

LAMINATED
GLASS

USES AND APPLICATIONS

DATA SHEET / Quebec

Version 2.0

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MULTIVER
Cutting edge of the glass industry



Glass Offered by Multiver

LAMINATED GLASS

SPANDREL GLASS DEFINITION

Laminated glass is a combination of at least two layers of glass separated by a plastic film covering the entire surface of the glass. The whole is then subjected to heat and pressure to ensure complete adherence of the film to the glass. Regarding laminated safety glass, the most commonly used interlayer is a PVB (polyvinyl butyral) plastic film. Polyurethane or EVA (ethylene-vinyle acetate) films can also be used. Should the glass break, the adherence between the glass and the interlayer will ensure that the broken glass stays in place for a certain period of time or until a determined load level is reached.

STANDARDS AND CERTIFICATES

Multiver meets the following requirements :

- CAN/CGSB 2 12.1 Categories I and II – Tempered or Laminated Safety Glass
- ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass
- CPSC 16 CFR 1201 Categories I and II - Safety Standard for Architectural Glazing Materials
- ANSI Z97.1 American National Standard

*Other standards and certificates may apply.



USES

Here are some examples of Multiver's laminated glass uses :

- Protection against personal risk of injury resulting from contact with sharp broken glass pieces.
- Necessary where fall protection is required (no collapse of glass).
- Protection of property, and protection against breaking and entering as well as vandalism.
- Protection against bad weather.
- Protection against firearms.
- Protection against explosions.

Windshields



Solarium roofs



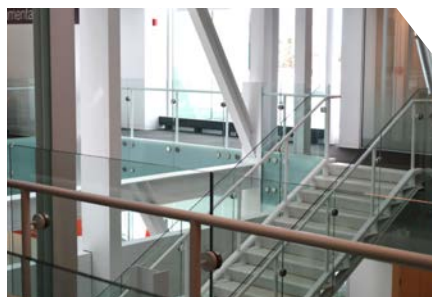
Skylights



Entrance canopies



Balustrades



Recording studios



Penitentiaries



Airports



Gymnasiums





BENEFITS

- ▶ Laminated glass provides **a high level of safety**.
- ▶ It can be tempered or heat strengthened to **increase its mechanical strength and thermal resistance** (must be combined with a PVB interlayer at least 1.52 mm thick).
- ▶ Vision through the glass is **not distorted** (when glass is not heat treated).
 - ▶ **Almost infinite variety of tints available** when one or several coloured films are combined (e.g. : Saflex® Vanceva®).
 - ▶ It makes **glass** that cannot be heat treated **safer** (e.g. : mirrors).
 - ▶ It significantly **improves soundproofing**.
 - ▶ **It reduces UV radiation by 99 %**.
 - ▶ **It can be used in monolithic form as well as in double- or triple-glazed insulated glass units. It can also be sandblasted, silk-screened, shaped, bevelled and enamelled.**
 - ▶ It can be assembled with **integral blinds as well as smart glass**, thus providing the ultimate comfort.
 - ▶ It can be **combined with low emissivity (low-e) glass** to improve the thermal resistance and overall performance of insulated units.



LAMINATED GLASS SUPPLIERS

Multiver offers a wide variety of laminated glass. Most of the products we currently offer are listed below. Products may be added to the list or removed from it, depending on demand.

TABLE 1 : Name and thickness of available glass

	<ul style="list-style-type: none"> - 0.015 - 0.030 - 0.060 - 0.090 - 0.100 - SC : 0.030 	BG R10/15, BG R20, HR100, Sound Control (SC), Sound Control* (SC+), Colour, Hurricane Glazing, Black and White, UV+	SentryGlas®	0.035 - 0.060 -0.090
	<ul style="list-style-type: none"> - Storm : 0.075 - Colour : 0.015 	*Various thicknesses available		

* Certain PVB interlayers are not kept in stock. A minimum quantity is required for some products.

GLAZING REPLACEMENT

To prevent thermal stress breakage and increase the safety factor, glass can be heat-strengthened or tempered. A laser-engraved logo can be found in one of the corners of any tempered or heat-strengthened glass product.



Multiver logo / Tempered glass



MANUFACTURING SIZE

Due to the wide selection of products available as well as the number of suppliers, maximum sizes may vary. Minimum sizes may also vary depending on intended uses. That being said, the average maximum size of a glass sheet is approximately **84 inches x 144 inches (2134 mm x 3657 mm)**. Upon request, we can obtain glass sheets of 102 inches X 160 inches (2590 mm X 4064 mm).

MAINTENANCE

Once the glass is installed, **it is recommended that all exposed surfaces be cleaned, if needed**, in order to preserve the esthetic qualities of the product. Rub gently with a soft cloth, using cold or warm water and non-aggressive chemicals for all glass surfaces. Caution should be exercised when choosing cleaners. Abrasive cleaners must never be used as they can cause damage to the glass surface. Several products are specifically designed to clean glass. Metallic objects should not be used because they could scratch the glass.

Never use any products containing solvents.

INSTALLATION

When installing laminated glass/laminated sealed units, **it is imperative to ensure the compatibility of sealants that are close to or in contact with the laminate films**. For further information, contact us or **consult the document on sealant compatibility with laminates**.

USEFUL ADVICE

Insulated units with laminated glass can now be fitted with magnetic or electric Privavision integrated blinds. For further information, consult the documents on **integrated blinds** available on our Web site.

For various uses, silk-screened and/or engraved glass (sandblasted designs or patterns) can be laminated.

The wide variety of possible compositions with laminated glass will allow you to show architectural genius you did not even know you had. Spider glass clamp system, balustrades, glass partitions, canopies, skylights, signs... There is no limit.





ADVICE ON APPLICATIONS WITH LAMINATED GLASS

Here are a few options we recommend :

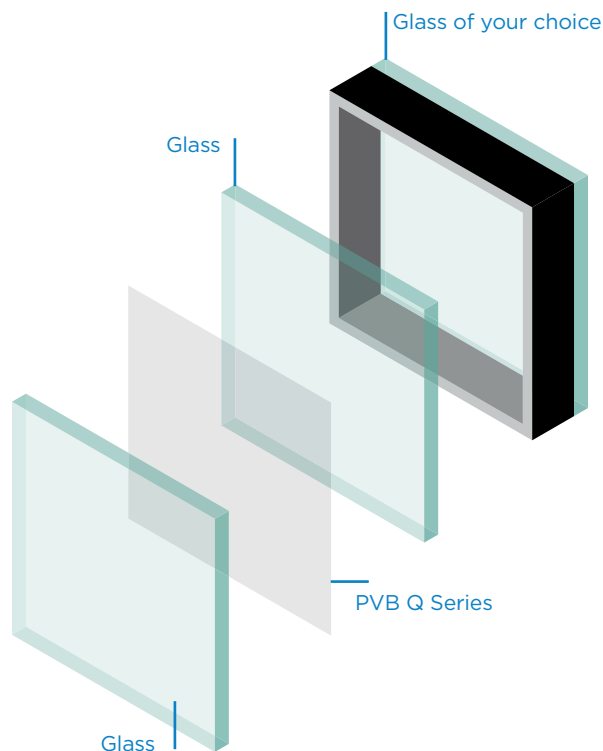
FOR ENHANCED ACOUSTIC PERFORMANCE :

Glass laminated with an acoustic polyvinyl butyral interlayer, commonly known as **Saflex® Q series acoustic PVB interlayer**, and laminated with another type of glass of your choice. Several layers can be laminated, offering virtually endless combination possibilities.

Many more options become available by **assembling** the laminated glass as described above in an **insulated glass unit**.

PURPOSE :

Reducing inside and outside noise opposite insulated glass units, glass partitions or even skylights.



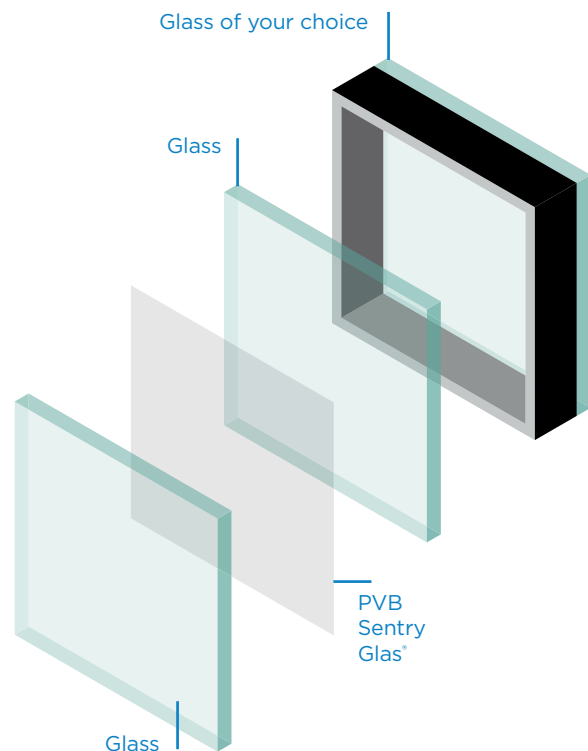
TO INCREASE GLASS SAFETY FACTOR AND MECHANICAL STRENGTH :

Glass laminated to a **PVB DuPont™ SentryGlas® interlayer**, and laminated with another type of glass. PVB SentryGlas® is nearly 100 times stiffer and five times stronger than standard PVB.

Many more options become available by **assembling** the laminated glass as described above in an **insulated glass unit**.

PURPOSE :

Insulated glass units resistant to impacts, powerful wind gusts, gunfire, explosions, vandalism, falling broken glass, etc. (certain conditions apply). Useful for protecting valuables against theft. Note that other combinations should be considered to meet your specific needs.





ADVICE ON APPLICATIONS WITH LAMINATED GLASS

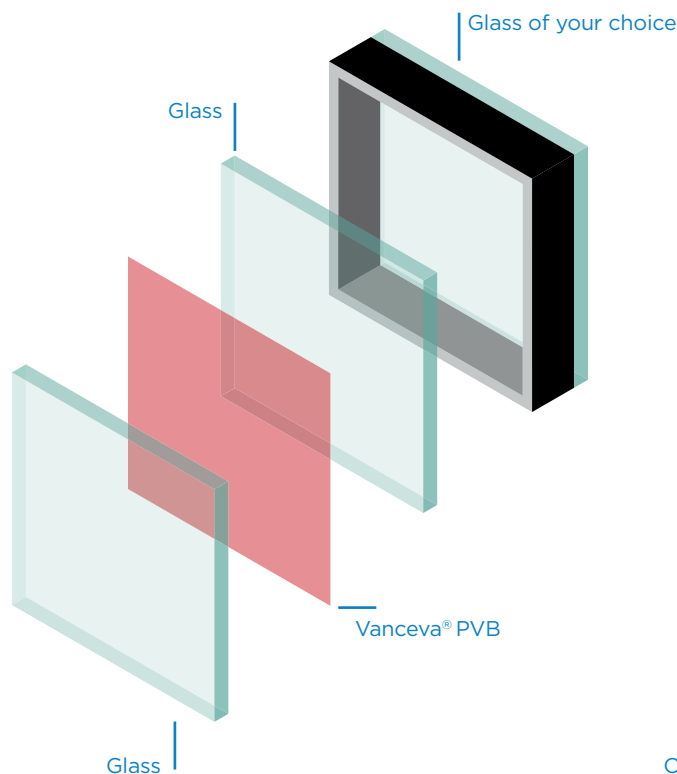
FOR AN OPAQUE GLAZING OR ORIGINAL COLOURS :

Glass laminated to an **opaque black or white PVB interlayer and/or a Saflex® Vanceva® colour PVB interlayer**, and laminated with another type of glass of your choice. To discover the impressive range of colours we offer, go to Vanceva's Web site (www.vanceva.com). Once again, numerous combinations are possible.

Many more options become available by **assembling** the laminated glass as described above in an **insulated glass unit**.

PURPOSE :

There is a whole variety of uses to choose from for both indoor and outdoor glazing designs that are **anything but ordinary**.



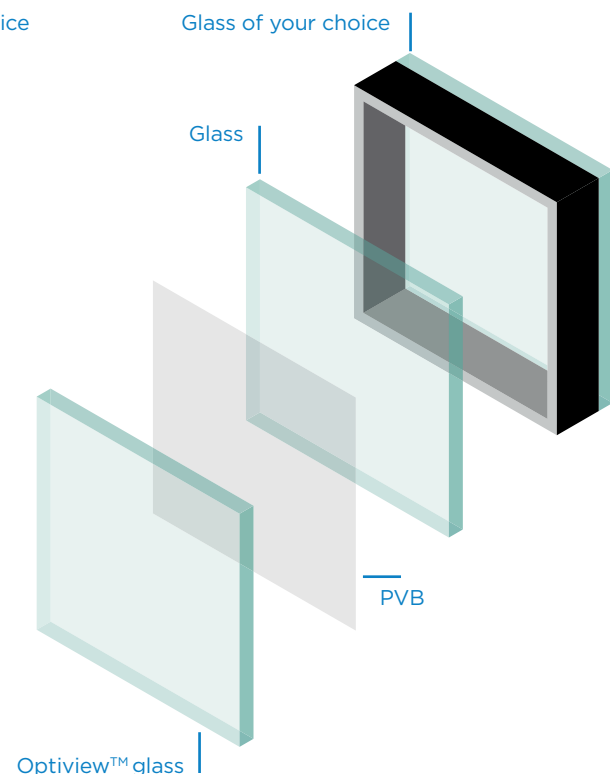
TO REDUCE GLARE :

OptiView™ anti-reflective glass laminated to a PVB interlayer of your choice as well as another type of glass. By reducing reflections and increasing visible light transmittance, this product offers **better visibility through the glass**.

Many more options become available by **assembling** the laminated glass as described above in an **insulated glass unit**.

PURPOSE :

For any projects **where reflections are undesirable**, such as condos, museums, storefronts, car dealerships, etc.





This document gives a general description of the product. For further information, please contact an authorized supplier of Multiver products. The use of any of the products mentioned here is the sole responsibility of the users. Multiver assumes no responsibility for the use of its products.

