

## Dimensional Tolerances

The alloys are distributed into two groups which correspond to varying difficulty when manufacturing the products. Tighter thickness tolerances apply to Group I alloys (soft alloys).

The grouping is carried out according to the specified chemical composition limits of the alloys as follows:

### Group I alloys

- 1000 series alloys;
- non heat-treatable 7000 and 8000 series alloys;
- 4000 series alloys with less than 2% maximum specified silicon content;
- 3000 and 5000 series alloys for which the maximum specified magnesium and manganese contents are each no greater than 1,8% and their sum no greater than 2,3%.

### Group II alloys

- all alloys which do not belong to Group I

The split into Group I and Group II of the most commonly used general engineering alloys is given in annex A (see table A1)

Specified thickness		Thickness tolerances for specified width											
		Up to and including 1000		Over 1000 up to & including 1250		Over 1250 up to & including 1600		Over 1600 up to & including 2000		Over 2000 up to & including 2500		Over 2500 up to & including 3000	
Over	Up to & including	Alloy Group		Alloy Group		Alloy Group		Alloy Group		Alloy Group		Alloy Group	
		I	II	I	II	I	II	I	II	I and II	I and II	I and II	
0,20	0,4	±0,02	±0,03	±0,04	±0,05	±0,05	±0,06	-	-	-	-	-	-
0,4	0,5	±0,03	±0,03	±0,04	±0,05	±0,05	±0,06	±0,06	±0,07	±0,10	-	-	-
0,5	0,6	±0,03	±0,04	±0,05	±0,06	±0,06	±0,07	±0,07	±0,08	±0,11	-	-	-
0,6	0,8	±0,03	±0,04	±0,06	±0,07	±0,07	±0,08	±0,08	±0,09	±0,12	-	-	-
0,8	1,0	±0,04	±0,05	±0,06	±0,08	±0,08	±0,09	±0,09	±0,10	±0,13	-	-	-
1,0	1,2	±0,04	±0,05	±0,07	±0,09	±0,09	±0,10	±0,10	±0,12	±0,14	-	-	-
1,2	1,5	±0,05	±0,07	±0,09	±0,11	±0,10	±0,12	±0,11	±0,14	±0,16	-	-	-
1,5	1,8	±0,06	±0,08	±0,10	±0,12	±0,11	±0,13	±0,12	±0,15	±0,17	-	-	-
1,8	2	±0,06	±0,09	±0,11	±0,13	±0,12	±0,14	±0,14	±0,16	±0,19	-	-	-
2	2,5	±0,07	±0,10	±0,12	±0,14	±0,13	±0,15	±0,15	±0,17	±0,20	-	-	-
2,5	3,0	±0,08	±0,11	±0,13	±0,15	±0,15	±0,17	±0,17	±0,19	±0,23	-	-	-
3,0	3,5	±0,10	±0,12	±0,15	±0,17	±0,17	±0,19	±0,18	±0,20	±0,24	-	-	-
3,5	4,0	±0,15		±0,20		±0,22		±0,23		±0,25	±0,34	±0,38	
4,0	5,0	±0,18		±0,22		±0,24		±0,25		±0,29	±0,36	±0,42	
5,0	6,0	±0,20		±0,24		±0,25		±0,26		±0,32	±0,40	±0,46	
6,0	8,0	±0,24		±0,30		±0,31		±0,32		±0,38	±0,44	±0,50	
8,0	10	±0,27		±0,33		±0,36		±0,38		±0,44	±0,50	±0,56	
10	12	±0,32		±0,38		±0,40		±0,41		±0,47	±0,53	±0,59	
12	15	±0,36		±0,42		±0,43		±0,45		±0,51	±0,57	±0,63	
15	20	±0,38		±0,44		±0,46		±0,48		±0,54	±0,60	±0,66	
20	25	±0,40		±0,46		±0,48		±0,50		±0,56	±0,62	±0,68	
25	30	±0,45		±0,50		±0,53		±0,55		±0,60	±0,65	±0,70	
30	40	±0,50		±0,55		±0,58		±0,60		±0,65	±0,70	±0,75	
40	50	±0,55		±0,60		±0,63		±0,65		±0,70	±0,75	±0,80	

\*When measuring the thickness, a zone 10mm wide from the edges of the product shall be disregarded.

Specified thickness		Width tolerance for specified width					
		Up to and including 100	Over 100 up to & including 300	Over 300 up to & including 500	Over 500 up to & including 1250	Over 1250 up to & including 1650	Over 1650 up to & including 2600
Over	Up to and including						
0,20	0,6	+0,3 0	+0,4 0	+0,6 0	+1,5 0	+2,5 0	+3 0
0,6	1,0	+0,3 0	+0,5 0	+1 0	+1,5 0	+2,5 0	+3 0
1,0	2,0	+0,4 0	+0,7 0	+1,2 0	+2 0	+2,5 0	+3 0
2,0	3,0	+1 0	+1 0	+1,5 0	+2 0	+2,5 0	+4 0
3,0	5,0	-	+1,5 0	+2 0	+3 0	+3 0	+5 0

**Table 3. Width Tolerances for Sheet and Plate** Dimensions in millimetres

Specified thickness		Width tolerance for specified width				
Over	Up to and including	Up to and including 500	Over 500 up to & including 1250	Over 1250 up to & including 2000	Over 2000 up to & including 3000	Over 3000 up to & including 3500
0,20	3,0	+1,5 0	+3 0	+4 0	+5 0	-
3,0	6,0	+3 0	+4 0	+5 0	+8 0	+8 0
6,0	50	+4 0	+5 0	+5 0	+8 0	+8 0

**Table 4. Length Tolerances for Sheet and Plate** Dimensions in millimetres

Specified thickness		Length tolerance for specified length				
Over	Up to and including	Up to and including 1000	Over 1000 up to & including 2000	Over 2000 up to & including 3000	Over 3000 up to & including 5000	Over 5000
0,20	3,0	+3 0	+4 0	+6 0	+8 0	+0,2 % of specified length
3,0	6,0	+4 0	+6 0	+8 0	+10 0	
6,0	50	+6 0	+8 0	+10 0	+10 0	

Length tolerances for strip are not specified.

The deviation from straightness,  $d$ , is measured as indicated in figure 1, for length  $L$  of 2000mm, from one end of the strip, while the strip is resting on a horizontal base plate.

The deviation from straightness,  $d$ , is measured as indicated in figure 1, while the sheet or plate is resting on a horizontal base plate.

Flatness tolerances for sheet and plate are specified in table 7 and are expressed as a percentage of length  $L$  and/or the width  $W$  and/or measured chord length  $L$ .

Deviation from flatness,  $d$ , resulting from arching, buckling or edge waves, is measured as shown in figures 2 to 5, using a lightweight straightedge and feeler gauge, dial gauge or scale, while the sheet or plate is resting on a horizontal base plate concave side upwards.

These tolerances do not apply to sheet and plate supplied in the O (annealed) or F (as fabricated) tempers or to bright sheet.

These tolerances do not include end or corner turnup.

**Table 5. Lateral Curvature Tolerances for Strip** Dimensions in millimetres  
(measured on 2000mm strip length)

Specified width		Lateral curvature
Over	Up to and including	$d_{max}$
$\geq 25^1$ )	100	8
100	300	6
300	600	5
600	1000	4
1000	2000	3
2000	3500	3

<sup>1)</sup> For widths less than 25mm the tolerances are to be agreed between purchaser and supplier.

**Table 6. Lateral Curvature Tolerances for Sheet and Plate** Dimensions in millimetres

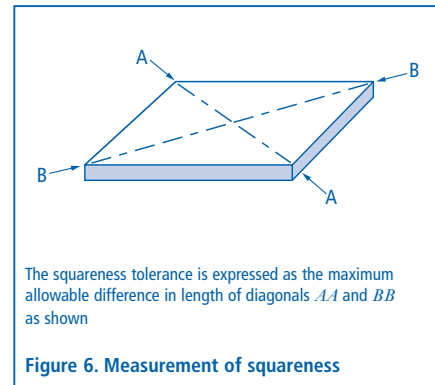
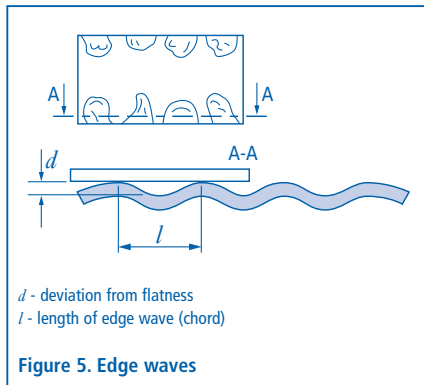
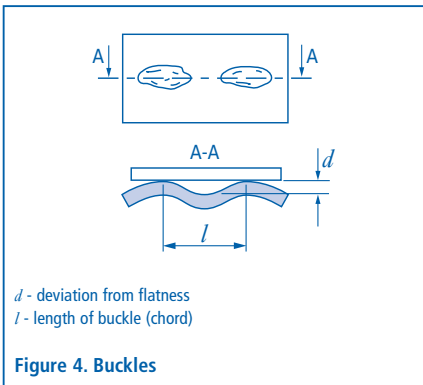
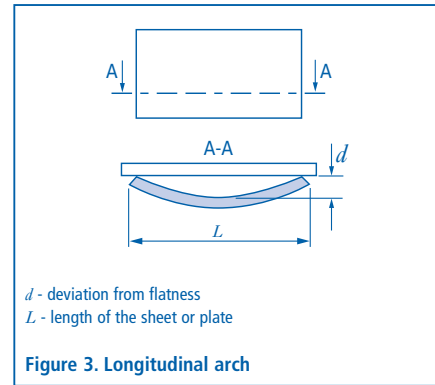
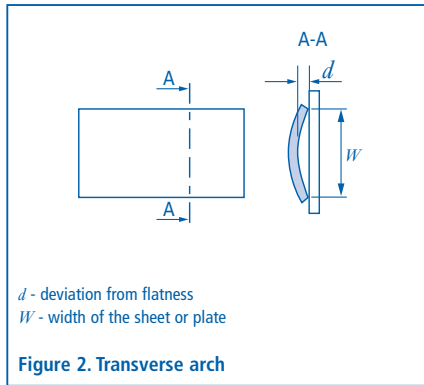
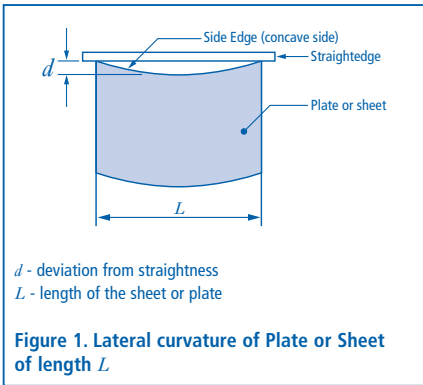
Specified width		Lateral curvature $d_{max}$ for specified length $L$				
Over	Up to and including	Up to and including 1000	Over 1000 up to & including 2000	Over 2000 up to & including 3500	Over 3500 up to & including 5000	Over 5000 up to & including 15000
$\geq 100^1$ )	300	2	4	8	-	-
300	600	1,5	3	5	-	-
600	1000	1	2	4	5	0.1 % of specified length
1000	2000	-	2	4	5	
2000	3500	-	-	4	5	

<sup>1)</sup> For widths less than 100mm the tolerances are to be agreed between purchaser and supplier.

**Table 7. Flatness Tolerances for Sheet and Plate**

Specified Thickness mm		Total deviation %		Partial deviation % (for a chord of at least 300mm) $d_{max}/l$
Over	Up to and including	on length $d_{max}/L$	on width $d_{max}/W$	
0,20	0,50	by agreement	by agreement	by agreement
0,50	3,0	0,4	0,5	0,5
3,0	6,0	0,3	0,4	0,4
6,0	50	0,2	0,4	0,3

Flatness tolerances for strip are not specified



Specified length		Specified thickness	Squareness tolerance for specified width			
Over	Up to and including		Up to and including 1000	Over 1000 up to and including 1500	Over 1500 up to and including 2000	Over 2000 up to and including 3500
	1000	≤ 6	4	-	-	-
		> 6	5	-	-	-
1000	2000	≤ 6	4	5	6	-
		> 6	6	7	8	-
2000	3000	≤ 6	5	5	7	8
		> 6	7	7	9	10
3000	5000	≤ 6	6	8	8	10
		> 6	8	10	10	12
5000	15000	≤ 6	10	10	12	12
		> 6	12	12	15	15

Squareness tolerances for strip are not specified.

**Annex A (normative)**  
**Alloy split into Group I and Group II**

Group I	1080A	1070A	1050A	1200
	3003	3103	3005	3105
	4006	4007		
	5005	5050		
	8011A			
Group II	2014	2017A	2024	
	3004			
	5040	5049	5251	5052
			5154A	5454
	5086	5083	5754	5182
	6082	6061		
	7020	7021	7022	7075