

Product Specification

Custom Laminated Glass

1. Standards Compliance

K&K Glass Laminated products are supplied in accordance with this Product Acceptance Standard and conform to the following Australian Standards.

- AS/ NZS 2208 "Safety Glazing Materials in Buildings"
- AS/ NZS 2080 "Safety Glass for Land Vehicles"
- AS 1288 "Glass in Buildings-Selection & Installation"
- AS/ NZS 4667 "Quality requirements for cut to size and processed glass"

K&K Glass are happy to provide a Certificate of Compliance on request.

2. Identification Label



All K&K Glass Custom Laminated products incorporating toughened glass are supplied with the appropriate K&K Glass stamp. This stamp verifies the glass was manufactured by K&K Glass and that the glass conforms to AS/ NZS 2208 or AS/ NZS 2080 standards certification.

3. Product Range

- Annealed Laminated Glass
- Heat Strengthened Laminated Glass
- Toughened Laminated Glass

All K&K Glass custom laminated glass manufactured and supplied with toughened or heat strengthened glass must have a minimum 1.52mm interlayer.

4. Size Range

- Minimum Size: 300mm x 300mm
- Maximum Size: Length 4500m x 2440mm

- Maximum Weight: 350kg/m² per panel

* Custom requirements outside of the above specifications may be accommodated, please contact sales to discuss your requirements.

5. Minimum Charge

A minimum area charge of 1m² per panel applies.
Minimum order charge of \$300.00 applies.

6. Dimensional Tolerances

6.1 Size:

	Glass Thickness < 10mm	Glass Thickness > 10mm
Length/width (tolerance) for glass < 1200mm	+ - 2mm	+ - 2mm
Length/width (tolerance) for glass > 1200mm	+ - 2 mm	+ - 3mm

6.2 Squareness:

Maximum difference in diagonals of panel to be no more than 4mm The overall shape of the glass must fit within a box ±2mm of the true original size.

6.3 Mismatch / Misalignment:

Edge slip or misalignment between panels to be no more than 2mm. Misalignment in holes shall be no more than 2mm for heat strengthened and toughened or toughened laminates.

6.4 Bow:

To be determined by adherence to requirements for substrates in accordance with AS/NZS2208:1996. Bow and Warpage shall be checked on the long edge using a straight edge with the panel standing within 5° of vertical.

Nominal Thickness	Annealed Float, Heat Strengthened & Toughened	Standard Laminating	Toughened Laminated Glass
4mm	1 in 300, 7mm Max.	-	-
5 & 6mm	1 in 350, 6mm Max.	1 in 400, 5mm Max.	1 in 400, 5mm Max.
8, 10 & 12mm	1 in 400, 5mm Max.	1 in 450, 4mm Max.	1 in 450, 4mm Max.
15 & 19mm	1 in 500, 6mm Max.	1 in 600, 4mm Max.	1 in 600, 4mm Max.

7. Visual Faults / Surface Quality

All glass is to be inspected in transmission (looking through the glass) at a distance of 3 metres at a viewing angle of 90° (perpendicular) to the surface and as normally viewed using daylight without direct sunlight or with a background light suitable for observing imperfections. Scratches, scars, surface marks and imperfections are acceptable if not readily visible from 3 metre viewing distance.

7.1 Roller Wave Distortion

Roller wave is caused by the heated glass being in continual contact with the oscillating ceramic rollers.

Evaluation of the level of distortion that is caused by the furnacing process is a subjective judgement. The use of a Roller wave Gauge to measure the surface profile of the glass will give a good indication of the level of visual distortion in the glass. The standards for visual distortion are based on a surface profile that will result in an acceptable level of visual distortion. The roller wave is measured from peak to trough and maximum standards are as follows:

Substance	Custom Toughened Glass	Toughened Glass for Laminating	Toughened Glass for MultiGlazing
4mm	0.14mm	0.1mm	0.14mm
5 & 6mm	0.14mm	0.1mm	0.14mm
8, 10 & 12mm	0.14mm	0.08mm	0.14mm
15 & 19mm	0.14mm	0.08mm	0.14mm

8. Edge Quality

All K&K Laminated glass shall have a minimum standard of edgework such that:-

- a) Flared or splayed edges are not acceptable - except for the end of score up to a maximum size of 3mm.
- b) Scallops, flakes, shells and chips are permitted up to a maximum of 3mm.
- c) 'Shark's teeth' are not to extend to more than 50% of the thickness of the glass substrate.
- d) Shells are not acceptable on Flat Polish, Flat Smoothed or Mitred processed edges.
- e) Broken corners and corners on/off are not permitted
- f) Vented edges are not permitted

9. Localised Warp

Localised bow or kinks is not to exceed 1 in 200 for nominal thickness 5, and 6mm and 1 in 300 for substances greater than 6mm.

10. Interlayer Snap Back / Shrinkage / Edge Delamination

Laminated glass within specification may exhibit delamination. From any edge of the laminate interlayer, snap back, shrinkage or delamination is acceptable if no more than:

- 6mm for annealed laminates
- 10mm for toughened & heat strengthened laminates

11. Interlayer Bubbles

Acceptable if not visible from 3M

11.1 Acceptable Inclusion Tolerance

Bubble/Inclusion	Up to 2.5m ²	Over 2.5m ²
<1.0mm	No Limit	No Limit
1.0mm – 5.0mm	2	4

12. Performance Characteristics

12.1 Visual Distortion and Surface Quality

The standard for laminated glass is based on the faults being not readily visible at 3 meters when viewed perpendicular to the surface and as the glass would normally be viewed. The following guide-lines assist in the inspection of the glass when it cannot be viewed from 3 meters.

12.1.2 Digs

Digs are not permitted.

12.1.3 Scratches

- Scratches less than 75mm in length and less than 0.5mm in width are allowable.
- Heavy scratches less than 75mm in length and less than 0.75mm in width are permissible if within 100 mm of the glass edge.

12.1.4 Stones

- No stones greater than 2mm are permitted.
- Stones 1mm to 2mm in size, one stone allowed in 4m².
- Up to 3 stones below 1mm in diameter are allowed in 4m².

- Where the glass is coated, a different set of guide-lines apply.

12.1.5 oeam and Other Linear Distortion

- oeam and other linear distortion are not permitted.

12.1.6 Surface Vent and Blisters

- Surface vent and blisters are not permitted.

12.1.7 Stains

- Stains are not permitted.

12.2 Spot Defects in the Vision area

Inspect the laminated glass held in a perpendicular position and in front of and parallel to a matt grey screen, lit by diffuse daylight or equivalent at a distance of 3m from the glass. The spot defects in the vision area when viewed from 3m shall not exceed the number of the permissible defects in table below.

Defects less than 0.5mm are not considered and defects greater than 3mm are not permitted.

Size of defect d in mm		0.5 < d ≤ 1.0	1.0 < d ≤ 3.0			
Size of pane A in m ²		for all sizes	A ≤ 1	1 < A ≤ 2	2 < A ≤ 8	A ≤ 8
Number of permissible defects	2	No limitation, however no accumulation of defects	1	2	1/m ²	1.2/m ²
	3		2	3	1.5/m ³	1.8/m ³
	4		3	4	2/m ⁴	2.4/m ⁴
	≥5		4	5	2.5/m ⁵	3/m ⁵

Note: An accumulation of defects occurs if four or more defects are at a distance of < 200mm from each other. This distance is reduced to 180mm laminated glass consisting of three panes, to 150mm laminated glass consisting of 4 panes and to 100mm laminated glass consisting of five or more panes.

12.3 Defects / Bubbles in the edge area for framed edges

Inspect the laminated glass according to Section 10.4, defects which do not exceed 5mm in diameter are permitted in the edge area. For panes sizes ≤ 5m² the width of the edge area is 15mm. The edge area width is increased to 20mm for pane sizes > 5m². If bubbles are present, the bubbled area shall not exceed 5% of the edge area.

12.4 Defects / Bubbles on edge which will not be framed

Bubbles, interlayer defects and retractions are permissible if they are not readily visible at 3m when viewed according to Section 10.4.

Pease note:

Information provided is issued for specification reference only and should not be used as a substitute for detailed technical advice. K&K Glass disclaims any responsibility for loss or damage suffered from the use of such data. To the best of our knowledge the information detailed above was correct at the time this document was published and printed.

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