

Laminated safety and security glass

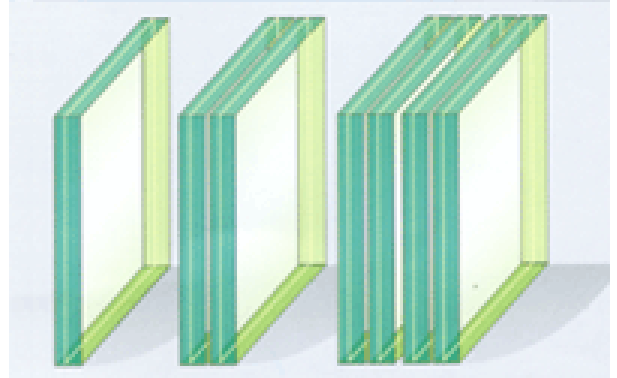
----- Choose an enhanced security glass to protect yourself against break-in attempts or vandalism

Description

Noval laminated safety and security glass, comprises two or more sheets of glass bonded together with one or more interlayer's of polyvinyl butyric (PVB) film.

Noval laminated safety and security glass incorporates a single PVB sheet with a nominal thickness of 0.38mm, distinguishing it from Noval laminated safety and security glass which has a minimum thickness of 0.76mm. Laminated glasses with different levels of safety and security can be obtained by varying the number and /or thickness of each of the components.

If the glass breaks, the fragments of glass are held in place by the interlayer(s). In fully framed installations the broken glass retains a residual strength while awaiting replacement.



Applications

Protection against injury

If the glass breaks, the fragments of glass remain bonded to the interlayer. This safety feature, which is often mandatory (for example : in public buildings, schools, crèches, etc), is also ideal for residential buildings, where it protects the occupants.

The use of glass in roofs must meet safety, enhanced thermal insulation and solar protection requirements. Safety is ensured by the use of a laminated safety or security glass (inner leaf of the overhead glazing). If an object falls onto the glazing, Noval laminated safety and security glass may prevent the object from passing through the glass and also minimizes the risk of fragments falling into the space below.

Depending on the composition, Noval laminated safety and security glass ensures that structures conform to the regulatory requirements for overhead glazing.

Guarding and balustrade

Noval laminated safety and security glass has:

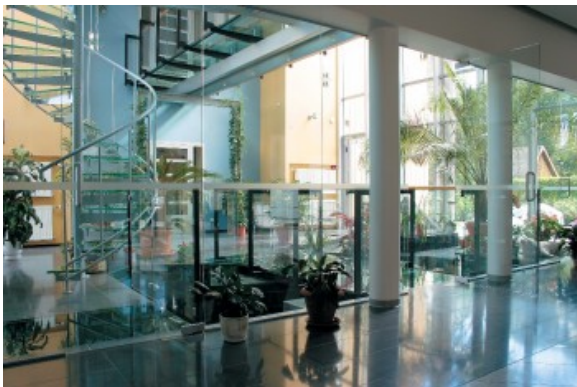
- Residual stability in the event of breakage
- Retention of the object which caused the glass to break (depending on the required safety and security level) providing that it is accurately sized, installed, supported adequately and that it complies with current regulations and requirements (BS EN12600).

The main areas in which laminated safety and security glass is used are: guarding, glazed partitions and sloping glazing.

Protection against vandalism and burglary

Noval laminated safety and security glass, installed in an appropriate frame, can be an important deterrent to

ensure the security of property and occupants in a building.



- Noval laminated safety and security glass contributes to the security of Business and offices. Combined with additional protection, if required, this glass can be used in shop windows and doors, entrance doors and windows in offices appropriate to the specified level of protection
- The level of the risk and the regulatory requirements determine the necessary level of protection and thus the type of Noval laminated safety and security glass to use .This selection is determined by the type and value of the property to be protected , the type of building (for example :building which is easy of difficult to access, private house ,etc) and its location (for example : isolated premises ,high-risk area, etc).

The risk must be assessed on a case by case basis and must take any insurance specifications into account.

Applications.../...

Protection against firearms

Noval bullet –resistant laminated security glass provides protection against armed attack (e.g. financial institutions, banks, guardrooms, official or military units, etc).

The NO Splinters (NS) or minimal spall version protects against injury from splinters of glass, which may fly from the rear surface of the glass upon attack.

Noval laminated safety and security glass protects against bullets from handguns and rifles. Noval laminated safety and security (HC) glass protects against shotgun fire.

Noval laminated safety and security glass (FS) combines bullet resistance (against certain firearms) with protection against vandalism and burglary. This glass is therefore suitable for multifunctional applications requiring safety, security and protection.

Protection against explosions

Minimizing the consequences of an accidental or criminal explosion involves the use of glass which protects against the pressure generated by the explosion .For industrial use; any premises located in hazardous areas should use a Noval laminated safety and security glass.

Protection against noise

Products in the NOVAL Stadia range have acoustic insulation properties .They can be used in any applications requiring acoustic insulation.

SILENCE laminated acoustic and safety glass can be used in applications where high acoustic insulation is essential (e. g. interpreting booths , residential areas in close proximity to airport, towns or city centers ,railway lines or motorways ,etc), without compromising the safety performance.

Protection against UV light

The PVB interlayer in the Noval laminated safety and security glass range filters most UV rays .It can be used to reduce the discoloration of items inside a building that are exposed to direct sunlight .(e. g. shop window displays ,curtains , carpets , conservatories etc).

Glass floor panels

NOVAL LITE-FLOOR is a laminated safety glass which has been specially designed and sized for use in floors. Note: The behavior of the polyvinyl butyric (PVB) interlayer varies with temperature. Noval laminated safety and security glass is mechanically stable in a temperature range between 10°C and 45°C, inside the glass assembly.

Range

The standard Noval laminated safety and security glass range comprises two or more leaves of Noval clear glass. Other glass products can, however, be incorporated:

- Noval extra clear glass
- Noval body-tinted glass
- Noval off-line low-emissivity glass
- Certain patterned glasses .In these cases, the name of the product is added

Processed product variations

Glass in the Noval laminated safety and security glass range can be*:

- Edgeworked after assembly, providing it does not comprise any toughened or heat -strengthened components
- Sandblasted or acid etched
- Heat-strengthened, toughened or heat soak tested. The components must be heat-treated before laminating.
- Drilled and notched: The individual components are best processed prior to laminating where practical.
- Coated with a solar control coating, or a low-emissivity coating

- Assembled into double-glazing
- Certain treatments may alter the mechanical properties of the product and modify its classification

Installation Guidelines

- All the products described above must be installed in accordance with current national standards and regulations and our own installation instructions. Unless gasket glazed into a drained and ventilated system, particular care must be taken to protect the PVB interlayer against water ingress. Prolonged contact with water can cause the interlayer to swell and ultimately lead to delamination.
- The interlayer should be protected from contact with unsuitable mastics and sealants containing mineral or vegetable oils and unsuitable glazing compounds such as acid curing silicones. Only use products classified as suitable for PVB laminated by the manufacture. In case of doubt always check compatibility.
- For all installations, a thermal safety risk analysis is necessary to ensure that the Noval laminated safety and security glass is not susceptible to break as a result of thermal stress. In order to minimise this risk, locating heat generating devices close to the glazing should be avoided (e.g. spotlights, radiators and convectors which could cause a localised rise in temperature). Similarly, no screens or films should be applied to the glass (posters, signage, adhesive lettering etc).
- Noval laminated safety and security glass should not be exposed to temperatures of more than 60°C before and post glazing.
- When incorporated into double-glazing, the laminated glass can be positioned on the inner or outer pane of the unit, depending on the specific safety / security requirements of the application.
- To provide enhanced protection against vandalism, burglary, firearms and explosions, Noval laminated safety and security glass must be used with the appropriate framing systems. Reference from the standards must be made, depending on the level of protection required, to ensure that the performance of the frame used is fully compliant.

For more information, you can refer to Noval's website: www.novalglass.com

European building codes

Noval products contain at least one PVB interlayer of a minimum thickness of 0.38mm. They therefore meet the European norms on laminated safety glass.

Current European norms (www.cenorm.be - www.gevvp.org/cemarking)

Normative References:

EN356	Glass in building - Security glazing - Testing and classification of resistance against manual attack.
EN357	Glass in building - Fire resistant glazed elements with transparent or translucent glass products - Classification of fire resistance.
EN410	Glass in building - Determination of luminous and solar characteristics of glazing (light transmission, direct solar transmission, total solar energy transmission and ultraviolet transmission; corresponding characteristics of glazing).
EN572	Glass in building - Basic soda lime silicate glass products
EN673	Glass in building - Determination of thermal transmittance (U value) - Calculation method.
EN674	Glass in building. Determination of thermal transmittance (U value) - Guarded hot plate method.
EN675	Determination of thermal transmittance (U value) - Heat flow method
EN1063	Glass in building - Security glazing - Bullet-resistant glazing - Classification and test method.
EN1096	Glass in building - coated glass.
CR1187	Test methods for external fire exposure to roofs.
EN1748-1	Glass in building - Special basic products. Part 1: Borosilicate glasses.
EN1748-2	Glass in building - Special basic products. - Borosilicate glasses - Part 2: Glass ceramics.
EN1863	Glass in building - Heat strengthened glass.
EN12150	Glass in building - Thermally toughened soda lime silicate glass.

EN12337	Glass in building - Chemically strengthened soda lime silicate safety glass.
EN12543-1	Glass in building - Laminated glass and laminated safety glass - Definition and description of component parts.
EN12543-2	Glass in building - Laminated glass and laminated safety glass - Laminated safety glass.
EN12543-3	Glass in building - Laminated glass and laminated safety glass - Laminated glass.
EN12543-4	Glass in building - Laminated glass and laminated safety glass - Test methods for durability.
EN12543-5	Glass in building - Laminated glass and laminated safety glass - Dimensions and edge finishing .
EN12543-6	Verre dans la construction - Verre feuilleté et verre feuilleté de sécurité - Aspect.
EN12600	Glass in building -Pendulum test - Impact test method and classification for flat glass.
EN12758	Glass in building - Glazing and airbourne sound insulation - Product descriptions and determination of properties.
EN13024	Glass in building - Thermally toughened borosilicate safety glass.
EN13501-1	Reaction to fire - Classification.
EN13541	Testing and classification of resistance to explosion pressure.
EN14449	Evaluation of conformity/Product standard
EN14719	Glass in Building - Heat soaked soda lime silicate glass.
EN14718	Glass in Building - basic alkaline earth silicate glass products.