

CHEVRON TOUGHENED GLASS SPECIFICATIONS

1. STANDARDS COMPLIANCE
2. STAMP (TOUGHENED GLASS IDENTIFICATION & STANDARDS LOGO)
3. SIZE LIMITATIONS
4. DIMENSIONAL TOLERANCES
5. FLATNESS TOLERANCE (BOW)
6. EDGE QUALITY
7. SURFACE QUALITY
8. ROLLER WAVE DISTORTION
9. WORKING OF TOUGHENED GLASS
10. HOLES
11. SLOTTED HOLES
12. FAN HOLES
13. NOTCHES
14. CUT OUTS
15. FINGER GRIPS
16. HEAT SOAK TREATMENT
17. HANDLING & STORAGE
18. OTHER

1. STANDARDS COMPLIANCE

Chevron Toughened Glass is supplied to conform to the following Australian Standards:
 AS /NZE 2208-“Safety Glazing Materials in Buildings”
 AS/ NZS 2080-“Safety Glass for Land Vehicles”
 AS 1288-“Glass in Buildings-Selection & Installation”
 AS/ NZS4667-“Quality requirements for cut-to-size and processed glass”

2. STAMP

All Chevron toughened glass will be supplied with a Chevron stamp (or logo). This stamp verifies manufacture by Chevron Glass, our licence number, glass type and thickness and conformity to AS/ NZS 2208 or AS/ NZS 2080 standards certification where applicable. If glass is required without the stamp, this must be indicated in writing at the time of ordering and a non-reusable sticker will be applied instead.

3. SIZE LIMITATIONS

Limitations on size are:

MAXIMUM SIZE	MINIMUM SIZE
2400 x 4200mm	100 x 300mm

4. DIMENSIONAL TOLERANCES

All dimensions +/- 2.0mm.

5. FLATNESS TOLERANCE

Toughened glass is not always flat like annealed glass. Generally the deviation is slight, depending on size and thickness.

Overall bow can be checked at the point of maximum gap on the long edge using a straight edge with the panel standing within 5° of vertical.

The following standards for bow are in accordance with AS/ NZS 2208 together with the Chevron Glass own maximum tolerance for bow.

4mm	1mm in 300, 7mm maximum
5 & 6mm	1mm in 350, 6mm maximum
8, 10 & 12mm	1mm in 400, 5mm maximum
15 & 19mm	1mm in 500, 5mm maximum

Maximum Aspect Ratio

To minimise distortion, the ratio of length to width of rectangles should not exceed 15:1.

6. EDGE QUALITY

Toughened glass cannot be supplied with “clean cut” edges. Chevron toughened glass is supplied with an arrissed edge for thicknesses 4mm to 12mm. 15mm and 19mm thicknesses require a minimum flat smooth edge which is a chargeable extra.

Other types of edge treatment are available on request.

Shells are acceptable that have been arrissed provided they extend no more than 5mm from the edge.

Shells are not acceptable on flat polished, flat smoothed, bevelled or mitred edges.

7. SURFACE QUALITY

The standard for toughened glass is based on faults not being readily visible at 1 metre when viewed perpendicular to the surface and as the glass would normally be viewed.

Furnace pick-up should not exceed 3mm in diameter. More than 3 pick-up markings between 1mm and 3mm in diameter per piece is unacceptable. Any number of pick-up markings below 1mm in diameter is allowable.

Heat markings and heat haze are acceptable if not visible from 3 metres when viewed between an angle from 90° to 45° to the glass surface.

8. ROLLER WAVE DISTORTION

An inherit consequence of the heat treatment process is roller wave which is caused by the heated, slightly softened glass being in continual contact with the oscillating ceramic rollers. This distortion is more noticeable in reflective or dark tinted glasses and if applicable, the direction of roller wave should be specified.

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
4mm	0.14 mm
5 & 6mm	0.14 mm
8 – 12mm	0.14 mm
15 – 19mm	0.14 mm

9. WORKING OF TOUGHENED GLASS

All necessary processing must be carried out before the glass is toughened. No work can be carried out after toughening due to the risk of breakage. Therefore accurate dimensions must be submitted at the time of ordering.

10. HOLES (up to 150mm)

10.1 HOLE SIZE

Minimum Dimension

Hole diameters cannot be less than the thickness of the glass.

Maximum Dimension

Depending on the narrowest glass dimension the maximum diameter of any large circular hole may be subject to manufacturing limitations.

10.2 EDGE FINISH

Holes will normally have a ground finish.

Holes can be countersunk at 45° with ground edges on request.

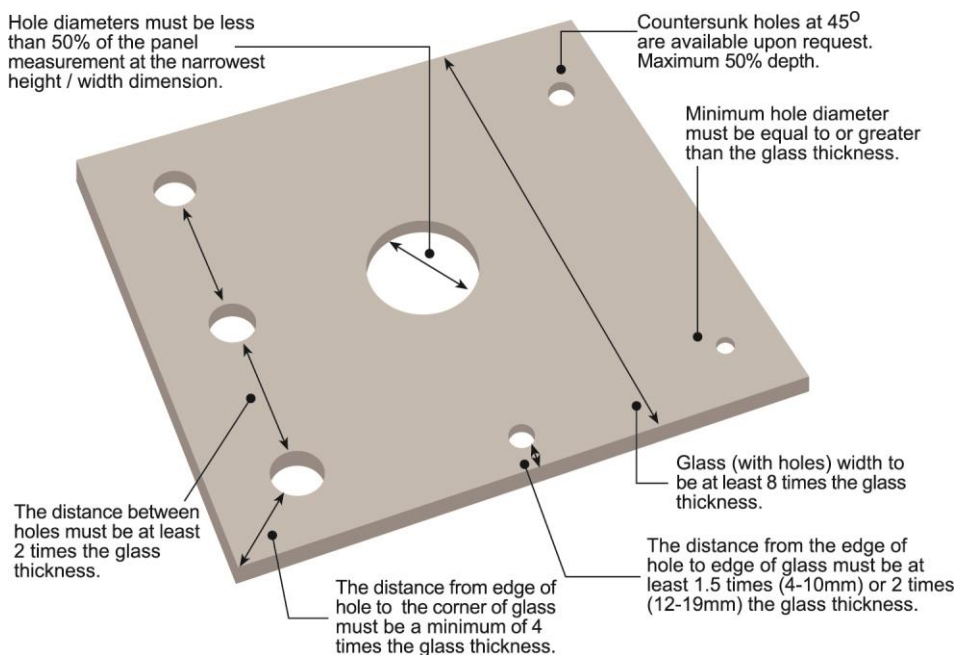
Countersunk depth should not exceed 50% of glass thickness.

10.3 TOLERANCES

Hole Diameter (mm)	Up to 150mm	Over 150mm
Size Tolerance (mm)	+1,-0	+1,-1
Dist. Between hole centres	+1,-1	+1,-1
Dist. Between glass edge & hole	+1,-1	+1,-1

10.4 POSITION OF HOLES FROM EDGE

For holes up to 50mm diameter the distance between the edge of any hole and the edge of the glass must never be less than 1.5 times the thickness of the glass for glass up to 10mm thickness, and two times the thickness for 12-19mm.



10.5 POSITION OF HOLES FROM CORNER

The distance from the edge of hole to the corner of glass must be a minimum four times the glass thickness.

10.6 SPACING OF HOLES

The minimum distance between the edges of adjacent holes cannot be less than two times the glass thickness. Where there are more than four holes in a group the minimum distance cannot be less than six times the glass thickness.

10.7 HOLES OTHER THAN CIRCULAR

All non-circular holes must have radius corners with the internal radius not less than the thickness of the glass. Refer to section 13 on Notches.

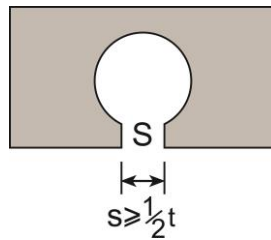
10.8 HOLE CONSIDERATION

Unusual hole configurations or larger hole sizes should be referred for consideration before ordering.

11. SLOTTED HOLES

The diameter of slotted holes must not be less than the thickness of the glass (t).

The width of the slot (S) must be at least equal to half of the thickness of the glass (t).



12. FAN HOLES (and holes over 50mm diameter)

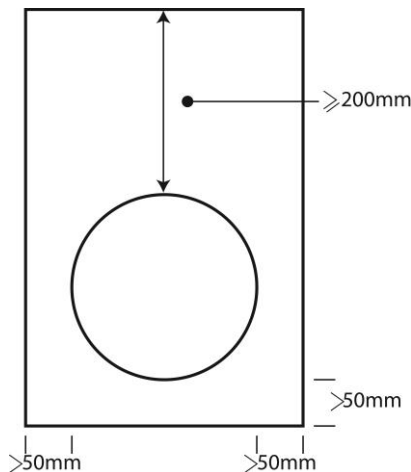
Large circular holes greater than 50mm diameter. This includes circular pet doors in up to 6mm thickness.

12.1 EDGE FINISH

Fan holes will generally have a ground finish.

12.2 MINIMUM REQUIREMENTS

The size of the fan hole will determine the minimum dimensions of the glass sizes. Refer diagram for minimum dimensions.



13. NOTCHES

Defined as having any one dimension no greater than 200mm.

13.1 EDGE FINISH

Edges will have a flat ground finish with arris. Polished notches are available with a minimum internal radius of 16mm, with the exception of 19mm thickness equal to 19mm radius. Limitations apply.

The maximum finish for Splashback notches is flat ground only.

13.2 DIMENSIONS

The height / width of a notch must be greater than the thickness of the glass.

The depth of a notch cannot be greater than half the width of the glass.

13.3 TOLERANCES

The tolerance on notch location in relation to the edge of the glass is 2mm.

13.4 CORNER NOTCHES

Corner notches must have an internal radius equal to or greater than the glass thickness.

13.5 SIDE NOTCHES

Side notches must have radius corners equal to or greater than the glass thickness.

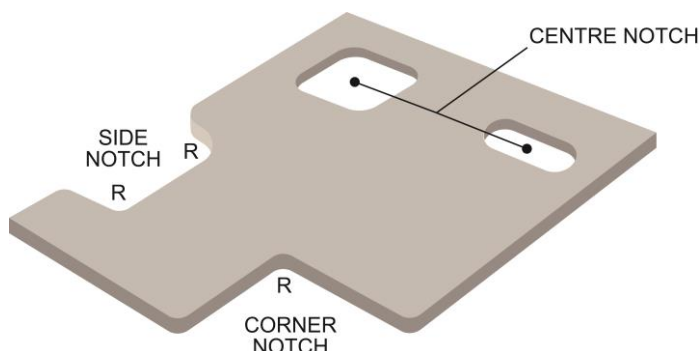
The minimum distance from a corner should be 50mm.

13.6 CENTRE NOTCHES

All centre notches must have radius corners equal to or greater than the glass thickness. The distance between the edge of the centre notch and the glass edge must be at least four times the glass thickness, with a minimum of 25mm for 4-6mm glass and 100mm for 8-19mm glass. The interior width of a centre notch must be equal to or greater than the glass thickness. The distance between centre notches must be at least four times the glass thickness.

The notch height and width must be less than 50% of the glass dimensions.

Centre notches are generally processed by Waterjet Cutter then arrissed.



14. CUT OUTS

Defined as having any one dimension greater than 200mm.

14.1 EDGE FINISH

Edges will have a flat ground finish with arris. Polished cut outs are available with a minimum internal radius of 16mm, with the exception of 19mm thickness equal to 19mm radius. Limitations apply.

The maximum finish for Splashback cut outs is flat ground only.

14.2 DIMENSIONS

The height / width of a cut out must be greater than the thickness of the glass. The depth of a cut out cannot be greater than half the width of the glass.

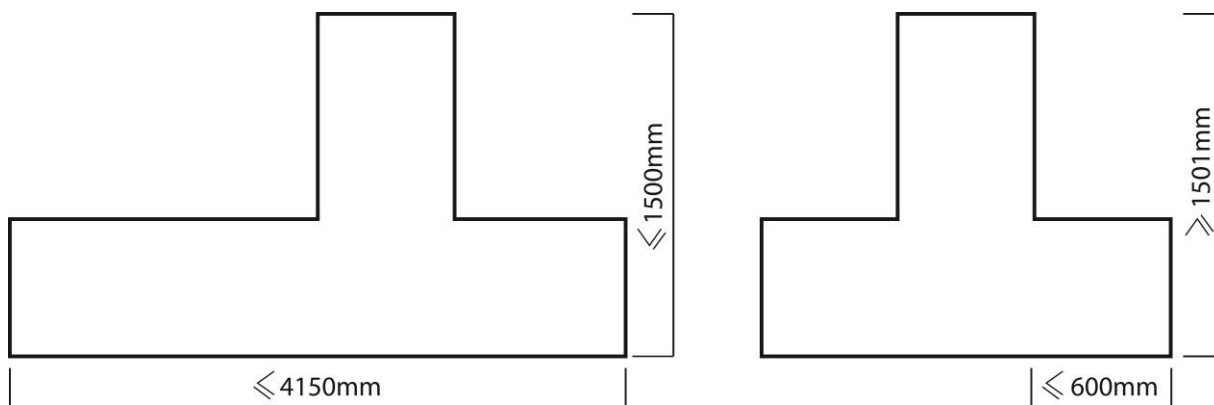
14.3 TOLERANCES

The tolerance on cut out location in relation to the edge of the glass is 2mm.

14.4 CORNER CUT OUTS

All corner cut outs must have radius corners equal to or greater than the glass thickness.

The below diagrams shows the requirements for a typical Splashback panel.



For panel heights equal to or less than (\le) 1500mm. The total panel width cannot exceed 4150mm.

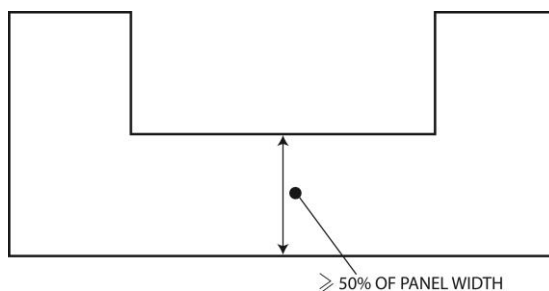
For panel heights equal to or greater than (\ge) 1501mm. The corner cut outs cannot exceed 600mm in width.

Chevron Glass may reject any order due to WHS considerations.

14.5 SIDE CUT OUTS

Side cut outs must have radius corners equal to or greater than the glass thickness. The minimum distance from a corner should be 75mm.

The cut out must not exceed 50% of the width of the glass – refer diagram.



14.6 CENTRE CUT OUTS

All centre cut outs must have radius corners equal to or greater than the glass thickness. The distance between the edge of the centre cut out and the glass edge must be at least 100mm.

The interior width of a centre cut out must be equal to or greater than the glass thickness. The cut out height and width must be less than 50% of the glass height / width. Centre cut outs are generally processed by Waterjet Cutter then arrissed.

14.7 CUT OUT CONSIDERATIONS

Cut out requirements for Splashbacks in particular that are not covered by these specifications should be referred to our Production staff for approval prior to processing. Chevron Glass may request adjustments to any order due to manufacturing limitations or WHS considerations.

15. FINGER GRIPS

Standard finger grips are 13mm wide and are available in glass of 5mm thickness or greater.

16. HEAT SOAK TREATMENT

Heat soaking involves heating toughened glass in an oven for a period of time to induce breakage that may be caused by any inclusions or contaminants in the glass. The process substantially reduces the likelihood of breakage after installation due to any inclusions or contaminants. The process is strongly recommended for balustrades, pool surrounds and toughened glass assemblies.

In most circumstances where glass is to be glazed vertically 5.0 metres above ground or floor level, it is mandatory for the glass to be head soaked.

Maximum panel size for heat soak treatment is 4200mm x 1880mm.

For further information, refer to AGGA Technical Fact Sheet - Heat Soaking of Toughened Glass on our website, www.chevronglass.com.au

17. HANDLING & STORAGE

The edges of toughened glass must be treated with care to avoid chipping or shelling. A chipped edge is a source of weakness which may cause subsequent failure.

Toughened glass should always be stored on edge on suitable soft blocking. It should not be stacked horizontally.

For further information, refer to AGGA Technical Fact Sheet – Unloading of Glass & Storage of Glass on our website, www.chevronglass.com.au

18. OTHER

Chevron Glass may request adjustments to any order due to manufacturing limitations or WHS considerations. Any requirement not covered by these specifications should be referred to our Production staff for approval prior to processing.