

## Aluminium Alloy - EN Standards for Rolled Aluminium

Last Updated 18 July 2019

The old BS1470 standard has been replaced by nine EN standards:

- EN485-1:** Technical conditions for inspection and delivery
- EN485-2:** Mechanical properties
- EN485-3:** Tolerances for HOT rolled material
- EN485-4:** Tolerances for COLD rolled material
- EN515:** Temper designations
- EN573-1:** Numerical alloy designation system
- EN573-2:** Chemical symbol designation system
- EN573-3:** Chemical compositions
- EN573-4:** Product forms in different alloys

For those familiar with the old BS1470 it is useful to highlight where the new EN standards differ:

- Chemical Compositions – No Change.
- Alloy Numbering System – No Change.
- Temper Designations for Heat Treatable Alloys - A new wider range of special tempers having up to four digits after the T have been introduced for non-standard applications (e.g. T6151).
- Temper Designations for Non Heat Treatable Alloys - No change to existing tempers but a more comprehensive definition of how tempers are achieved.
- Mechanical Properties – Similar but not identical. Also, 0.2% Proof Stress must now be quoted on test certificates.
- Thickness Tolerances – Considerably tighter for alloys 1050 & 3103. To reflect manufacturing difficulty the tolerances for alloys 5251, 5083 & 6082 are now wider than this, although still a little tighter than in BS1470.
- Length and Width Tolerances - These tend to be tighter and are now all on the plus side (i.e. minus zero).
- Flatness Tolerances – These are considerably tighter.

### ALLOY GROUPS

Please note that thickness tolerances for Cold Rolled material vary according to alloy, with the alloys falling into two groups as shown below.

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

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### THICKNESS TOLERANCES - COLD ROLLED SHEET & STRIP

Please note that thickness tolerances for Cold Rolled material vary according to alloy, with the alloys falling into two groups as shown above. The thickness tolerances also vary according to the width of the material as shown in the tables below.

Thickness mm	Tolerance (+/-)		
	Group I 1000mm wide	Group I 1250mm wide	Group I 1500mm wide
0.25 to 0.40	0.02	0.04	0.05
0.41 to 0.50	0.03	0.04	0.05
0.51 to 0.60	0.03	0.05	0.06
0.61 to 0.80	0.03	0.06	0.07
0.81 to 1.00	0.04	0.06	0.08
1.1 to 1.20	0.04	0.07	0.09
1.21 to 1.50	0.05	0.09	0.10
1.51 to 1.80	0.06	0.10	0.11
1.81 to 2.00	0.06	0.11	0.12
2.1 to 2.50	0.07	0.12	0.13
2.6 to 3.00	0.08	0.13	0.15
3.1 to 3.50	0.10	0.14	0.17

### THICKNESS TOLERANCES - COLD ROLLED SHEET & STRIP

Thickness mm	Tolerance (+/-)		
	Group II 1000mm wide	Group II 1250mm wide	Group II 1500mm wide
0.25 to 0.40	0.03	0.05	0.06
0.41 to 0.50	0.03	0.05	0.06
0.51 to 0.60	0.04	0.06	0.07
0.61 to 0.80	0.04	0.07	0.08
0.81 to 1.00	0.05	0.08	0.09
1.1 to 1.20	0.05	0.09	0.10
1.21 to 1.50	0.07	0.11	0.12
1.51 to 1.80	0.08	0.12	0.13
1.81 to 2.00	0.09	0.13	0.14
2.1 to 2.50	0.10	0.14	0.15
2.6 to 3.00	0.11	0.15	0.17
3.1 to 3.50	0.12	0.17	0.19

Thickness mm	Tolerance (+/-)		
	Group I/II 1000mm wide	Group I/II 1250mm wide	Group I/II 1500mm wide
3.6 to 4.0	0.15	0.20	0.22
4.1 to 5.0	0.18	0.22	0.24
5.1 to 6.0	0.20	0.24	0.25
6.1 to 0.80	0.24	0.30	0.31
0.81 to 10.0	0.27	0.33	0.36
10.1 to 12.0	0.32	0.38	0.40
12.1 to 15.0	0.36	0.42	0.43
15.1 to 20	0.38	0.44	0.46
21 to 25	0.40	0.46	0.48
26 to 30	0.45	0.50	0.53
31 to 40	0.50	0.55	0.58
41 to 50	0.55	0.60	0.63

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### THICKNESS TOLERANCES - HOT ROLLED PLATE

Thickness mm	Tolerance (+/-) 1250mm Wide	Tolerance (+/-) 1500mm Wide
2.5 to 4.0	0.28	0.28
4.1 to 5.0	0.30	0.30
5.1 to 6.0	0.32	0.32
6.1 to 8.0	0.35	0.40
8.1 to 10.0	0.45	0.50
10.1 to 15.0	0.50	0.60
15.1 to 20	0.60	0.70
21 to 30	0.65	0.75
31 to 40	0.75	0.85
41 to 50	0.90	1.0
51 to 60	1.1	1.2
61 to 80	1.4	1.5
81 to 100	1.7	1.8
101 to 150	2.1	2.2
151 to 220	2.5	2.6
221 to 350	2.8	2.9
351 to 400	3.5	3.7

### WIDTH TOLERANCES

Thickness mm	Hot Rolled EN485-3 (-0mm) Plus:	Cold Rolled EN485-4 (-0mm) Plus:
0.2 to 3.0	-	3.0mm
3.1 to 6.0	7.0mm	4.0mm
6.1 to 12.0	7.0mm	5.0mm
12.1 to 50.0	8.0mm	-
51 to 200	8.0mm	-
201 to 400	11.0mm Applies to widths 1001mm to 2000mm	- Applies to widths 501mm to 1250mm

### FLATNESS TOLERANCES

Product	Thickness mm	Max Deviation over 2500mm length	Max Deviation over 2500mm width
Cold Rolled	0.5 to 3.0	10.0mm	5.0mm
	3.0 to 6.0	7.5mm	3.75mm
Hot Rolled	6.0 to 200	5.0mm	2.5mm

### LENGTH TOLERANCES

Thickness mm	Hot Rolled EN485-3 (-0mm) Plus:	Cold Rolled EN485-4 (-0mm) Plus:
0.2 to 3.0	8.0mm	6.0mm
3.0 to 6.0	8.0mm	8.0mm
6.0 to 12.0	8.0mm	10mm
12 to 50.0	9.0mm	-
over 50.0 Applies to lengths 2001mm to 3000mm	9.0mm	-

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