

# GLASS QUALITY & CONSUMER EXPECTATIONS



## Customers Expectation of Glass Quality

The clear, tinted and coated glass supplied for buildings in Australia is almost exclusively manufactured using the float process. Glass made using this process (float glass) is extremely flat and contains very few faults.

This “raw” float glass is converted into the end product by various processes such as:

- Applying coatings to the glass surface (for solar control or thermal insulation or both)
- Cutting (manual or machine)
- Processing the glass (edge working, drilling, shaping, etc.)
- Laminating (the addition of additional leaves of glass by use of interlayer(s))
- Toughening/Tempering (reheating glass to approximately 600 degrees Celsius then snap cooling)
- Insulating glass manufacturing (construction of a sealed unit)

Glass is handled/moved numerous times during these manufacturing processes and occasionally the glass may incur minor damage.

To set a standard for glass quality an Australian Standard (AS4667:2000 “Quality requirements for cut to size and processed glass”) was published as a flat glass industry guide to acceptable quality.

In this Australian Standard there are tables and charts showing the maximum allowable imperfections for processed and cut to size glass.

Architectural Glass commonly purchased as “single” or “Double glazing” (IGU) provides a high standard of vision.

The following is a guide to the quality that can be expected (Glass used as single or double glazing will have a similar level of visual quality.)

Inspecting the glass should be carried out as early as reasonably practicable following installation or supply.

## How to check for blemishes

1. Clean the glass in accordance with manufacturers recommendations
2. Stand in the room no less than 3 metres away from the glass and look directly through it. Glass must be viewed at 90 degrees to the window.

a. Inspect the glass in natural daylight, but not looking directly towards the sun and with no visible moisture on the surface of the glass.

b. Where it is not possible to stand at the correct distance then stand as far away as you can from the glass.

c. Exclude 50mm wide band around edge of the glass from the check when viewing IGUs.

## What to expect when viewed as described

While AS4667 is the definitive reference, generally flat transparent glass, including laminated or toughened or coated glass is acceptable if;

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- There are no bubbles in the glass greater than 5mm in diameter.
- A panel of glass contains one bubble between 1mm and 5mm in diameter per 1.6m x 1.6m of area.
- There are bubbles smaller than 1mm in diameter.
- Scratches should not be visible from 3m or more.

The obtrusiveness of blemishes is judged by looking through the glass, not at it, under natural light. It must be understood that the glass used in single and double glazing is a processed glass, and so as a consequence, blemishes are to be expected.

Insulating glass units with optical defects such as smears, finger prints or other dirt on the cavity faces of the glass, or extraneous material in the cavity are unacceptable, except in some cases where small particles of desiccant can be seen.

## Special glasses

*Toughened glass* may show visual distortions. These distortions may be accentuated by reflections in double glazing. Such surface colorations and patterns do not indicate a change in physical performance.

*Laminated glass* may have a few more blemishes due to it being made of several layers.

*Low emissivity* coating may produce transient visual effects. In some lighting conditions the coating may look like a transparent film or produce a haze, i.e. a cloudy look to the surface. When light colored objects such as net curtains are placed close to the glazing they may look slightly darker.

## Insulated Glass Units

When viewing IGU's exclude a 50mm wide band around edge of the glass from the check.

The viewing period for IGU's should not be more than 60 seconds.

### Double reflection

- This occurs in certain light conditions. It is caused by multiple surface reflections in double glazing which may vary from pane to pane.

### Brewster's Fringes – the rainbow effect

- Small transitory rainbow effects are sometimes produced by the glass refraction of light.
  - Their appearance is due to high quality flat glass sheets being placed parallel to each other.

## Other Glass Types

The above does not apply to patterned glass, mirror, splashbacks or glass used in furniture.