



Cobham Aluminium

Aluminum Technical Data
Sheet and Plate
Flatness Tolerances

Flatness Tolerances - Flat Sheet (1)

| Alloy (includes Alclads) | Specified Thickness in. | Longitudinal or Transverse Distance (ft) Center to Center Buckles or Edge Waves (2) | | | | | |
|--|--------------------------------------|--|------------------|------------------|------------------|--------|--|
| | | Up Thru 2 | Over 2 Thru 3 | Over 3 Thru 4 | Over 4 Thru 6 | Over 6 | |
| 1060, 1100, 1350, 3003, 3005, 3105, 5005, 5050, 5X57 | 0.020 thru 0.064 0.065 thru 0.249 | 1/8 | 3/16 | 3/16 | 5/16 | 3/8 | |
| 3004, 5052, 5083, 5086, 5252, 5X54, 5456, 5652, brazing sheet, and all heat treatable alloys | 0.020 thru 0.064 0.065 thru 0.249 | 1/8 | 3/16 | 3/8 | 1/2 | 1/2 | |

(1) Not applicable to cut-to-length sheet, panel flat sheet, coiled sheet, or sheet over 60 in. wide
 (2) Also applicable to overall length of width of sheet if only one longitudinal and/or transverse buckle or edge wave is present.
 (3) Allowable deviation from flat with the sheet positioned on flat horizontal surface to minimize deviation
 (4) Not applicable to O, F and FX8 and harder tempers.
 (5) Not applicable to end or corner turn-up.

Flatness Tolerances - Sawed or Sheared Plate

| Specified Thickness, in. | Tolerance (1) in. - Allowable Deviation from Flat | |
|--------------------------|---|--------------------------------|
| | TX51 Tempers (2) | Other than TX51 tempers (2)(7) |
| 0.250 - 3.000 | 1/4 in any 6 ft or less | 1/4 in any 6 ft or less |
| 3.001 - 8.000 | 1/8 in any 6 ft or less | 1/4 in any 6 ft or less |

Longitudinal Flatness

| Specified Thickness, in. | Tolerance (1) in. - Allowable Deviation from Flat | | |
|--------------------------|---|---------------------------------|--|
| | Widths over 4 ft thru 6 ft (4) | Widths over 2 ft thru 4 ft | Widths 2 ft and less |
| 0.250 - 0.624 | TX51 tempers (2) | TX51 tempers (2) | All tempers (7) |
| 0.625 - 1.500 | Other than, TX51 tempers (2)(7) | Other than, TX51 tempers (2)(7) | Only short-span flatness tolerance applies |
| 1.501 - 3.000 | 1/2 | 3/8 | |
| 3.001 - 8.000 | 3/8 | 1/4 | |
| | 1/4 | 3/16 | |
| | 1/4 | 1/8 | |

Transverse Flatness

| Specified Thickness, in. | Tolerance (6) in. - Allowable Deviation from Flat | |
|--------------------------|---|--------------------------------|
| | TX51 Tempers (2) | Other than TX51 tempers (2)(7) |
| 0.250 - 0.624 | 0.125 | |
| 0.625 - 8.000 | 0.09 | |

Short-Span Flatness (5)

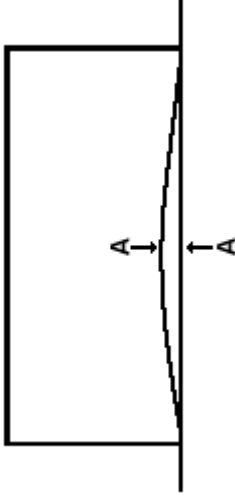
(1) As measured with plate resting on a flat surface concave side upward, using a straightedge and a feeler gauge, dial
 gauge or scale.
 (2) TX51 is a general designation for the following stress-relieved tempers: T351, T451, T651, T851, T7351, and T7651. (6) As measured with the plate resting on a flat surface
 (3) For pieces ordered to less than 6 ft length, the tolerance is 1/8 in. for the total length
 (4) For widths over 6 ft, these tolerances allow for any 6 ft of total width.
 (5) Short-span flatness is the deviation from flat over full span for spans 2 ft and less
 (7) Not applicable to O, F, and HX8 and harder tempers.



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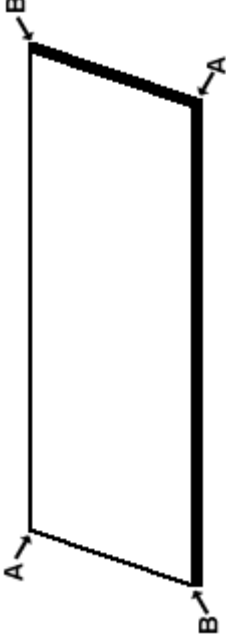
Aluminum Technical Data
Sheet and Plate
Lateral Bow and Squareness Tolerances

Lateral Bow Tolerances - Flat Sheet and Plate

| Specified Thickness in. | Specified Width in. | Allowable Deviation of a side edge from a straight line | Maximum allowable value of AA | | | | | | |
|----------------------------|---|--|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|--|
| | | | Specified Length - in. | | Specified Length - in. | | Specified Length - in. | | |
| | |  | Up thru 60 | Over 60 thru 90 | Over 90 thru 120 | Over 120 thru 150 | Over 150 thru 180 | Over 180 thru 210 | Over 210 thru 240+ |
| | | | Tolerance - in. | | | | | | |
| 0.006-0.125 | Up thru 4 Over 4 thru 10 Over 10 thru 35 Over 35 | | 0.250 0.094 0.063 0.032 | 0.563 0.219 0.125 0.063 | 1.000 0.375 0.188 0.125 | 1.563 0.563 0.250 0.188 | 2.250 0.875 0.375 0.250 | 3.000 1.156 0.500 0.375 | 4.000(1) 1.500(1) 0.750(1) 0.500(1) |
| 0.126-0.249 | Over 4 thru 15 Over 15 | | 0.063 0.032 | 0.125 0.063 | 0.250 0.125 | 0.375 0.188 | 0.563 0.250 | 0.750 0.375 | 1.000(1) 0.500(1) |
| 0.250-8.000 | Up thru 10 Over 10 thru 18 Over 18 | | 0.250 0.063 0.032 | 0.563 0.125 0.094 | 1.000 0.250 0.125 | 1.563 0.406 0.219 | 2.250 0.594 0.312 | 3.000 0.781 0.438 | 4.000(1) 1.000(1) 0.562(1) |

(1) Also applicable to any 240-inch increment of longer sheet or plate

Squareness Tolerances - Flat Sheet and Plate

| Specified Length ft. | Specified Width - ft. | Allowable difference in length of diagonals - inches |
|-------------------------|-----------------------|--|
| | | |
| Up thru 3 | | |
| Over 3 | | |
| | |  |
| Up thru 12 Over 12 | | Maximum difference between AA and BB |
| | | 5/64 x width, ft (2) 7/64 x width, ft (2) |

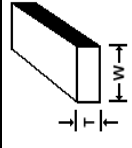


Diameter - Round Wire and Rod

| Specified Diameter in. | Tolerance - in. plus and minus Allowable Deviation From | | | |
|---------------------------|--|-------------------------|------------|-------|
| | Drawn Wire | Cold Finished Rod | Rolled Rod | |
| | | | Plus | Minus |
| Up thru 0.035 | 0.0005 | ... | ... | ... |
| 0.036 - 0.064 | 0.001 | ... | ... | ... |
| 0.065 - 0.374 | 0.0015 | ... | ... | ... |
| 0.375 - 0.500 | ... | 0.0015 | ... | ... |
| 0.501 - 1.000 | ... | 0.002 | ... | ... |
| 1.001 - 1.500 | ... | 0.0025 | ... | ... |
| 1.501 - 2.000 | ... | 0.004 | 0.006 | 0.006 |
| 2.001 - 3.000 | ... | 0.006 | 0.008 | 0.008 |
| 3.001 - 3.499 | ... | 0.008 | 0.012 | 0.012 |
| 3.500 - 5.000 | ... | 0.012 | 0.031 | 0.016 |
| 5.001 - 8.000 | ... | ... | 0.062 | 0.031 |

Thickness and Width - Rectangular Wire and Bar

| Specified Thickness or Width in. | Tolerance in. plus and minus Allowable Deviation from Specified Thickness and Width | | | |
|---|--|--------|------------|-------|
| | Drawn Wire | | Rolled Bar | |
| | Thickness | Width | Thickness | Width |
| Up thru 0.035 | 0.001 | ... | ... | ... |
| 0.036 - 0.064 | 0.0015 | ... | ... | ... |
| 0.065 - 0.500 | 0.002 | 0.006 | 0.006 | ... |
| 0.501 - 0.750 | 0.0025 | 0.0025 | 0.008 | 0.016 |
| 0.751 - 1.000 | 0.0025 | 0.0025 | 0.012 | 0.016 |
| 1.001 - 1.500 | 0.003 | 0.003 | 0.016 | 0.016 |
| 1.501 - 2.000 | 0.005 | 0.005 | 0.016 | 0.031 |
| 2.001 - 3.000 | 0.008 | 0.008 | 0.02 | 0.031 |
| 3.001 - 4.000 | ... | 0.01 | 0.02 | 0.031 |
| 4.001 - 6.000 | ... | ... | ... | 0.047 |
| 6.001 - 10.000 | ... | ... | ... | 0.062 |



Distance across Flats - Square, Hexagonal and Octagonal Wire and Bar

| Specified Distance Across Flats in. | Tolerance Allowable Deviation From Specified Distance Across Flats | | |
|---|---|-------------------------|---------------|
| | Drawn Wire | Cold Finished Bar | Rolled Bar |
| | | | |
| Up thru 0.035 | 0.001 | ... | ... |
| 0.036 - 0.064 | 0.0015 | ... | ... |
| 0.065 - 0.374 | 0.002 | ... | ... |
| 0.375 - 0.500 | ... | 0.002 | ... |
| 0.501 - 1.000 | ... | 0.0025 | ... |
| 1.001 - 1.500 | ... | 0.003 | ... |
| 1.501 - 2.000 | ... | 0.005 | 0.016 |
| 2.001 - 3.000 | ... | 0.008 | 0.02 |
| 3.001 - 4.000 | ... | ... | 0.02 |

