Product Name

Pro Tuf™ – Toughened Grade 'A' Safety Glass

Product Line

Glass Project ***Safety Range***

Description of Product

Pro Tuf™ Toughened Glass is a Grade 'A' safety glass (AS/NZS 2208).

Pro Tuf™ Toughened Glass is incredibly versatile and used in applications where strength and safety are primary concern. Pro Tuf™ is known as toughened, or tempered, glass meaning it can resist greater wind loads, impact loads, and thermal stresses compared to annealed glass products of the same thickness.

Intended Use

Any glazing situation where a Grade 'A' safety glass is required, greater strength is required to resist impact loading or wind loading, or for frameless glazing and point fixed glazing designs where the glass has unsupported edges.

Building types: residential, retail, commercial, assembly buildings.

Uses: windows, facades, shopfronts, entranceways, doors, balustrades, canopies, interior glazing, partition glazing, shower screens and doors, splashbacks etc.

Designs: fully framed, partially framed, and frameless glass designs.

Product Identifier

Pro Tuf™ Toughened Glass is part of the Glass Project ***Safety Range***.

Relevant Building Code Clauses and Compliance

Pro Tuf™ Toughened Glass supplied by Glass Projects is certified as a Grade 'A' safety glass manufactured according to AS/NZS 2208 Safety Glazing Materials in Buildings.

When designed, used, installed, and maintained in accordance with Glass Projects standard details and requirements, Pro Tuf™ will comply with, or contribute to compliance of, the following performance clauses of the NZ Building Code:

B1 ***Structure***
Clause: B1.3.1, B1.3.2, B1.3.3, B1.3.4.

Compliance: Glazing with Pro Tuf™ can be designed to meet project requirements in accordance with B1/AS1 clause 7.1 NZS4223.1, clause 7.2 NZS4223.2, clause 7.3 NZS4223.3 & Clause 7.4 NZS4223.4 or by specific engineering design to B1/VM1.

B2 ***Durability***

Clause: B2.3.1 (b).

Compliance: When designed, used, installed, and maintained in accordance with Glass Projects standard details and requirements, Pro Tuf™ Toughened Safety Glass will satisfy the durability performance requirements for a minimum serviceability life of 15 years.

Processed toughened safety glass has an in-service history of more than 50 years when used in ordinary conditions of exposure.

C2 ***Fire***
Clause: C4.1.2

Compliance: Protection from Fire - Internal Surface linings - Glass achieves Group Number 1-S to Appendix Table C1.2 as composed of glass and External Cladding Systems is non-combustible as composed entirely of glass (in accordance with definitions in NZBC C/AS1 & AS2).

E2 ***External Moisture***
Clause: E2.3.1, E2.3.2.

Compliance: Glass is impervious to water.

F2 ***Hazardous Building Materials***
Clause: F2.3.2 for unimpeded path of travel, F2.3.3 for use of safety glass.

Compliance: F2/AS1 clause 1.0 NZS4223.3. Pro Tuf™ is manufactured in accordance with NZS4223.3 for human impact locations to project requirements. Safety glass is marked in accordance with NZS4223.3 clause 2.8.

F4 ***Safety From Falling***
Clause: F4.3.4.

Compliance: Glazing with Pro Tuf™ can be designed in accordance with NZS4223.3 clause 21 Window glazing safeguarding a fall, and clause 22 Barriers, to the project requirements, as well as other designs by specific engineering design to B1/VM1.

Limitations of use

1. Pro Tuf™ Toughened Safety Glass is readily available in the following sizes (design restrictions apply).

Glass Thickness	4 mm to 19 mm
Minimum Dimension	250 mm x 250 mm
Maximum Dimension	2800 mm x 6000 mm

Larger sized panes are available upon request and subject to longer lead time.

2. Pro Tuf™ is not classified as fire rated glazing.
3. The use of toughened glass involves a small risk of breakage resulting from nickel sulphide or other inclusions. Heat soaking is not mandatory but is highly recommended to reduce inclusion failures, particularly important in barriers from falling such as balustrades.
4. For frameless glazing and point fixed glazing application, not covered in NZS 4223, specific engineering design by Glass Projects is required.

Design Requirements

Pro Tuf™ toughened safety glass can be designed for use in projects with the following scope:

Any design and installation that follows NZBC B1/AS1 section 7 and the following glazing standards:

NZS 4223.1 Glazing in buildings – Glass selection and glazing

NZS 4223.2 Glazing in buildings - Insulating glass units
NZS 4223.3 Glazing in buildings - Human impact safety requirements
NZS 4223.4 Glazing in buildings - Wind, dead, snow, and live actions

Wind Zones: All NZS 4223.4 wind zones as well as Specific Engineered Design wind pressures when designed, used, installed, and maintained in accordance with Glass Projects standard details and requirements.

Exposure Zones: All NZS 3604 exposure zones when designed, used, installed, and maintained in accordance with Glass Projects standard details and requirements.

Pro Tuf™ Toughened Safety glass is custom designed and fabricated to the requirements of each project. The following selection must be confirmed by the specifier:

- Glass size.
- Required support type or framing method.
- Project wind zone or design wind pressure.
- Any glazing performance requirements that the glass should meet including centre of glass U-value, Shading Coefficient (SC), and Visible Light Transmission (VLT) as a minimum.
- Any impact or barrier loading the glass should resist.

Installation requirements

Glazing systems utilising Pro Tuf™ must be designed and glazed by Glass Projects or an approved installer.

Cleaning & Maintenance

Care must always be taken when cleaning any glass and clean, grit free water, cleaning solutions, cloths, brushes, sponges, and squeegee products must be always used.

During construction
Check weekly and clean every 1 - 2 months, or as required, during construction. Protect the glass from weld and grinding splatter, concrete and mortar plashes, and impact or scratch damage from other trades.

Regular maintenance
Proprietary cleaners should be used with a soft cloth, brush, or sponge, but a mild soap or liquid detergent and warm water can work well. After washing rinse with clean water and use a clean squeegee to remove excess water.

Ensure the glass is dry and spot free. Excess water droplets will evaporate and can leave dissolved minerals on the glass that can cause surface staining particularly when a hard water supply is used.

Never use harsh solvent, abrasive, or alkaline cleaners.

Never use scrapers or razor blades to remove paint spots or sticky residue from the glass surface.

The condition of glass should be checked as part of a regular building maintenance regime and should be cleaned as soon as any build of dirt or foreign particles is noticed, but as a minimum the following is recommended.

Industrial sites – glass should be cleaned every 1 – 2 months.

Urban areas - glass should be cleaned every 3 months.

Rural areas - glass should be cleaned every 6 months.

Samples

During the design phase, choosing the right type of glass is critical and viewing a particular glass type up close is essential to get a good understanding of its visual characteristics.

300 x 300mm glass samples are available from Glass Projects upon request. There are guidelines on how glass samples should be viewed to properly understand how different qualities of light and how different glazing methods and designs can affect a person's visual perspective of glass.

An alternative to glass samples is to view a project reference in real life. Glass Projects has an extensive range of case studies available to view on our website at glassprojects.co.nz/projects.

Please contact Glass Projects to discuss your needs.

Product Selection & Technical Assistance

We collaborate closely with our clients to understand their specific needs and develop innovative designs that seamlessly integrate with the overall architecture of the building. Our team of sales and engineering experts specialise in custom glass design and have a deep understanding of New Zealand regulations. We are available to provide advice on glass products to suit any application.