00	± 0.26	± 0.29	± 0.31	± 0.34
3.00 < th ≤ 4.00	± 0.29	± 0.31	± 0.34	± 0.35
4.00 < th ≤ 5.00	± 0.31	± 0.34	± 0.36	± 0.38
5.00 < th ≤ 6.00	± 0.34	± 0.36	± 0.38	± 0.40
6.00 < th ≤ 8.00	± 0.38	± 0.39	± 0.40	± 0.46
8.00 < th ≤ 10.00	± 0.42	± 0.43	± 0.44	± 0.52
10.00 < th ≤ 12.50	± 0.46	± 0.47	± 0.48	± 0.56
12.50 < th ≤ 15.00	± 0.48	± 0.49	± 0.52	± 0.60
15.00 < th ≤ 25.00	± 0.52	± 0.55	± 0.58	± 0.65

Category D: 420 MPa < R_e ≤ 960 MPa

	Width (mm)			
Thickness (mm)	w ≤ 1200	1200 < w ≤ 1500	1500 < w ≤ 1800	w > 1800
th ≤ 2.00	± 0.24	± 0.27	± 0.29	-
2.00 < th ≤ 2.50	± 0.25	± 0.29	± 0.32	± 0.35
2.50 < th ≤ 3.00	± 0.28	± 0.31	± 0.34	± 0.36
3.00 < th ≤ 4.00	± 0.31	± 0.34	± 0.36	± 0.38
4.00 < th ≤ 5.00	± 0.34	± 0.36	± 0.39	± 0.41
5.00 < th ≤ 6.00	± 0.36	± 0.39	± 0.41	± 0.43
6.00 < th ≤ 8.00	± 0.41	± 0.42	± 0.43	± 0.49
8.00 < th ≤ 10.00	± 0.45	± 0.46	± 0.48	± 0.56
10.00 < th ≤ 12.50	± 0.49	± 0.50	± 0.52	± 0.60
12.50 < th ≤ 15.00	± 0.52	± 0.53	± 0.56	± 0.64
15.00 < th ≤ 25.00	± 0.56	± 0.59	± 0.63	± 0.70

Steel grades with R_e > 960 MPa

Thickness tolerances of steel grades with a minimum specified yield strength > 960 MPa need to be agreed at the time of enquiry and order.

Width according to EN 10051

	Mill edges		Edge trimmed[1]	
Width (mm)	Lower	Upper	Lower	Upper
w ≤ 1200	0	+ 20	0	+ 3
1200 < w ≤ 1500 (1850)	0	+ 20	0	+ 5
w > 1500 (1850)	0	+ 25	0	+ 6

(1) Tolerances for trimmed edges apply to products with nominal thickness th ≤ 10 mm; for nominal thickness th > 10 mm the upper tolerances shall be agreed at the time of enquiry and order.

Length according to EN 10051

Length (mm)	Lower	Upper
L < 2000	0	+ 10
2000 ≤ L < 8000	0	+ 0.005 x length
L ≥ 8000	0	+ 40

Flatness according to EN 10051[2]

		Normal flatness tolerances (mm)		Special flatness tolerances (mm)	
		Categories A, B and C	Category D	Categories A, B and C	Category D
Width (mm)	Thickness (mm)	Measuring length 1000 mm		Measuring length 1000 mm	
w ≤ 1200	th ≤ 2.00	18	To be agreed with the customer	18	To be agreed with the customer
	2.00 < th ≤ 2.50	15		14	
	2.50 < th ≤ 3.00	15		11	
	3.00 < th ≤ 5.00	15	18	9	12
	5.00 < th ≤ 8.00	13	16	8	11
	8.00 < th ≤ 15.00	13	16	7	10
	15.00 < th ≤ 25.00	13	16	7	10
1200 < w ≤ 1500	th ≤ 2.00	21	To be agreed with the customer	21	To be agreed with the customer
	2.00 < th ≤ 2.50	18		17	
	2.50 < th ≤ 3.00	18		14	
	3.00 < th ≤ 5.00	18	21	12	15
	5.00 < th ≤ 8.00	16	19	11	14
	8.00 < th ≤ 15.00	16	19	10	13
	15.00 < th ≤ 25.00	16	19	10	13
w > 1500	th ≤ 2.00	26	To be agreed with the customer	26	To be agreed with the customer
	2.00 < th ≤ 2.50	22		22	
	2.50 < th ≤ 3.00	22		19	
	3.00 < th ≤ 5.00	22	25	17	20
	5.00 < th ≤ 8.00	19	22	16	19
	8.00 < th ≤ 15.00	19	22	15	18
	15.00 < th ≤ 25.00	19	22	15	18

(2) The flatness tolerances only apply to sheet and plate.

Thickness tolerances with only positive tolerances[3]

Category A: $R_e \leq 300$ MPa

Thickness (mm)	Tolerances for a width w (mm)							
	w ≤ 1200		1200 < w ≤ 1500		1500 < w ≤ 1800		w > 1800	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
th ≤ 2.00	0	+0.34	0	+0.38	0	+0.42	-	-
2.00 < th ≤ 2.50	0	+0.36	0	+0.42	0	+0.46	0	+0.50
2.50 < th ≤ 3.00	0	+0.40	0	+0.44	0	+0.48	0	+0.52
3.00 < th ≤ 4.00	0	+0.44	0	+0.48	0	+0.52	0	+0.54
4.00 < th ≤ 5.00	0	+0.48	0	+0.52	0	+0.56	0	+0.58
5.00 < th ≤ 6.00	0	+0.52	0	+0.56	0	+0.58	0	+0.62
6.00 < th ≤ 8.00	0	+0.58	0	+0.60	0	+0.62	0	+0.70
8.00 < th ≤ 10.00	0	+0.64	0	+0.66	0	+0.68	0	+0.80
10.00 < th ≤ 12.50	0	+0.70	0	+0.72	0	+0.74	0	+0.86
12.50 < th ≤ 15.00	0	+0.74	0	+0.76	0	+0.80	0	+0.92
15.00 < th ≤ 25.00	0	+0.80	0	+0.84	0	+0.90	0	+1.00

(3) The thickness tolerances apply to strip, sheet and plate.

Category B: 300 MPa < $R_e \leq 360$ MPa

Thickness (mm)	Tolerances for a width w (mm)							
	w ≤ 1200		1200 < w ≤ 1500		1500 < w ≤ 1800		w > 1800	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
th ≤ 2.00	0	+0.40	0	+0.44	0	+0.48	-	-
2.00 < th ≤ 2.50	0	+0.42	0	+0.48	0	+0.52	0	+0.58
2.50 < th ≤ 3.00	0	+0.46	0	+0.50	0	+0.56	0	+0.60
3.00 < th ≤ 4.00	0	+0.50	0	+0.56	0	+0.60	0	+0.62
4.00 < th ≤ 5.00	0	+0.56	0	+0.60	0	+0.64	0	+0.66
5.00 < th ≤ 6.00	0	+0.60	0	+0.64	0	+0.66	0	+0.72
6.00 < th ≤ 8.00	0	+0.66	0	+0.70	0	+0.72	0	+0.80
8.00 < th ≤ 10.00	0	+0.74	0	+0.76	0	+0.78	0	+0.92
10.00 < th ≤ 12.50	0	+0.80	0	+0.82	0	+0.86	0	+0.98
12.50 < th ≤ 15.00	0	+0.86	0	+0.88	0	+0.92	0	+1.06
15.00 < th ≤ 25.00	0	+0.92	0	+0.96	0	+1.04	0	+1.16

(3) The thickness tolerances apply to strip, sheet and plate.

Category C: 360 MPa < R_e ≤ 420 MPa

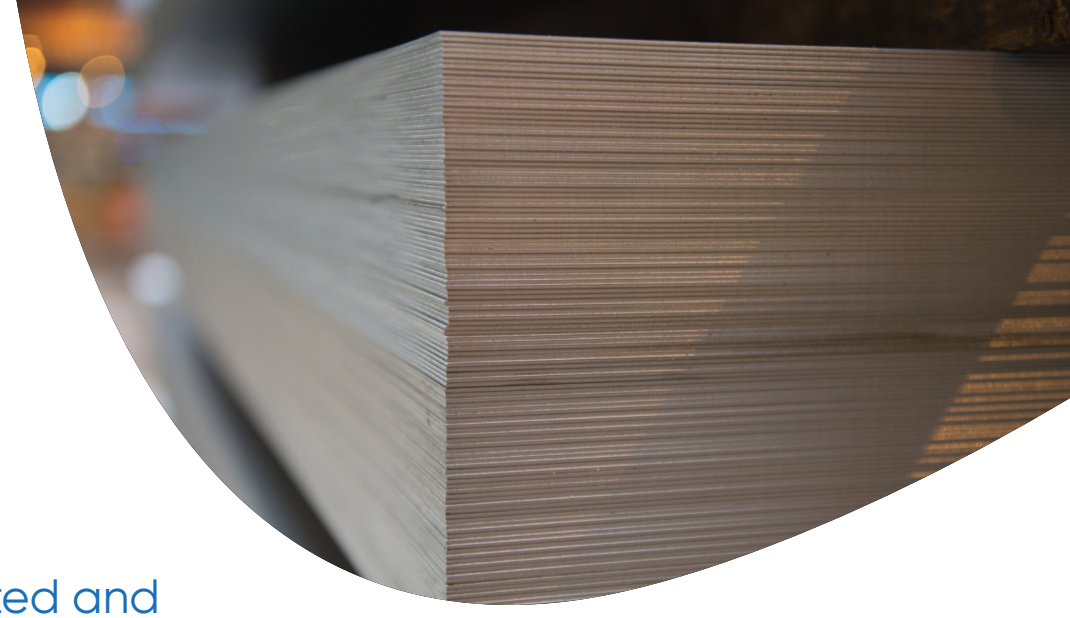
Thickness (mm)	Tolerances for a width w (mm)							
	w ≤ 1200		1200 < w ≤ 1500		1500 < w ≤ 1800		w > 1800	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
th ≤ 2.00	0	+0.44	0	+0.50	0	+0.54	-	-
2.00 < th ≤ 2.50	0	+0.46	0	+0.54	0	+0.60	0	+0.66
2.50 < th ≤ 3.00	0	+0.52	0	+0.58	0	+0.62	0	+0.68
3.00 < th ≤ 4.00	0	+0.58	0	+0.62	0	+0.68	0	+0.70
4.00 < th ≤ 5.00	0	+0.62	0	+0.68	0	+0.72	0	+0.76
5.00 < th ≤ 6.00	0	+0.68	0	+0.72	0	+0.76	0	+0.80
6.00 < th ≤ 8.00	0	+0.72	0	+0.78	0	+0.80	0	+0.92
8.00 < th ≤ 10.00	0	+0.84	0	+0.86	0	+0.88	0	+1.04
10.00 < th ≤ 12.50	0	+0.92	0	+0.94	0	+0.96	0	+1.12
12.50 < th ≤ 15.00	0	+0.96	0	+0.98	0	+1.04	0	+1.20
15.00 < th ≤ 25.00	0	+1.04	0	+1.10	0	+1.18	0	+1.30

(3) The thickness tolerances apply to strip, sheet and plate.

Category D: 420 MPa < R_e ≤ 960 MPa

Thickness (mm)	Tolerances for a width w (mm)							
	w ≤ 1200		1200 < w ≤ 1500		1500 < w ≤ 1800		w > 1800	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
th ≤ 2.00	0	+0.48	0	+0.54	0	+0.58	-	-
2.00 < th ≤ 2.50	0	+0.50	0	+0.58	0	+0.64	0	+0.70
2.50 < th ≤ 3.00	0	+0.56	0	+0.62	0	+0.68	0	+0.72
3.00 < th ≤ 4.00	0	+0.62	0	+0.68	0	+0.72	0	+0.76
4.00 < th ≤ 5.00	0	+0.68	0	+0.72	0	+0.78	0	+0.82
5.00 < th ≤ 6.00	0	+0.72	0	+0.78	0	+0.82	0	+0.86
6.00 < th ≤ 8.00	0	+0.82	0	+0.84	0	+0.86	0	+0.98
8.00 < th ≤ 10.00	0	+0.90	0	+0.92	0	+0.96	0	+1.12
10.00 < th ≤ 12.50	0	+0.98	0	+1.00	0	+1.04	0	+1.20
12.50 < th ≤ 15.00	0	+1.04	0	+1.06	0	+1.12	0	+1.28
15.00 < th ≤ 25.00	0	+1.12	0	+1.18	0	+1.26	0	+1.40

(3) The thickness tolerances apply to strip, sheet and plate.



Cold rolled uncoated and electrolytically coated flat products

Thickness according to EN 10131

R_e < 260 MPa

Thickness (mm)	Width (mm)					
	Normal tolerances (mm)			Special tolerances (mm)		
	w ≤ 1200	1200 < w ≤ 1500	w > 1500	w ≤ 1200	1200 < w ≤ 1500	w > 1500
0.35 ≤ th ≤ 0.40	± 0.03	± 0.04	± 0.05	± 0.020	± 0.025	± 0.030
0.40 < th ≤ 0.60	± 0.03	± 0.04	± 0.05	± 0.025	± 0.030	± 0.035
0.60 < th ≤ 0.80	± 0.04	± 0.05	± 0.06	± 0.030	± 0.035	± 0.040
0.80 < th ≤ 1.00	± 0.05	± 0.06	± 0.07	± 0.035	± 0.040	± 0.050
1.00 < th ≤ 1.20	± 0.06	± 0.07	± 0.08	± 0.040	± 0.050	± 0.060
1.20 < th ≤ 1.60	± 0.08	± 0.09	± 0.10	± 0.050	± 0.060	± 0.070
1.60 < th ≤ 2.00	± 0.10	± 0.11	± 0.12	± 0.060	± 0.070	± 0.080
2.00 < th ≤ 2.50	± 0.12	± 0.13	± 0.14	± 0.080	± 0.090	± 0.100
2.50 < th ≤ 3.00	± 0.15	± 0.15	± 0.16	± 0.100	± 0.110	± 0.120

260 MPa ≤ R_e < 340 MPa

Thickness (mm)	Width (mm)					
	Normal tolerances (mm)			Special tolerances (mm)		
	w ≤ 1200	1200 < w ≤ 1500	w > 1500	w ≤ 1200	1200 < w ≤ 1500	w > 1500
0.35 ≤ th ≤ 0.40	± 0.04	± 0.05	± 0.06	± 0.025	± 0.030	± 0.035
0.40 < th ≤ 0.60	± 0.04	± 0.05	± 0.06	± 0.030	± 0.035	± 0.040
0.60 < th ≤ 0.80	± 0.05	± 0.06	± 0.07	± 0.035	± 0.040	± 0.050
0.80 < th ≤ 1.00	± 0.06	± 0.07	± 0.08	± 0.040	± 0.050	± 0.060
1.00 < th ≤ 1.20	± 0.07	± 0.08	± 0.10	± 0.050	± 0.060	± 0.070
1.20 < th ≤ 1.60	± 0.09	± 0.11	± 0.12	± 0.060	± 0.070	± 0.080
1.60 < th ≤ 2.00	± 0.12	± 0.13	± 0.14	± 0.070	± 0.080	± 0.100
2.00 < th ≤ 2.50	± 0.14	± 0.15	± 0.16	± 0.100	± 0.110	± 0.120
2.50 < th ≤ 3.00	± 0.17	± 0.18	± 0.18	± 0.120	± 0.130	± 0.140

340 MPa ≤ R_e ≤ 420 MPa

Thickness (mm)	Width (mm)					
	Normal tolerances (mm)			Special tolerances (mm)		
	w ≤ 1200	1200 < w ≤ 1500	w > 1500	w ≤ 1200	1200 < w ≤ 1500	w > 1500
0.35 ≤ th ≤ 0.40	± 0.04	± 0.05	± 0.06	± 0.030	± 0.035	± 0.040
0.40 < th ≤ 0.60	± 0.05	± 0.06	± 0.07	± 0.035	± 0.040	± 0.050
0.60 < th ≤ 0.80	± 0.06	± 0.07	± 0.08	± 0.040	± 0.050	± 0.060
0.80 < th ≤ 1.00	± 0.07	± 0.08	± 0.10	± 0.050	± 0.060	± 0.070
1.00 < th ≤ 1.20	± 0.09	± 0.10	± 0.11	± 0.060	± 0.070	± 0.080
1.20 < th ≤ 1.60	± 0.11	± 0.12	± 0.14	± 0.070	± 0.080	± 0.100
1.60 < th ≤ 2.00	± 0.14	± 0.15	± 0.17	± 0.080	± 0.100	± 0.110
2.00 < th ≤ 2.50	± 0.16	± 0.18	± 0.19	± 0.110	± 0.120	± 0.130
2.50 < th ≤ 3.00	± 0.20	± 0.20	± 0.21	± 0.130	± 0.140	± 0.150

Thickness according to EN 10131

R_e > 420 MPa

Thickness (mm)	Width (mm)					
	Normal tolerances (mm)			Special tolerances (mm)		
	w ≤ 1200	1200 < w ≤ 1500	w > 1500	w ≤ 1200	1200 < w ≤ 1500	w > 1500
0.35 ≤ th ≤ 0.40	± 0.05	± 0.06	± 0.07	± 0.035	± 0.040	± 0.050
0.40 < th ≤ 0.60	± 0.05	± 0.07	± 0.08	± 0.040	± 0.050	± 0.060
0.60 < th ≤ 0.80	± 0.06	± 0.08	± 0.10	± 0.050	± 0.060	± 0.070
0.80 < th ≤ 1.00	± 0.08	± 0.10	± 0.11	± 0.060	± 0.070	± 0.080
1.00 < th ≤ 1.20	± 0.10	± 0.11	± 0.13	± 0.070	± 0.080	± 0.100
1.20 < th ≤ 1.60	± 0.13	± 0.14	± 0.16	± 0.080	± 0.100	± 0.110
1.60 < th ≤ 2.00	± 0.16	± 0.17	± 0.19	± 0.100	± 0.110	± 0.130
2.00 < th ≤ 2.50	± 0.19	± 0.20	± 0.22	± 0.130	± 0.140	± 0.160
2.50 < th ≤ 3.00	± 0.22	± 0.23	± 0.24	± 0.160	± 0.170	± 0.180

Width according to EN 10131

Width ≥ 600 mm

Width (mm)	Normal tolerances (mm)		Special tolerances (mm)	
	Lower	Upper	Lower	Upper
w ≤ 1200	0	+ 4	0	+ 2
1200 < w ≤ 1500	0	+ 5	0	+ 2
w > 1500	0	+ 6	0	+ 3

Width < 600 mm

Tolerances (mm)	Thickness (mm)	Width (mm)							
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
		w < 125		125 ≤ w < 250		250 ≤ w < 400		400 ≤ w < 600	
Normal	th < 0.6	0	+ 0.4	0	+ 0.5	0	+ 0.7	0	+ 1.0
	0.6 ≤ th < 1.0	0	+ 0.5	0	+ 0.6	0	+ 0.9	0	+ 1.2
	1.0 ≤ th < 2.0	0	+ 0.6	0	+ 0.8	0	+ 1.1	0	+ 1.4
	2.0 ≤ th ≤ 3.0	0	+ 0.7	0	+ 1.0	0	+ 1.3	0	+ 1.6
Special	th < 0.6	0	+ 0.2	0	+ 0.2	0	+ 0.3	0	+ 0.5
	0.6 ≤ th < 1.0	0	+ 0.2	0	+ 0.3	0	+ 0.4	0	+ 0.6
	1.0 ≤ th < 2.0	0	+ 0.3	0	+ 0.4	0	+ 0.5	0	+ 0.7
	2.0 ≤ th ≤ 3.0	0	+ 0.4	0	+ 0.5	0	+ 0.6	0	+ 0.8

Length according to EN 10131

Length (mm)	Normal tolerances (mm)		Special tolerances (mm)	
	Lower	Upper	Lower	Upper
L < 2000	0	+ 6	0	+ 3
L ≥ 2000	0	0.3% of the length	0	0.15% of the length

Flatness according to EN 10131[4]

R_e < 260 MPa

Tolerances (mm)	Width (mm)	Thickness (mm)		
		th < 0.7	0.7 ≤ th < 1.2	th ≥ 1.2
Normal	w < 600	7	6	5
	600 ≤ w < 1200	10	8	7
	1200 ≤ w < 1500	12	10	8
	w ≥ 1500	17	15	13
Special	w < 600	4	3	2
	600 ≤ w < 1200	5	4	3
	1200 ≤ w < 1500	6	5	4
	w ≥ 1500	8	7	6
	w < 1500	Height of edge wave of length over 200 mm must be less than 1% of its length.		
	w ≥ 1500	Height of edge wave of length over 200 mm must be less than 1.5% of its length.		
		For edge waves of length less than 200 mm, the maximum height must not exceed 2 mm.		

(4) The flatness tolerances only apply to sheet.

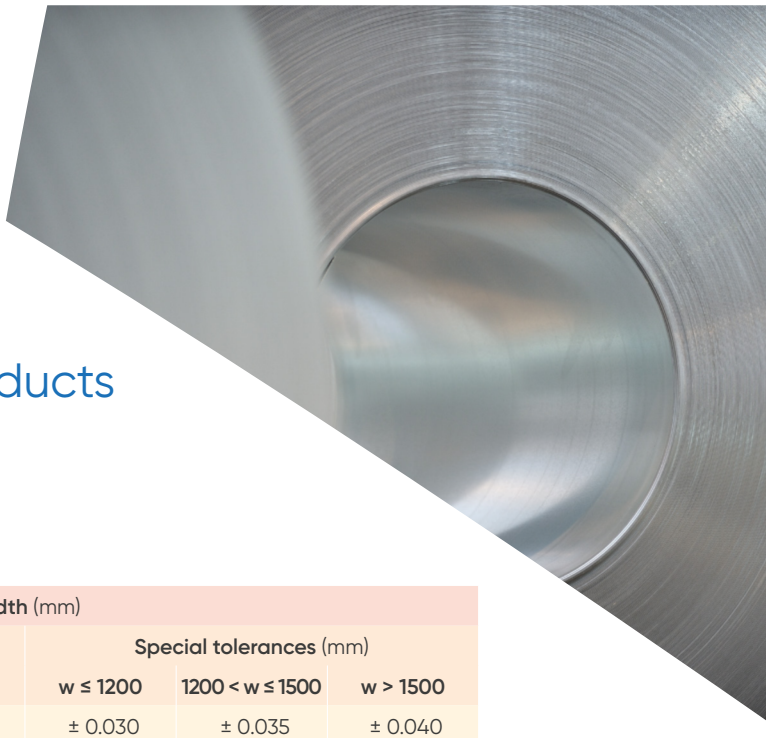
260 MPa ≤ R_e < 340 MPa

Tolerances (mm)	Width (mm)	Thickness (mm)		
		th < 0.7	0.7 ≤ th < 1.2	th ≥ 1.2
Normal	600 ≤ w < 1200	13	10	8
	1200 ≤ w < 1500	15	13	11
	w ≥ 1500	20	19	17
Special	600 ≤ w < 1200	8	6	5
	1200 ≤ w < 1500	9	8	6
	w ≥ 1500	12	10	9

(4) The flatness tolerances only apply to sheet.

R_e ≥ 340 MPa

For these steel grades, flatness tolerance values shall be specified at the time of enquiry and order.



Hot-dip metallic coated flat products

Thickness according to EN 10143

R_e or $R_{p0.2}$ < 260 MPa

Thickness (mm)	Width (mm)					
	Normal tolerances (mm)			Special tolerances (mm)		
	w ≤ 1200	1200 < w ≤ 1500	w > 1500	w ≤ 1200	1200 < w ≤ 1500	w > 1500
0.20 < th ≤ 0.40	± 0.04	± 0.05	± 0.06	± 0.030	± 0.035	± 0.040
0.40 < th ≤ 0.60	± 0.04	± 0.05	± 0.06	± 0.035	± 0.040	± 0.045
0.60 < th ≤ 0.80	± 0.05	± 0.06	± 0.07	± 0.040	± 0.045	± 0.050
0.80 < th ≤ 1.00	± 0.06	± 0.07	± 0.08	± 0.045	± 0.050	± 0.060
1.00 < th ≤ 1.20	± 0.07	± 0.08	± 0.09	± 0.050	± 0.060	± 0.070
1.20 < th ≤ 1.60	± 0.10	± 0.11	± 0.12	± 0.060	± 0.070	± 0.080
1.60 < th ≤ 2.00	± 0.12	± 0.13	± 0.14	± 0.070	± 0.080	± 0.090
2.00 < th ≤ 2.50	± 0.14	± 0.15	± 0.16	± 0.090	± 0.100	± 0.110
2.50 < th ≤ 3.00	± 0.17	± 0.17	± 0.18	± 0.110	± 0.120	± 0.130
3.00 < th ≤ 5.00	± 0.20	± 0.20	± 0.21	± 0.15	± 0.16	± 0.17
5.00 < th ≤ 6.50	± 0.22	± 0.22	± 0.23	± 0.17	± 0.18	± 0.19

260 MPa ≤ $R_{p0.2}$ < 360 MPa and grades DX51D & S550GD

Thickness (mm)	Width (mm)					
	Normal tolerances (mm)			Special tolerances (mm)		
	w ≤ 1200	1200 < w ≤ 1500	w > 1500	w ≤ 1200	1200 < w ≤ 1500	w > 1500
0.20 < th ≤ 0.40	± 0.05	± 0.06	± 0.07	± 0.035	± 0.040	± 0.045
0.40 < th ≤ 0.60	± 0.05	± 0.06	± 0.07	± 0.040	± 0.045	± 0.050
0.60 < th ≤ 0.80	± 0.06	± 0.07	± 0.08	± 0.045	± 0.050	± 0.060
0.80 < th ≤ 1.00	± 0.07	± 0.08	± 0.09	± 0.050	± 0.060	± 0.070
1.00 < th ≤ 1.20	± 0.08	± 0.09	± 0.11	± 0.060	± 0.070	± 0.080
1.20 < th ≤ 1.60	± 0.11	± 0.13	± 0.14	± 0.070	± 0.080	± 0.090
1.60 < th ≤ 2.00	± 0.14	± 0.15	± 0.16	± 0.080	± 0.090	± 0.110
2.00 < th ≤ 2.50	± 0.16	± 0.17	± 0.18	± 0.110	± 0.120	± 0.130
2.50 < th ≤ 3.00	± 0.19	± 0.20	± 0.20	± 0.130	± 0.140	± 0.150
3.00 < th ≤ 5.00	± 0.22	± 0.24	± 0.25	± 0.17	± 0.18	± 0.19
5.00 < th ≤ 6.50	± 0.24	± 0.25	± 0.26	± 0.19	± 0.20	± 0.21

Thickness according to EN 10143

360 MPa ≤ $R_{p0.2}$ ≤ 420 MPa

Thickness (mm)	Width (mm)					
	Normal tolerances (mm)			Special tolerances (mm)		
	w ≤ 1200	1200 < w ≤ 1500	w > 1500	w ≤ 1200	1200 < w ≤ 1500	w > 1500
0.35 < th ≤ 0.40	± 0.05	± 0.06	± 0.07	± 0.040	± 0.045	± 0.050
0.40 < th ≤ 0.60	± 0.06	± 0.07	± 0.08	± 0.045	± 0.050	± 0.060
0.60 < th ≤ 0.80	± 0.07	± 0.08	± 0.09	± 0.050	± 0.060	± 0.070
0.80 < th ≤ 1.00	± 0.08	± 0.09	± 0.11	± 0.060	± 0.070	± 0.080
1.00 < th ≤ 1.20	± 0.10	± 0.11	± 0.12	± 0.070	± 0.080	± 0.090
1.20 < th ≤ 1.60	± 0.13	± 0.14	± 0.16	± 0.080	± 0.090	± 0.110
1.60 < th ≤ 2.00	± 0.16	± 0.17	± 0.19	± 0.090	± 0.110	± 0.120
2.00 < th ≤ 2.50	± 0.18	± 0.20	± 0.21	± 0.120	± 0.130	± 0.140
2.50 < th ≤ 3.00	± 0.22	± 0.22	± 0.23	± 0.140	± 0.150	± 0.160
3.00 < th ≤ 5.00	± 0.22	± 0.24	± 0.25	± 0.17	± 0.18	± 0.19
5.00 < th ≤ 6.50	± 0.24	± 0.25	± 0.26	± 0.19	± 0.20	± 0.21

420 MPa < $R_{p0.2}$ ≤ 900 MPa

Thickness (mm)	Width (mm)					
	Normal tolerances (mm)			Special tolerances (mm)		
	w ≤ 1200	1200 < w ≤ 1500	w > 1500	w ≤ 1200	1200 < w ≤ 1500	w > 1500
0.35 < th ≤ 0.40	± 0.06	± 0.07	± 0.08	± 0.045	± 0.050	± 0.060
0.40 < th ≤ 0.60	± 0.06	± 0.08	± 0.09	± 0.050	± 0.060	± 0.070
0.60 < th ≤ 0.80	± 0.07	± 0.09	± 0.11	± 0.060	± 0.070	± 0.080
0.80 < th ≤ 1.00	± 0.09	± 0.11	± 0.12	± 0.070	± 0.080	± 0.090
1.00 < th ≤ 1.20	± 0.11	± 0.13	± 0.14	± 0.080	± 0.090	± 0.110
1.20 < th ≤ 1.60	± 0.15	± 0.16	± 0.18	± 0.090	± 0.110	± 0.120
1.60 < th ≤ 2.00	± 0.18	± 0.19	± 0.21	± 0.110	± 0.120	± 0.140
2.00 < th ≤ 2.50	± 0.21	± 0.22	± 0.24	± 0.140	± 0.150	± 0.170
2.50 < th ≤ 3.00	± 0.24	± 0.25	± 0.26	± 0.170	± 0.180	± 0.190
3.00 < th ≤ 5.00	± 0.26	± 0.27	± 0.28	± 0.23	± 0.24	± 0.26
5.00 < th ≤ 6.50	± 0.28	± 0.29	± 0.30	± 0.25	± 0.26	± 0.28

Width according to EN 10143

Wide strip in a width ≥ 600 mm

Width (mm)	Normal tolerances (mm)		Special tolerances (mm)	
	Lower	Upper	Lower	Upper
600 ≤ w ≤ 1200	0	+ 5	0	+ 2
1200 < w ≤ 1500	0	+ 6	0	+ 2
1500 < w ≤ 1800	0	+ 7	0	+ 3
w > 1800	0	+ 8	0	+ 3

Slit strip in a width < 600 mm

Tolerances (mm)	Thickness (mm)	Width (mm)							
		Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
		w < 125		125 ≤ w < 250		250 ≤ w < 400		400 ≤ w < 600	
Normal	th < 0.6	0	+ 0.4	0	+ 0.5	0	+ 0.7	0	+ 1.0
	0.6 ≤ th < 1.0	0	+ 0.5	0	+ 0.6	0	+ 0.9	0	+ 1.2
	1.0 ≤ th < 2.0	0	+ 0.6	0	+ 0.8	0	+ 1.1	0	+ 1.4
	2.0 ≤ th ≤ 3.0	0	+ 0.7	0	+ 1.0	0	+ 1.3	0	+ 1.6
	3.0 < th ≤ 5.0	0	+ 0.8	0	+ 1.1	0	+ 1.4	0	+ 1.7
	5.0 < th ≤ 6.5	0	+ 0.9	0	+ 1.2	0	+ 1.5	0	+ 1.8
Special	th < 0.6	0	+ 0.2	0	+ 0.2	0	+ 0.3	0	+ 0.5
	0.6 ≤ th < 1.0	0	+ 0.2	0	+ 0.3	0	+ 0.4	0	+ 0.6
	1.0 ≤ th < 2.0	0	+ 0.3	0	+ 0.4	0	+ 0.5	0	+ 0.7
	2.0 ≤ th ≤ 3.0	0	+ 0.4	0	+ 0.5	0	+ 0.6	0	+ 0.8
	3.0 < th ≤ 5.0	0	+ 0.5	0	+ 0.6	0	+ 0.7	0	+ 0.9
	5.0 < th ≤ 6.5	0	+ 0.6	0	+ 0.7	0	+ 0.8	0	+ 1.0

Length according to EN 10143

	Normal tolerances (mm)		Special tolerances (mm)	
Length (mm)	**Lower**	**Upper**	**Lower**	**Upper**
L < 2000	0	+ 6	0	+ 3
2000 ≤ L ≤ 8000	0	+ 0.3% of the length	0	+ 0.15% of the length
L > 8000	after prior agreement			

Flatness according to EN 10143[4]

R_e or $R_{p0.2}$ < 260 MPa

		Width (mm)		
Tolerances (mm)	**Thickness** (mm)	**w < 1200**	**1200 ≤ w < 1500**	**w ≥ 1500**
Normal	**th < 0.7**	10	12	17
	0.7 ≤ th < 1.6	8	10	15
	1.6 ≤ th < 3.0			
	3.0 ≤ th ≤ 6.5	15	18	23
Special	**th < 0.7**	5	6	8
	0.7 ≤ th < 1.6	4	5	7
	1.6 ≤ th < 3.0	3	4	6
	3.0 ≤ th ≤ 6.5	8	9	12

(4) The flatness tolerances only apply to sheet.

260 MPa ≤ $R_{p0.2}$ < 360 MPa and grades DX51D & S550GD

		Width (mm)		
Tolerances (mm)	**Thickness** (mm)	**w < 1200**	**1200 ≤ w < 1500**	**w ≥ 1500**
Normal	**th < 0.7**	13	15	20
	0.7 ≤ th < 1.6	10	13	19
	1.6 ≤ th < 3.0			
	3.0 ≤ th ≤ 6.5	18	25	28
Special	**th < 0.7**	8	9	12
	0.7 ≤ th < 1.6	6	8	10
	1.6 ≤ th < 3.0	5	6	9
	3.0 ≤ th ≤ 6.5	9	12	14

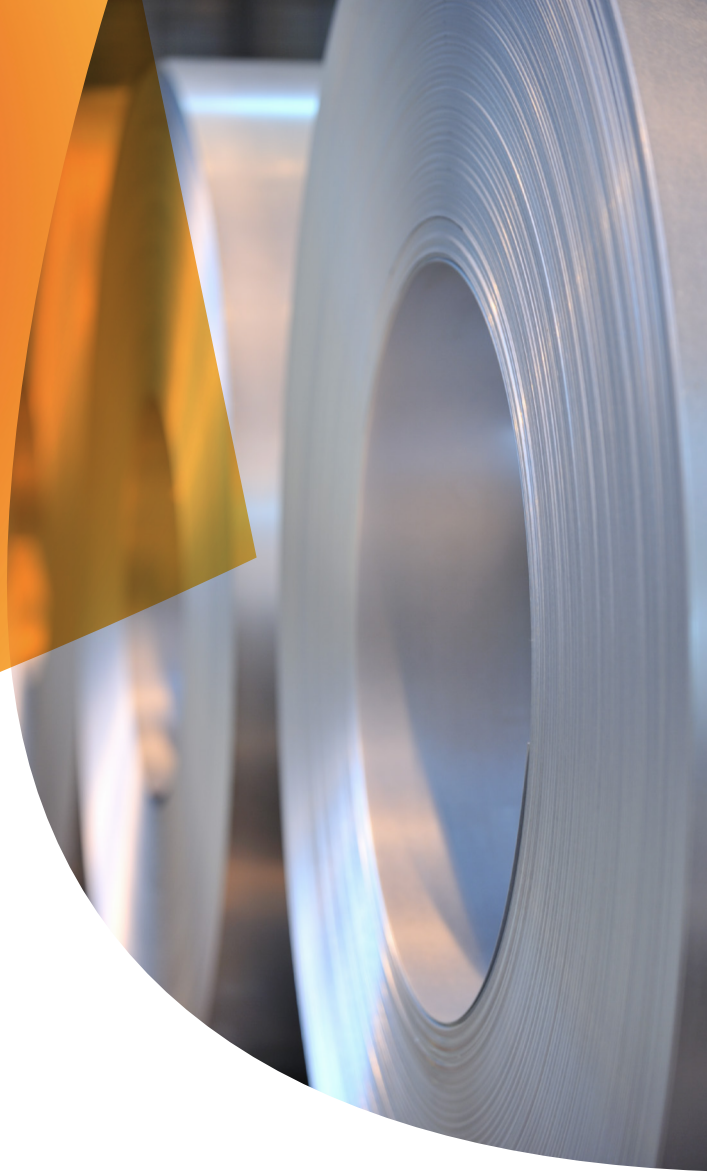
(4) The flatness tolerances only apply to sheet.

$R_{p0.2}$ ≥ 360 MPa

For these steel grades, flatness tolerance values shall be specified at the time of enquiry and order.

Conversion tables

In this section you will find conversion tables, a table comparing hardness values and correspondence tables between tensile strength and hardness.



	Units of length
1 inch	25.40 mm
1 foot (ft) **(= 12 inches)**	30.48 cm
1 yard (yd) **(= 3 feet)**	91.44 cm
1 terrestrial mile	1609.3 m
1 centimetre (cm)	0.3937 inches
1 metre (m)	39.37 inches = 3.2808 feet
1 kilometre (km)	0.62137 miles = 1093.6 yards

	Units of capacity
1 pint (UK)	0.568 l
1 gallon (UK)	4.546 l
1 gallon (USA)	3.785 l
1 bushel (USA)	35.239 l
1 l	1.759 pints
1 cubic metre (m^3)	35.315 cubic feet
1 cubic foot	0.028 cubic metres (m^3)
1 register tonne (100 cu. ft)	2.83 cubic metres (m^3)

	Units of surface
1 square inch (sq. inch)	6.4516 cm^2 = 645.16 mm^2
1 square foot (sq. ft)	0.0929 m^2
1 square yard (sq. yd)	0.8361 m^2
1 acre	40.47 ares
1 square mile	2.59 km^2
1 square millimetre (mm^2)	0.00155 sq. inches
1 square centimetre (cm^2)	0.155 sq. inches
1 square metre (m^2)	10.7639 sq. feet = 1.196 sq. yards
1 are (100 m^2)	119.6 sq. yards
1 hectare (10000 m^2)	2.4711 acres

	Thermometric equivalents
- 20° Celsius	- 4° Fahrenheit
- 10° Celsius	14° Fahrenheit
0° Celsius	32° Fahrenheit
10° Celsius	50° Fahrenheit
30° Celsius	86° Fahrenheit
37° Celsius	98° Fahrenheit
50° Celsius	122° Fahrenheit
100° Celsius	212° Fahrenheit

	Units of weight
1 ounce	28.35 g
1 pound (lb)	453.6 g
1 stone	6.35 kg
1 hundredweight (cwt)	45.36 kg
1 gross (long) tonne (2240 lb)	1016 kg = 22.4 cwt
1 metric tonne	1000 kg = 2204 lb = 22.04 cwt
1 net (short) tonne (2000 lb)	907.2 kg
1 kg	2.204 pounds
1 metric tonne	2204.6 pounds = 0.9842 gross tonnes = 1.1023 net t.
1 pound per foot	1.4882 kg/m
1 pound per yard	0.4961 kg/m
1 kg/m	0.672 pounds per foot
1 pound per sq. inch (= 1 lb/in² = psi)	0.0703 kg/cm²
1 pound per sq. foot	4.8825 kg/m²
1 kg/mm²	1422.32 lb/in²
1 kg/cm²	14.2232 lb/in²
1 kg/m²	0.2048 pounds per sq. foot = 1.8433 pounds per sq. yard

Approximate comparison of hardness values

Vickers P = 10 kg	Vickers P = 2 kg	HR 15 T 0.50 mm	HR 30 T 0.50 - 0.79 mm	HRB 0.80 mm
80	90	72.0	40.0	36
85	95	73.5	43.0	40
90	100	75.0	45.5	44
95	103	76.0	47.5	47
100	108	76.5	49.0	49
105	112	77.0	50.5	51
110	117	78.0	51.5	53
115	121	78.5	53.0	55
120	126	79.0	54.5	57
125	130	80.0	56.0	59
130	135	80.5	57.0	61
135	138	81.0	58.5	63
140	144	81.5	60.0	65
145	149	82.5	61.5	67
150	154	83.0	62.5	69
155	158	83.5	64.0	71
160	163	84.5	65.5	73
165	168	85.0	67.0	75
170	172	85.5	68.0	77
175	177	86.0	69.5	79

Correspondence table between tensile strength and hardness

Conversion table between Brinell hardness and tensile strength
Median values and dispersion range (with a probability of 95%)

HBS HBW(1)	Min R_m MPa	Median R_m MPa	Max R_m MPa
85	270	370	470
90	280	380	480
95	290	390	490
100	310	410	510
105	320	420	520
110	330	430	530
115	350	450	550
120	360	460	560
125	370	470	570
130	390	490	590
135	400	500	600
140	410	510	610
145	430	530	630
150	440	540	640
155	460	560	660
160	470	570	670
165	490	590	690
170	500	600	700
175	510	610	710
180	530	630	730
185	540	640	740
190	560	660	760
195	570	670	770
200	590	690	790
205	600	700	800
210	620	720	820
215	630	730	830
220	650	750	850
225	670	770	870
230	680	780	880
235	700	800	900
240	710	810	910
245	730	830	930
250	750	850	950
255	760	860	960
260	780	880	980
265	790	890	990
270	810	910	1010
275	830	930	1030
280	840	940	1040

HBS HBW(1)	Min R_m MPa	Median R_m MPa	Max R_m MPa
285	860	960	1060
290	880	980	1080
295	890	990	1090
300	910	1010	1110
310	950	1050	1150
320	980	1080	1180
330	1020	1120	1220
340	1050	1150	1250
350	1090	1190	1290
360	1120	1220	1320
370	1160	1260	1360
380	1200	1300	1400
390	1240	1340	1440
400	1270	1370	1470
410	1310	1410	1510
420	1350	1450	1550
430	1390	1490	1590
440	1430	1530	1630
450	1470	1570	1670
460	1510	1610	1710
470	1550	1650	1750
480	1590	1690	1790
490	1630	1730	1830
500	1680	1780	1880
510	1720	1820	1920
520	1760	1860	1960
530	1800	1900	2000
540	1850	1950	2050
550	1890	1990	2090
560	1940	2040	2140
570	1980	2080	2180
580	2030	2130	2230
590	2070	2170	2270
600	2120	2220	2320
610	2160	2260	2360
620	2210	2310	2410
630	2260	2360	2460
640	2310	2410	2510
650	2350	2450	2550
-	-	-	-

(1) HBS, HBW for values ≤ 450 and only HBW above 450

Conversion table between Vickers hardness and tensile strength
Median values and dispersion range (with a probability of 95%)

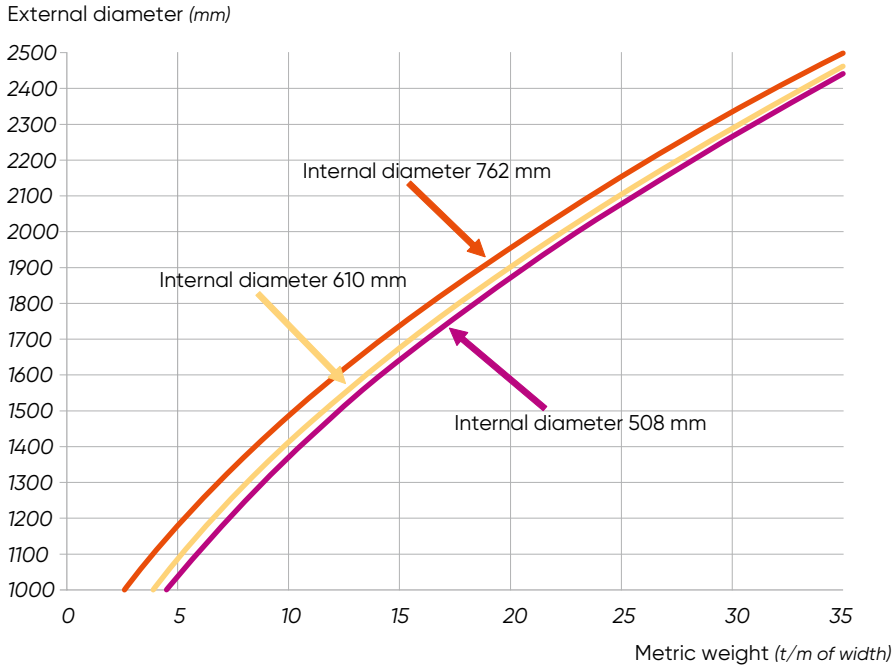
HV	Min R_m MPa	Median R_m MPa	Max R_m MPa
85	200	310	420
90	220	320	430
95	230	340	440
100	240	350	460
105	260	370	470
110	270	380	490
115	290	390	500
120	300	410	520
125	320	420	530
130	330	440	540
135	340	450	560
140	360	470	570
145	370	480	590
150	390	500	600
155	400	510	620
160	420	530	630
165	430	540	650
170	450	550	660
175	460	570	680
180	480	580	690
185	490	600	710
190	510	610	720
195	520	630	740
200	540	650	750
205	550	660	770
210	570	680	780
215	580	690	800
220	600	710	810
225	610	720	830
230	630	740	840
235	650	750	860
240	660	770	880
245	680	780	890
250	690	800	910
255	710	820	920
260	720	830	940
265	740	850	950
270	760	860	970
275	770	880	990
280	790	890	1000

HV	Min R_m MPa	Median R_m MPa	Max R_m MPa
285	800	910	1020
290	820	930	1030
295	840	940	1050
300	850	960	1070
310	880	990	1100
320	920	1020	1130
330	950	1060	1160
340	980	1090	1200
350	1020	1120	1230
360	1050	1160	1260
370	1080	1190	1300
380	1120	1220	1330
390	1150	1260	1370
400	1190	1290	1400
410	1220	1330	1430
420	1250	1360	1470
430	1290	1400	1500
440	1320	1430	1540
450	1360	1470	1570
460	1400	1500	1610
470	1430	1540	1650
480	1470	1570	1680
490	1500	1610	1720
500	1540	1650	1750
510	1580	1680	1790
520	1610	1720	1830
530	1650	1760	1860
540	1690	1790	1900
550	1720	1830	1940
560	1760	1870	1980
570	1800	1910	2010
580	1840	1940	2050
590	1880	1980	2090
600	1910	2020	2130
610	1950	2060	2170
620	1990	2100	2210
630	2030	2140	2240
640	2070	2180	2280
650	2110	2220	2320
-	-	-	-

Coil weight chart / external diameter

The chart below can be used to calculate the outside diameters or metric weights that are compatible with your systems.

For example, if you order a 25-tonne coil, 1250 mm in width (i.e. 20 t/m), with an inside diameter of 762 mm, you can work out from the chart that the outside diameter will be 1960 mm.



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