

Product Specification

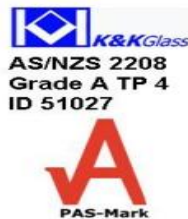
Toughened & Heat Strengthened Glass

1. Standards Compliance

K&K toughened glass is manufactured and supplied in accordance with this Product Acceptance Standard and conforms 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"

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: 100mm x 300mm
- Maximum Size: Length 6000mm x 2700mm
- Maximum Weight: 800kg 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

Parameter	Glass up to and including 6mm	Glass greater than 6mm
Substance	± 0.2mm	± 0.3mm
Length/width	± 2mm	± 3mm
Squareness	Maximum difference in diagonals is 5mm for panels with the largest dimension less than 1200mm, or 10mm maximum if the largest dimension is greater than 1200mm.	
Flatness	A plate of 1000x500 shall have a maximum deviation from flatness of 0.5mm when placed horizontally on a flat surface. Measurement to be by feeler guage.	

6.1 Bow:

To be determined by adherence to requirements for substrates in accordance with AS/NZS2208:1996 & AS/NZS 4667:2000. Bow and Warp 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	.01mm	0.14mm
8, 10 & 12mm	0.14mm	0.08mm	0.14mm
15 & 19mm	0.14mm	0.08mm	0.14mm
<ul style="list-style-type: none">• Edge kink not to exceed 0.15mm in 300mm			

7.2 Inspecting Surface Quality (within 2M)

The standard for toughened glass is based on the faults being not readily visible at 3 meters when viewed perpendicular to the surface using daylight without direct sunlight, or with a background light suitable for observing any imperfections and as the glass would normally be viewed.

The following guide-lines assist in the inspection of the glass when it can not be viewed from 3 meters.

7.2.1 Digs

Digs are not permitted.

7.2.2 Scratches

Scratches less than 75mm in length and less than 0.5mm in width are allowable.

7.3.3 Furnace Pick up

- Furnace Pick-up is not to exceed 3mm in diameter.
- Any more than 3 Pick-up markings between 1 and 3 in diameter per plate is unacceptable.
- Any number of Pick-up markings below 1mm in diameter is acceptable.

8. Edge Quality

8.1 Clean Cut

Toughened Glass cannot be supplied with a clean cut edge finish, please see below options for edgework on toughened glass;

K&K toughened Glass is supplied with an arrissed edge for glass thicknesses of 4-6mm at no charge. Glass thicknesses 8-19mm must be supplied with minimum flat smooth or flat ground finish at charge.

Please note that glass thicknesses between 4-6mm that require more than standard arrissed edge will be at charge.

8.2 Arrissed Edge

Chips and shells are acceptable provided they:

- Extend no greater than 5mm from the edge of the glass.
- Do not exceed half the glass thickness.
- Are not vented.

8.3 Flat Smooth / Flat Ground Edge

Grind marks are permitted but must be of light intensity (not visible at greater than 500mm). Chips and shells are not permitted.

8.4 Flat Polished Edge

Finish and arris must be consistent. Chips and shells are not permitted. Polish marks acceptable if not visible from 500mm.

8.5 Mitred Edges

Chips and shells are not permitted.
Vented edges are not permitted.

9. Reworking Toughened Glass

Once glass has been toughened, typically, no further processing can be carried out due to the risk of breakage. This is due to the heat treatment where the physical characteristics of the glass change and further processing of edgework can result in instantaneous explosion of the glass due the edge being ground down.

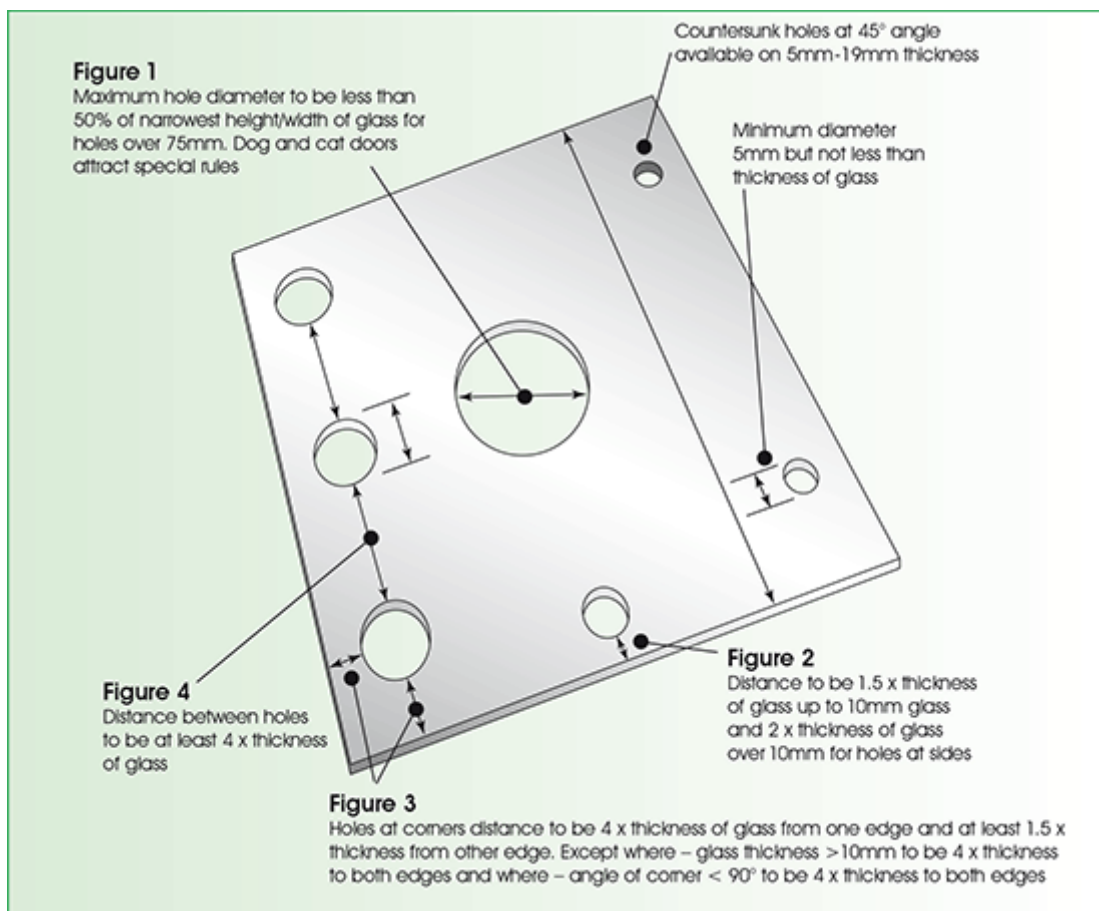
Due to this, accurate dimensions are essential when placing your order, however;

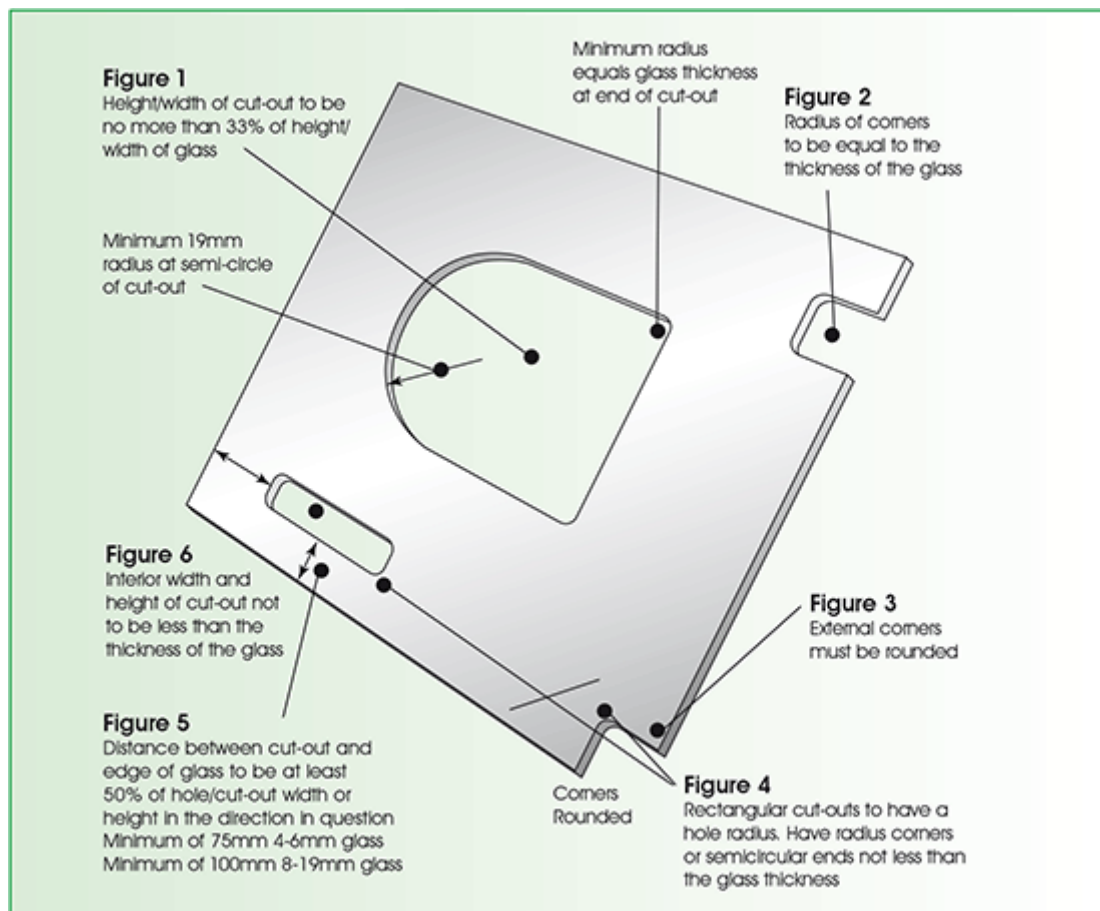
If you find yourself in this unenviable position, K&K Glass have spent years perfecting a technique that allows us, in most circumstances, to polish down 1-2mm of toughened glass. This is a time consuming and expensive process, typically 50% of the cost of the original order total.

10. Processing Toughened Glass

In most instances architectural glass will have some form of edgework other than edges that are clean-cut. The

The below guidelines for toughened safety glass summarise key dimensions and tolerances for holes and notches. Please refer any applications outside these tolerances to K&K Glass for approval.





10.1 Positioning of cut-outs from edge

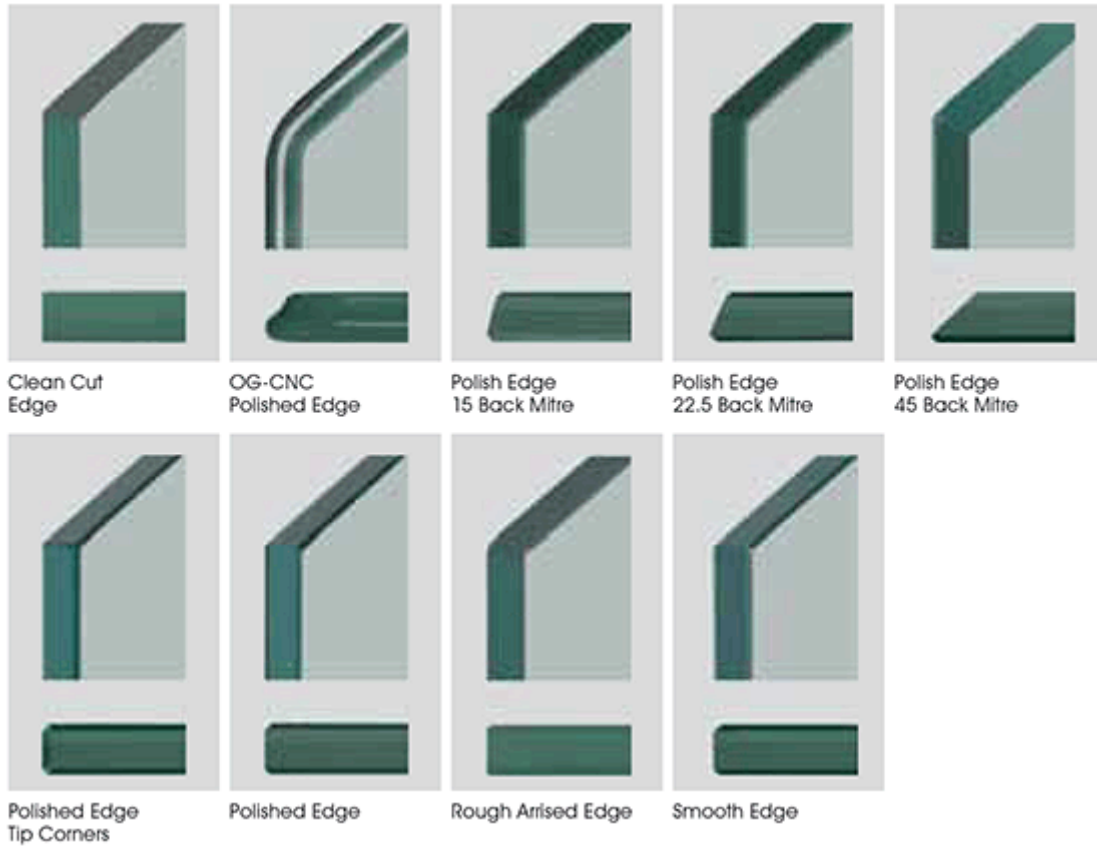
- The edge distance must be greater than half of cut-out height
- The edge distance must be greater than half of cut-out width
- The inside of cut-out must have radius corners to a dimension of not less than the thickness of the glass

Any questions or concerns please don't hesitate to refer to our sales staff for advice.

10.2 Further to the above

- In a panel with holes, the minimum width of the panel must be eight times the thickness of the glass
- In a panel of glass where there are a cluster of holes (eg. more than four), please refer to our sales staff for advice

11. Types of glass edge work



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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