

Toughened (Tempered) Safety Glass

Heat-treated to ~620°C then rapidly cooled — 4-5x stronger than annealed

Overview

Toughened glass is produced by heating annealed float glass to approximately 620°C then rapidly cooling with high-pressure air jets (quenching). This creates permanent compressive stress on both surfaces, making it 4-5x stronger. When broken, it fractures into small, relatively harmless blunt granular pieces rather than sharp shards. Toughened glass cannot be cut, drilled or modified after the furnace — all processing must be done before toughening.

Properties Comparison

Property	Annealed	Heat Strengthened	Toughened
Bending strength	40 N/mm ²	70-120 N/mm ²	120-200 N/mm ²
Thermal shock	40°C	100°C	200°C
Break pattern	Sharp shards	Large pieces	Small granules
Safety glass?	No	No	Yes (Class 1)

Where Toughened Is Required

- **Doors & side panels:** within door leaf or 300mm of edge, floor to 1500mm.
- **Low-level:** lowest edge below 800mm from floor.
- **Bathrooms:** all glazing in rooms with bath/shower, floor to 1500mm.
- **Full-height:** floor-to-ceiling panels, glass walls.
- **Overhead (outer):** outer pane of rooflights.
- **Near stairs:** staircase enclosures.

Technical Specifications

Property	Specification
Strength	120-200 N/mm ² (4-5x annealed)
Thermal shock	200°C differential
Impact class	Class 1
Thicknesses	4-19mm
Max size	2400 x 4800mm (jumbo line to 4800 x 2400mm)

Heat Soak Testing

Nickel sulphide (NiS) inclusions can very rarely cause spontaneous breakage months or years later. Heat soak testing at 290°C for several hours accelerates NiS expansion, causing affected panels to break in the oven rather than in service. Recommended for overhead glazing, structural and critical applications.

How to Order

Contact our sales team: 020 8574 9342 | 07305 993794 | sales@csultd.co.uk | csultd.co.uk — quotes returned within 2 business hours (Mon-Fri, 8am-5pm).