

ToughLam

Hi-performance laminated glass for the ultimate in safety, security and structural integrity.

 ToughLam RANGE

Defining Spaces.



G.JAMES

FEATURES

- Safety and security
- Noise control
- UV protection
- Single and multi-colour ceramic printing
- Standard and custom patterns
- Range of options



GJ ToughLam hi-performance laminated glass is ideal for custom windows, balustrades, pool fences, skylights, overhead glazing and glass fins, enabling architects and designers to maximise innovations in retail, commercial and residential projects.



ToughLam

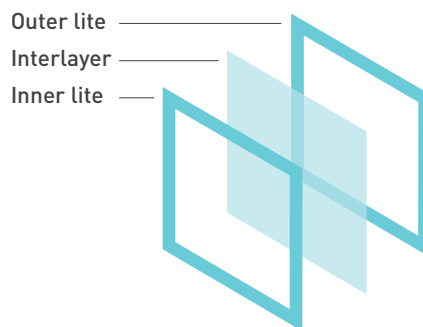
Hi-performance laminated glass provides superior safety, security and structural integrity on your next project.

With ever increasing demands for innovative design in retail, commercial and residential environments, the benefits of high performance laminated glass has become a vital component in applications such as skylights, overhead glazing, balustrades, swimming pool enclosures, custom windows and glass fins.

GJ ToughLam hi-performance laminated glass enables architects and designers to maximise innovations across commercial and residential markets delivering the very best in safety, security, solar and UV light control.

PROCESS

ToughLam hi-performance laminated glass consists of two or more sheets of heat strengthened or toughened glass bonded together by heat and pressure with an interlayer of either standard PVB or a specialist high strength SentryGlas® ionoplast to ensure the highest strength and structural performance.



Toughened glass is produced by heating the glass close to its softening point in the toughening furnace and then relatively cool air rapidly cools the outer surface of the glass while the inner layer of the glass cools at a slower rate. This process induces compressive stress in to the surface of the glass. When the glass is placed under load, this compressive stress must first be overcome before tensile stress can be induced in the glass. The result is that glass subject to this process is much stronger than annealed glass. It also has different breakage characteristics.

If one layer of ToughLam glass is broken, the combination of the strength of the unbroken glass and the tough plastic interlayer will help to retain the glass in the frame.

FEATURES

Safety – in vertical or sloped overhead applications, ToughLam can resist penetration from accidental impact. Being up to 2½ times stronger than normal laminated glass, ToughLam can resist much higher loads. If the glass is broken, the glass fragments adhere to the tough plastic interlayer and are retained in place. ToughLam provides safety from contact with broken or falling glass, or bodily injury by falling through the glass. ToughLam is the ideal choice for sloped overhead applications.

Security – standard laminated glass provides resistance to penetration from physical attack. By increasing the thickness of the interlayer and its strength, or by using multiple layers of strengthened glass, ToughLam can be specified for specialist security applications. (Bullet and bomb resistant glasses are also available as specialised G.James products.)

Noise control – ToughLam can be specified with a specially developed acoustic interlayer for enhanced noise reduction, achieved by providing noise dampening compared with the same thickness of standard glass.

Superior noise attenuation can be achieved by incorporating ToughLam into a GJ TwinGlaze insulating glass unit.

UV protection – the PVB interlayer used in ToughLam eliminates 99% of harmful ultraviolet radiation. When incorporated with solar control glass, fading can be significantly reduced compared to normal glass.

Solar control – ToughLam can be engineered with a wide range of solar control glass and interlayers to provide glare and Solar Heat Gain reductions and can be customised for the ideal balance of daylight, solar control and thermal insulation. Further shading can be incorporated with the addition of printed images or patterns.

PERFORMANCE OPTIONS

– Interlayers

ToughLam is available in a range of interlayers including PVB as standard or specialist high strength SentryGlas® ionoplast. The result is a durable, adaptable high performance glazing material that meets the most demanding requirements. It can also incorporate high performance acoustic interlayers for enhanced sound control or toned interlayers for increased solar performance.

– Heat Strengthened or Toughened Glass

ToughLam can be specified with either heat strengthened or toughened glass or a combination of both.

Heat strengthened glass is 1½ times stronger than annealed glass of the same thickness. When broken, heat strengthened glass breaks into fewer, larger pieces.

When heat strengthened laminated glass is broken, the combination of the tough plastic interlayer and the relatively large pieces help the glass stay in the frame.

Toughened glass is 2½ times stronger than annealed glass of the same thickness. When broken it breaks into a large number of very small pieces.





RANGE

ToughLam

ToughLam hi-performance laminated glass provides safety, security and structural integrity for the most demanding architectural applications – from skylights, canopies and overhead glazing to ultra strong window systems, internal and external balustrades, and pool enclosures.

A key advantage of ToughLam is its superior structural integrity, custom engineered for specific applications enabling architects and designers to maximise innovations across retail, commercial and residential applications, delivering the very best in safety, security, solar and UV light control.

Features

- Safety
- Security
- Noise control
- UV protection
- Solar protection

Applications

- Balustrades
- Skylights
- Canopies
- Custom windows
- Swimming pool enclosures
- Architectural features

ToughLam GRAPHIC

A key advantage of ToughLam is the ability to efficiently combine images and abstract graphics by specifying GJ ToughLam Graphic for use in screens, canopies and overhead glazing using the very latest small volume, large format ceramic printing process.

With excellent large format print registration, single or multi-coloured patterns can be printed with minimal joint allowances between glass panels. Incorporating ToughLam Graphic into vision panels or overhead glazing will enhance architectural dynamics and improve interior comfort by reducing the Solar Heat Gain properties of the glass.

Features

- Range of standard colours
- Durable finish
- Single and multi-colour ceramic printing

Applications

- Building façades
- Awnings
- Signage
- Shop fronts

ToughLam FLOOR

GJ ToughLam Floor provides a stylish, low maintenance and safe alternative to traditional flooring systems. Ideal for use in feature staircases, internal and external walkways, display areas and retail fit outs. It can be used to brighten interiors with natural daylight through several floors of a building.

ToughLam Floor is a high-end laminated product that encompasses all the physical design elements required in heavy trafficable areas combined with a range of standard or custom non-slip surface graphic designs for both practical and aesthetic considerations.

Features

- Stylish and low maintenance
- Custom made to meet your individual requirements
- Range of non-slip patterns available

Applications

- Internal and external walkways
- Staircases
- Entries and foyers
- Retail fit outs

GJ ToughLam

GJ ToughLam hi-performance laminated glass range is custom engineered for a wide range of retail, commercial and residential applications.



ToughLam hi-performance laminated glass provides the superior in safety, security and structural integrity.

ADVANTAGES

- Superior performance
- Short supply times
- Superior strength
- Available throughout Australia

APPLICATIONS

- Staircases
- Balustrades
- Skylights
- Canopies
- Overhead glazing
- Flooring
- Custom windows and doors
- Swimming pool enclosures
- Retail displays
- Residential and commercial buildings

HOW TO SPECIFY

The ToughLam range can be custom engineered to suit your project specific requirements.

GJ ToughLam

GJ ToughLam Graphic

GJ ToughLam Floor

The new range of ToughLam hi-performance laminated glass is now backed by our Engineering Support Package (ESP).

Our package of support services for ToughLam includes full Project Specifications, Structural Glass Engineering for your project requirements and Certification needed to deliver the highest quality, guaranteed glazing solutions to your customers.

Specify ▶

Complete glazing project specification and certification.

Engineer ▶

All structural glass and glazing analysis conducted by fully qualified engineers.

Certify ▶

Our team can provide fully certified solutions. Onsite inspection and consultation is also available if required.

Our fully qualified team can provide structural engineering capabilities attuned to the latest design and innovation throughout the industry, with significant expertise in all facets of structural glazing, to deliver rapid turnaround on any structural or civil projects. We can provide a highly efficient service for your next retail, commercial or residential projects.

For more information and pricing on the range of ToughLam hi-performance laminated glass and our ESP services, please contact G.James on 1800 452 637 or visit our website for further details.



ENGINEERING
SUPPORT PACKAGE



G.JAMES

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Glass Products

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New South Wales

26 Long Street
Smithfield, Sydney

Queensland

1007 Kingsford Smith Drive
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Other G.James Branches: (Qld) Eagle Farm, Logan City, Capalaba, Narangba, Ipswich, Gold Coast, Toowoomba, Sunshine Coast, Gympie, Hervey Bay, Bundaberg, Gladstone, Rockhampton, Mackay, Townsville & Cairns; (NSW) Sydney, Lismore, Newcastle, Taree & Queanbeyan; (SA) Adelaide; (NT) Darwin; (WA) Perth. © 2016 G.James Glass & Aluminium. SentryGlas® is registered trademark of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved. The trademarks G.James, hexagon forming GJ and DEFINING SPACES are trademarks of G.James Glass & Aluminium. ISO 9001:2008 Quality system in place at 1. Old Gympie Road, Narangba, QLD, 4504 2. Shed 23, Schneider Road, Eagle Farm, QLD, 4009 for G.James Safety Glass Pty Ltd (ABN 55010828065) – GJG14955



Quality
ISO 9001

SAIGLOBAL