



This part specifies the tolerances on dimensions and form for aluminium and aluminium alloy extruded round bars having diameters in the range from 8mm up to 320mm.

Diameter <i>D</i>		Tolerances	
Over	Up to	Alloy Group I	Alloy Group II
≥8	18	±0,22	±0,30
18	25	±0,25	±0,35
25	40	±0,30	±0,40
40	50	±0,35	±0,45
50	65	±0,40	±0,50
65	80	±0,45	±0,70
80	100	±0,55	±0,90
100	120	±0,65	±1,0
120	150	±0,80	±1,2
150	180	±1,0	±1,4
180	220	±1,15	±1,7
220	270	±1,3	±2,0
270	320	±1,6	±2,5

Diameter <i>D</i>		Maximum deviation from straightness h_t mm/m	Maximum localised kink in any 300mm proportion h_s
Over	Up to		
≥8	80	2	0,8
80	120	2	1,0
120	220	3	1,5
200	320	6	3,0

Diameter <i>D</i>		Tolerances on Length		
Over	Up to	$L \leq 2000$	$2000 \leq L \leq 5000$	$L \leq 5000$
-	100	+5	+7	+10
		0	0	0
100	200	+7	+9	+12
		0	0	0
200	320	+8	+11	-
		0	0	

Group I	EN AW-1050A	EN AW-1070A	EN AW-1200	EN AW-1350			
	EN AW-3003	EN AW-3130					
	EN AW-5005	EN AW-5005A	EN AW-5015A	EN AW-5251			
	EN AW-6101A	EN AW-6101B	EN AW-6005	EN AW-6005A	EN AW-6106	EN AW-6012	EN AW-6018,
	EN AW-6351	EN AW-6060	EN AW-6061	EN AW-6261	EN AW-6262	EN AW-6063	EN AW-6063A,
	EN AW-6463	EN AW-6081	EN AW-6082				
Group II	EN AW-2007	EN AW-2011	EN AW-2011A	EN AW-2014	EN AW-2014A	EN AW-2017A	EN AW-2024
	EN AW-2030						
	EN AW-5019 ¹⁾	EN AW-5052	EN AW-5154A	EN AW-5454	EN AW-5754	EN AW-5083	EN AW-5086
	EN AW-7003	EN AW-7005A	EN AW-7020	EN AW-7022	EN AW-7049A	EN AW-7075	

¹⁾ EN AW-5019 is the new designation for EN AW-5056A.

Ovality is the difference between the maximum and minimum diameters measured in one cross-section.

The maximum permissible ovality is 50% of the tolerance range specified in table 1; e.g. for a diameter tolerance of ±0,22mm, the maximum permissible ovality is 0,22mm.

The straightness tolerances apply to bars in all tempers except O and T x 510. If a straightness tolerance is required for either O or T x 510 temper, it shall be agreed between purchaser and supplier.

Deviation from straightness, h_s and h_t shall be measured as shown in figure 1 with the bar placed in a horizontal baseplate so that its mass decreases the deviation.

If no fixed or minimum length is specified in the order, round extruded bars may be delivered in random lengths. The actual lengths and tolerances on random lengths shall be agreed between purchaser and supplier.

The squareness of cut ends shall be within half of the fixed-length tolerance range (table 3) for both fixed and random lengths, e.g. for a fixed length tolerance of $^{+10}_0$ mm the squareness of cut ends shall be within 5mm.

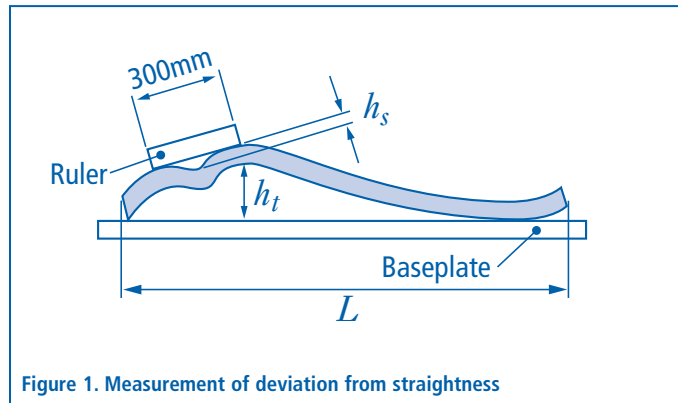


Figure 1. Measurement of deviation from straightness



Table 1. Width across flats Tolerances Dimensions in millimetres

Width across flats S		Tolerances	
Over	Up to	Alloy Group I	Alloy Group II
≥ 10	18	$\pm 0,22$	$\pm 0,30$
18	25	$\pm 0,25$	$\pm 0,35$
25	40	$\pm 0,30$	$\pm 0,40$
40	50	$\pm 0,35$	$\pm 0,45$
50	65	$\pm 0,40$	$\pm 0,50$
65	80	$\pm 0,45$	$\pm 0,70$
80	100	$\pm 0,55$	$\pm 0,90$
100	120	$\pm 0,65$	$\pm 1,0$
120	150	$\pm 0,80$	$\pm 1,2$
150	180	$\pm 1,0$	$\pm 1,4$
180	220	$\pm 1,15$	$\pm 1,7$

Table 2. Maximum Corner Radii Dimensions in millimetres

Width across flats S		Maximum corner radii	
Over	Up to	Alloy Group I	Alloy Group II
≥ 10	25	1,0	1,5
25	50	1,5	2,0
50	80	2,0	3,0
80	120	2,5	3,0
120	180	2,5	4,0
180	220	3,5	5,0

Table 3. Squareness Tolerances Dimensions in millimetres

Width across flats S		Maximum deviation from square z
Over	Up to	
≥ 10	100	0,01 x width
100	180	1,0
180	220	1,5

Table 4. Straightness Tolerances Dimensions in millimetres

Width across flats S		Maximum deviation from straightness h_t mm/m	Maximum localised kink in any 300mm portion h_s
Over	Up to		
≥ 10	80	2	0,8
80	120	2	1,0
120	220	3	1,5

Table 5. Twist Tolerances Dimensions in millimetres

Width across flats S		Twist tolerances T	
Over	Up to	Per 1000mm of length	Over the total length
≥ 10	30	1	3
30	50	1,5	4
50	120	2	5
120	220	3	6

Table 6. Fixed Length Tolerances Dimensions in millimetres

Width across flats S		Tolerances on Length		
Over	Up to	$L \leq 2000$	$2000 < L \leq 5000$	$L > 5000$
≥ 10	100	+5 0	+7 0	+10 0
100	200	+7 0	+9 0	+12 0
200	220	+8 0	+11 0	+14 0

This part specifies the tolerances on dimensions and form for aluminium and aluminium alloy extruded square bars having widths across flats from 10mm up to 220mm.

The deviation from square shall be measured as shown in figure 1.

The convexity - concavity for square bars shall be included within the width across flats tolerances.

The straightness tolerances apply to bars in all tempers except O and T x 510. If a straightness tolerance is required for either O or T x 510 temper, it shall be agreed between purchaser and supplier.

The twist measurement shall be carried out as shown in figure 3.

The twist tolerances are specified in table 5.

The twist tolerances apply to bars in tempers except O and T x 510. If a twist tolerance is required for either O or T x 510 temper, it shall be agreed between purchaser and supplier.

The squareness of cut ends shall be within half of the fixed-length tolerance range (table 6) for both fixed and random lengths, eg. for a fixed length tolerance of $+10_0$ mm the squareness of cut ends shall be within 5mm.

If no fixed or minimum length is specified in the order, square extruded bars may be delivered in random lengths. The actual lengths and tolerances on random lengths shall be agreed between purchaser and supplier.

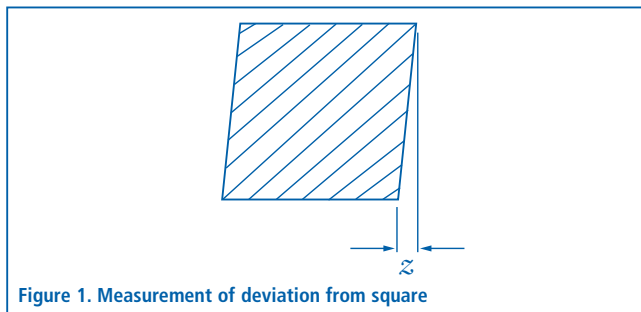


Figure 1. Measurement of deviation from square

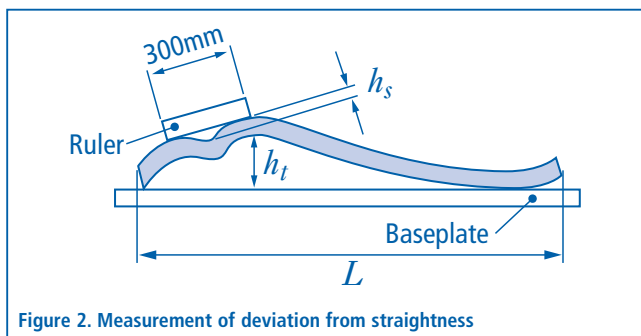


Figure 2. Measurement of deviation from straightness

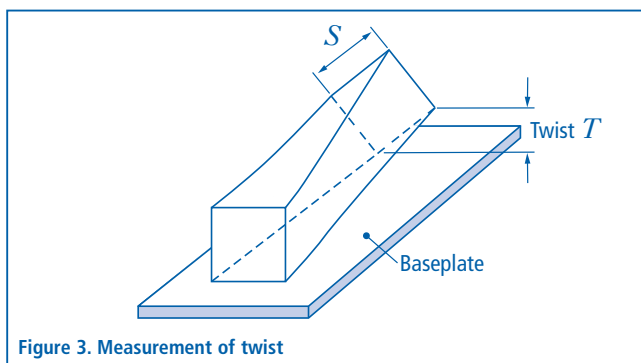


Figure 3. Measurement of twist

This part specifies the tolerances on dimensions and form for aluminium and aluminium alloy extruded rectangular bars having thicknesses in the range from 2mm up to 240mm and widths in the range from 10mm up to 600mm.

Width and Thickness Tolerances for Alloy Group I												Dimensions in millimetres	
Width <i>w</i>			Thickness <i>t</i> tolerances for thickness ranges										
Over	Up to	Tolerances	$2 \leq t \leq 6$	$6 < t \leq 10$	$10 < t \leq 18$	$18 < t \leq 30$	$30 < t \leq 50$	$50 < t \leq 80$	$80 < t \leq 120$	$120 < t \leq 180$	$180 < t \leq 240$		
≥10	18	±0,25	±0,20	±0,25	±0,25	-	-	-	-	-	-		
18	30	±0,30	±0,20	±0,25	±0,30	±0,30	-	-	-	-	-		
30	50	±0,40	±0,25	±0,25	±0,30	±0,35	±0,40	-	-	-	-		
50	80	±0,60	±0,25	±0,30	±0,35	±0,40	±0,50	±0,60	-	-	-		
80	120	±0,80	±0,30	±0,35	±0,40	±0,45	±0,60	±0,70	±0,80	-	-		
120	180	±1,0	±0,40	±0,45	±0,50	±0,55	±0,60	±0,70	±0,90	±1,0	-		
180	240	±1,4	-	±0,55	±0,60	±0,65	±0,70	±0,80	±1,0	±1,2	±1,4		
240	350	±1,8	-	±0,65	±0,70	±0,75	±0,80	±0,90	±1,1	±1,3	±1,5		
350	450	±2,2	-	-	±0,80	±0,85	±0,90	±1,0	±1,2	±1,4	±1,6		
450	600	±3,0	-	-	-	-	-	±0,90	±1,0	±1,4	-		

Width and Thickness Tolerances for Alloy Group II												Dimensions in millimetres	
Width <i>w</i>			Thickness <i>t</i> tolerances for thickness ranges										
Over	Up to	Tolerances	$2 \leq t \leq 6$	$6 < t \leq 10$	$10 < t \leq 18$	$18 < t \leq 30$	$30 < t \leq 50$	$50 < t \leq 80$	$80 < t \leq 120$	$120 < t \leq 180$	$180 < t \leq 240$		
≥10	18	±0,35	±0,25	±0,30	±0,35	-	-	-	-	-	-		
18	30	±0,40	±0,25	±0,30	±0,40	±0,40	-	-	-	-	-		
30	50	±0,50	±0,30	±0,30	±0,40	±0,50	±0,50	-	-	-	-		
50	80	±0,70	±0,30	±0,35	±0,45	±0,60	±0,70	±0,70	-	-	-		
80	120	±1,0	±0,35	±0,40	±0,50	±0,60	±0,70	±0,80	±1,0	-	-		
120	180	±1,4	±0,45	±0,50	±0,55	±0,70	±0,80	±1,0	±1,1	±1,4	-		
180	240	±1,8	-	±0,60	±0,65	±0,70	±0,90	±1,1	±1,3	±1,6	±1,8		
240	350	±2,2	-	±0,70	±0,75	±0,80	±0,90	±1,2	±1,4	±1,7	±1,9		
350	450	±2,8	-	-	±0,90	±1,0	±1,1	±1,4	±1,8	±2,1	±2,3		
450	600	±3,5	-	-	-	-	-	±1,2	±1,4	±1,8	-		

Maximum Corner Radii				Dimensions in millimetres	
Thickness <i>t</i>		Maximum corner radii			
Over	Up to	Alloy Group I	Alloy Group II		
≥2	10	0,6	1,0		
10	30	1,0	1,5		
30	80	1,8	2,5		
80	120	2,0	3,0		
120	180	2,5	4,0		
180	240	3,5	5,0		

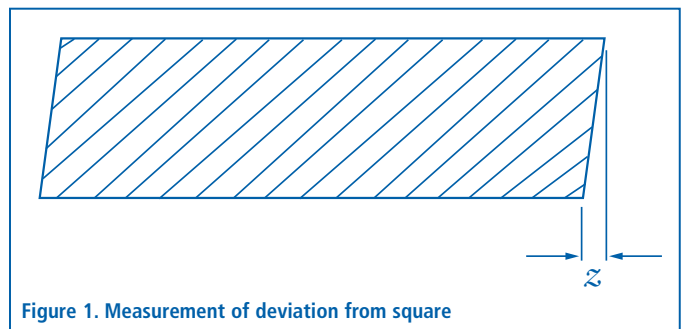


Figure 1. Measurement of deviation from square

Squareness Tolerances			Dimensions in millimetres
Thickness <i>t</i>		Maximum deviation from square <i>z</i>	
Over	Up to		
≥2	10	0,1	
10	100	0,01 x thickness	
100	180	1,0	
180	240	1,5	

Convexity - Concavity Tolerances		Dimensions in millimetres
Width m		Tolerances for convexity-concavity f
Over	Up to	
≥ 10	30	0,2
30	50	0,3
50	80	0,4
80	120	0,6
120	180	0,9
180	240	1,2
240	350	1,5
350	450	2,0
450	600	2,5

If no fixed or minimum length is specified in the order, rectangular extruded bars may be delivered in random lengths. The actual lengths and tolerances on random lengths shall be agreed between purchaser and supplier.

The squareness of cut ends shall be within half of the fixed length tolerance range for both fixed and random lengths, eg. for a fixed length tolerance of $+^{10}_0$ mm the squareness of cut ends shall be within 5mm.

The straightness tolerances apply to bars in all tempers except O and T x 510. If a straightness tolerance is required for either O or T x 510 temper, it shall be agreed between purchaser and supplier.

The twist tolerances apply to bars in tempers except O and T x 510. If a twist tolerance is required for either O or T x 510 temper, it shall be agreed between purchaser and supplier.

Straightness Tolerances				Dimensions in millimetres	
Width m		Thickness t		Maximum deviation from straightness h_t in any 300mm portion	Maximum localised kink in any 300mm portion h_s
Over	Up to	Over	Up to and including		
≥ 10	80	≥ 10	80	2	1
80	120	≥ 10	50	2	1
		50	120	3	1,5
120	180	≥ 10	50	3	1,5
		50	180	4	2
180	350	≥ 10	50	4	2
		50	240	6	4
350	450	≥ 10	240	6	4
450	600	30	120	6	4

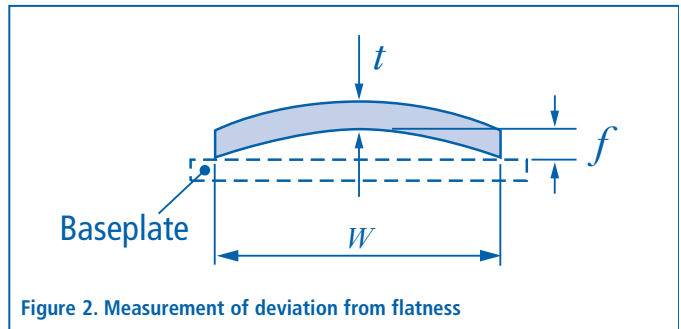


Figure 2. Measurement of deviation from flatness

Fixed Length Tolerances (plus only)		Dimensions in millimetres		
Width m		Tolerances on Length		
Over	Up to	$L \leq 2000$	$2000 < L \leq 5000$	$L > 5000$
-	100	+5 0	+7 0	+10 0
100	200	+7 0	+9 0	+12 0
200	450	+8 0	+11 0	+14 0
450	600	+9 0	+12 0	+16 0

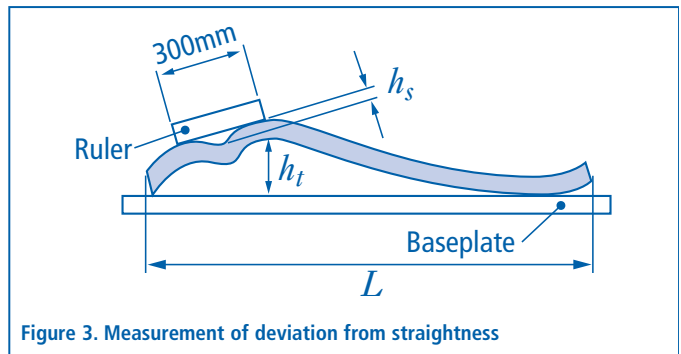


Figure 3. Measurement of deviation from straightness

Twist Tolerances		Dimensions in millimetres	
Width m		Twist tolerances T	
Over	Up to	Per 1000mm of length	Over the total length
≥ 10	30	1	3
30	50	1,5	4
50	120	2	5
120	240	3	8
240	350	4	10
350	450	5	12
450	600	6	14

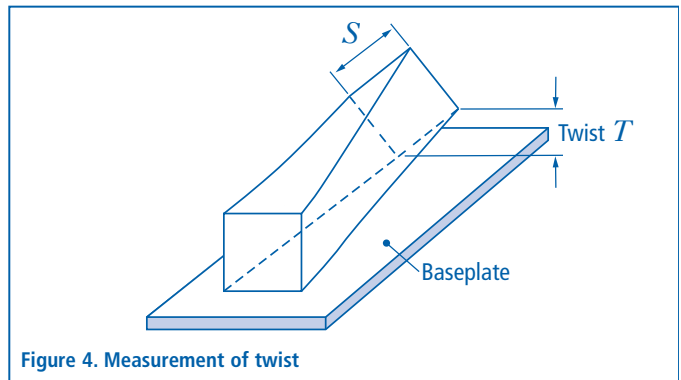


Figure 4. Measurement of twist