

Clayton Glass

Product Quality Standards

Technical
Guide

Clayton Glass uses a Quality Management System to assess product quality, providing products that meet or exceed customer and regulatory requirements, which include the following:

- BS EN 1279-2:2002 Production of Insulated Glass Units
- BS EN 1270-3:2002 Gas Retention in Insulated Glass Units
- BS EN 12150 & BS EN 12600:2002 Toughened Safety Glass

Inspection Standards

All panes of an insulating glass unit are viewed at right angles to the glass from the room side, standing more than 2 metres (toughened, laminate or coated glass, no less than 3 metres), in natural daylight and not in direct sunlight.

There should be no visible moisture on the surface of the glass. The area to be viewed is the normal vision area, except for a 50mm wide band around the perimeter of the unit, known as the edge zone. The quality of an insulating glass unit is assessed by looking through the glass and not directly at it.

All products are to be inspected using the criteria as described below:

1. Permissible glass defects in insulating glass units

Defect Type	Main vision area	Edge zone – visible 50mm perimeter
Hairline scratches	Permissible, but not in clusters	Permissible, but not in clusters
Scratches	Permissible, a single scratch of 25mm length, sum of all lengths of all scratches must not exceed 15mm	Permissible, a single scratch of 25mm length, sum of all lengths of all scratches must not exceed 90mm
Spot Defects		
<0.5mm	Permissible	Permissible
<1.0mm	Permissible, but not in clusters, 2 spots per metre squared	Permissible, but not in clusters
<2.0mm	Maximum 5 spots	1 spot per 1m length of glass
>2.0mm	Not permissible	Not permissible

The above criteria do not apply to obscure and patterned glass due to the method of manufacture which deems seeds and bubbles acceptable.

2. Glass soiling

No dirt visible should be visible from a 2 metre distance inside the insulating glass unit.

3. Dimensions and thickness tolerances of insulating glass units

Parameter	Permissible tolerance
Dimensions	+2.0/-1.0mm
Thickness	+1.0mm (annealed glass) +1.5mm (toughened/laminated/textured glass)
Diagonal difference	<2.0mm/m
Glass pane offset	<2.0mm

4. Chips, nicks, shells and other edge defects

Glass defects such as edge chips and shells are permissible up to 2mm, whilst a single individual chip can be up to 6mm. Cracks, even minor – are not permissible and these should be reported at glass receipt.

5. Glass type

Any deviation from the glass product types specified in the purchase order is considered a product fault.

6. Defects – Georgian bars, leaded units, back-to-back and integra bar

Decorative elements can be installed inside an insulating glass unit at the buyer's request. The type, colour, and geometry of elements are according to the purchase order.

The evaluation method regarding the accuracy and quality of these elements is the same as for the entire insulating glass unit (see sections 1-3).

Georgian bars and back-to-back/ integra spacer should not deviate from parallel by more than 2mm per metre. Lead strip that is applied to decorative lead units will oxidise for several weeks after installation, eventually stabilising to leave a dark patination on the lead. This is not a defect.

Lead is a comparatively 'soft' metal and small scratches on the surface of the lead do not constitute a defect.

7. Spacer bar defects

The internal surfaces of the spacer bars should be clean. In standard insulating glass units, the distance between the spacer bar sight line and the glass edge should not exceed 13mm, and the variation of the distance from the glass edge at one side of the insulating glass unit should not exceed 2mm. The curvature of the spacer, particularly at the corner on bent and super-spacer units, is a part of the manufacturing process and is acceptable if it does not extend beyond the allowed 13mm. No primary seal should protrude beyond the spacer bar and into the vision area.

8. Loss of seal tightness – moisture penetration

This is an insulating glass unit defect that occurs when the internal space between the insulating glass unit panes loses its seal tightness and allows gas and moisture exchange.

A sign of such a fault is visible by permanent or periodic condensation on the internal surfaces of the insulating glass unit panes, or water collecting at the bottom of the insulating glass unit.

The standard warranty period for insulating glass unit tightness is 10 years (reduced to 2 years if an edge tape has been applied in manufacturing at the buyer's request) for rectangular shape insulating glass units.

The warranty covers only the cases where the seal tightness was lost due to material or workmanship defects of the delivered insulating glass units, and if the defects can be attributed to Clayton Glass Ltd.

Only the water vapour condensation (dew) visible on the internal surfaces of insulating glass unit panes can be considered an insulating glass unit defect. Such dew cannot be removed by wiping the glass panes dry.

Condensation on the insulating glass unit surfaces towards the inside of the room or outside of the building is a common effect and occurs when air humidity is high, and the glass temperature is lower than that of the ambient air. This is a natural occurrence and not a default.

9. External Condensation

Condensation on the external surfaces of insulating glass units is not considered an insulating glass unit defect and is not covered by the warranty provided by Clayton Glass Ltd.

10. Toughened glass “polarisation” effect

When thermally toughened glass is reviewed by reflection, the effect of the toughening process may be seen under certain light conditions. Colouration or patterns on the surface do not indicate physical deterioration in the physical performance of the toughened glass.

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