



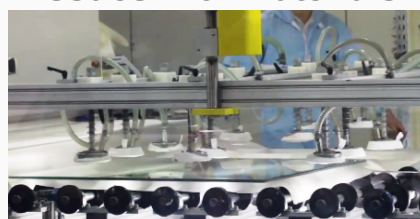
Why is laminated glass safe?

Laminated glass is considered a safety glass because broken pieces generally adhere to the interlayer instead of shattering into loose pieces that can easily cause harm and injuries.

What causes delamination?

Some Common Causes:

Issues with Materials



1) Use of Badly Tempered Glass

Tempered glass is not so flat as float glass. Surface stress, local bow, edge warping make it

easier to delaminate than float glass. If badly heat-treated glasses are used, the resulting laminated glass could be more vulnerable to delamination.

2) Poor Quality Interlayer

Issues with Glass Fabrication



1) Poor Process Control

Dirty glass surface can cause bubbles. This is one reason why the process of layering up the laminated glass configuration is done in the "clean room".

Issues with Design/Application



1) Environmental Conditions

If the site of application exposes the laminated glass to warm and moisture environment, the risk of delamination increases.

2) Designs with Exposed Glass Edge

PVB is typically used as the interlayer for laminated glass but is not recommended when the design leaves the glass edge exposed. An interlayer such as SGP, which has a higher edge stability is preferred to reduce chances of delamination.

Issues with Glass Installation



1) Sealant Incompatibility

Sealants which are incompatible with the interlayer used in laminated glass will promote delamination. We can provide such technical information to the contractors and installers.

2) Improper Handling

It is important to ensure that the laminated glass edges are dry and free of contamination before the sealants are being applied.

Is delaminated glass still a safety glass?

TEMPERED LAMINATED GLASS CAN STILL BE CONSIDERED A SAFETY GLASS AFTER DELAMINATION



But...

FLOAT LAMINATED GLASS HAS A LOWER RISK OF DELAMINATION THAN TEMPERED LAMINATED GLASS

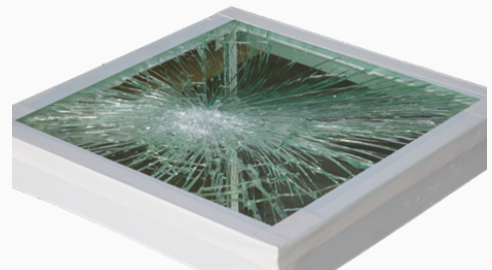
This is because tempered glass is usually less flat after the heat treatment. Surface stress, local bow, edge warping make it easier to delaminate than float glass.

Once delamination goes beyond acceptable standard, the glass configuration will lose its structure integrity and may cause unforeseen damages.

From safety glass to security glass.

Do you know?

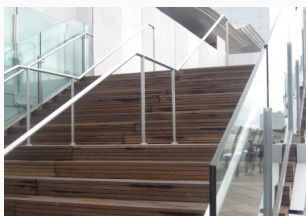
Glass can be laminated in multi-layers in varying glass and interlayer thickness, to fabricate glass that protects lives and shield us from natural and man-made disasters. [Anti-Bandit](#), [Bullet-Resistant](#) and [Storm/Typhoon-Resistant](#) glass are some examples.



BCA accepts laminated glass for...?

BCA acceptable solution

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H.3.5 Glass Barrier

“Where glass is used as a **part or whole of a barrier**, laminated glass shall be used.”



N Use of Glass at Height

Laminated glass “shall be used as the **glass material at height**.” where “used as a part or whole of the facade, roof, canopy or other type of overhead glazing of a building located at **height of 2.4 metres or more**”

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