Pyroguard

TECHNICAL FIRE SAFETY GROUP

Storage and handling guide

Pyroguard products: guidelines for users

2023 EDITION

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1 Introduction

The purpose of this storage and handling guide is to detail good practice in storage, handling, processing, loading, unloading and glazing of Pyroguard products.

2 Storage handling and processing information

2.1 Introduction

This section provides details on handling and processing Pyroguard fire resistant safety glass products to maintain product quality and maintain the warranty (see section 11).

2.2 Storage

Pyroguard stock sheets should always be stored in their original end-cap case or, when unpacked, on suitable racking as used throughout the glass industry. Particular attention should be given to the bottom/resting edge to ensure it is not in contact with an uneven or hard surface. Care should be taken when handling the glass remembering that, until glazed, the individual thin glass layers may be damaged by small edge impacts.

All glass products should be stored indoors in dry conditions out of direct sunlight.

For manual handling appropriate PPE should be worn, and training should be given and recorded on a training matrix, as is standard practice for CE/UKCA Marking in the glass industry. Care should be taken with the heavier weight of larger and thicker sheets.

We recommend reference to the Glass and Glazing Federations ‘Code of Practice: Glass Handling’.

2.3 Loading and unloading

2.3.1 Loading and distribution of stock packs

Once the pack is ready for distribution then, prior to loading, an outer label should be applied with the correct customer details. This label should bear the CE Mark and/or the UKCA Mark and should be kept with the pack until all the glass in the pack has been used. The information contained within the label must be passed on through the individual cut sizes to the point of installation.

Check lifting points and end-cap conditions prior to the lift. End-caps should be banded or suitably restrained individually to allow them to be withdrawn one at a time. Whilst unloading glass from a single end-cap it should be placed on case or block supports set at 4-5º lean. Care should be taken when removing metal banding from end-caps. Eye protection and gloves should be worn by the person cutting the banding and no-one should be near enough to be struck by the strap whipping when cut.

2.3.2 Unloading a pack with HIAB

- Glass should be unloaded by the HIAB driver
- Store at an angle of 7° (minimum) before removing end-cap
- Secure pack with banding or suitable device if transporting
- Before lifting, ensure no-one is stood within 4 meters of the load

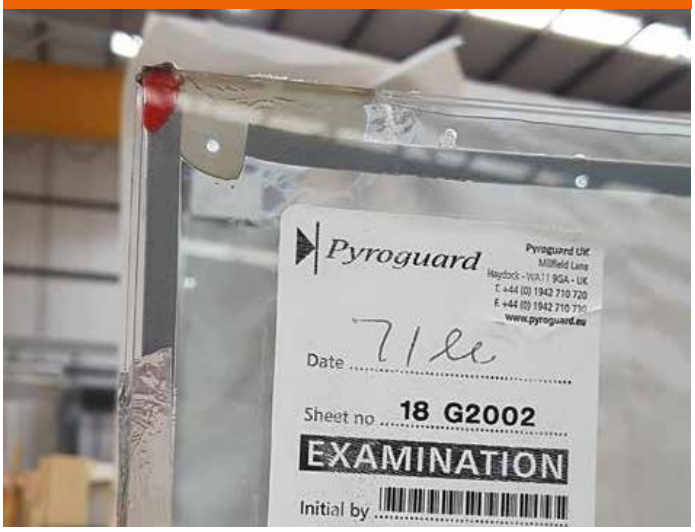
2.3.3 Unloading normal

- Before removing banding, ensure pack is secured by crane and all other packs are still banded to A-frame
- Glass should be carried at a low level
- Do not leave pack free-standing
- Store at an angle of 7° (minimum) before removing end-cap
- Before lifting, ensure no-one is stood within 4 meters of the load

2.4 Cutting

Single laminate Pyroguard Rapide and Pyroguard Advance products made from float glass can be cut on a laminated glass cutting table or by scoring the glass by hand on each side and then snapping through. In some climatic conditions the interlayer may need the application of additional heat to separate to cut. There will be a 10 mm wide area around the perimeter of stock sheet sizes of Pyroguard Advance and Pyroguard Rapide which contains a tape and no resin, this must be removed and discarded.

A cut size pane of Pyroguard Advance and Pyroguard Rapide must not include this 10 mm perimeter as it contains no fire rated interlayer



Pyroguard Rapide, Pyroguard Rapide Plus and Pyroguard Advance products thicker than single laminate must be cut with a diamond-tipped saw blade, normally on a specialist-built vertical saw.

For best results the glass should be against the saw with the glass fully supported to prevent vibration.

All glass products, especially those which have been saw-cut, should be washed and dried as soon as possible after cutting to remove any chance of surface damage. Poor cutting quality can lead to breakages during handling.

Pyroguard EW30 Maxi Impact, EW30 Maxi Satin Impact, EW60 Impact and EW60 Satin Impact require the edges of the cut glass to be polished as do SWS products. This is an essential processing step that must be carried out.

2.4.1 Traceability

Once the glass sheet has been placed on the cutting table, it should not be moved as there will be a risk of scratches on the glass.

Once the cutting has started, each cut must be completed without interruption, as the cutting fluid (water) may dissolve components of the interlayer and will subsequently produce stains on the surface of the glass.

It is good practice to clamp the glass at the top of the cut once the blade is halfway through the vertical cut. This will prevent vibration along the cut edge and prevent venting into the body of the glass. The clamp should only be applied at 'finger-tight' pressure.

The saw blade must be cooled by cutting fluid (water) during the sawing process. During this operation, the temperature of the water should not show a difference exceeding 8-10°C with the ambient temperature. If the temperature is lower, there is a risk that cracks may appear in the glass during the cutting.

Pyroguard advise that the type of saw blades to be used are:

- Diamond discs WI-400-10-3, 6-7
- Diamond discs WI-350-10-3, 2-7

Once the glass has been cut, it is important to dry the edges and clean away any residue marks on the glass. The residue marks can be removed by using a general glass cleaning fluid and a fine grade steel wool ('type 000').

2.4.2 Cutting using a water-jet cutter

Before cutting, the glass should be checked for any bowing. If the glass is bowed it should be stored horizontally for approximately 8 hours. The supporting table must be flat.
Polystyrene sheets should be placed on the water cutting bed to support the glass and prevent any scratches to the surface.

The water-jet cutter should be run at a pressure of 3100 bar at a feed of between 0.9 – 0.6 m/min depending on the glass thickness (i.e. 15 mm @ 0.9m/min, 27 mm @ 0.6m/min).
When cutting is complete, all surfaces of the glass should be cleaned and dried. After this initial clean, the glass should be washed in a washing machine and then thoroughly dried prior to any taping process.

2.4.3 Recommendations when taping the edges

No edge taping is generally required for the finished size glass of Pyroguard Rapide providing the glazed edges will always remain dry (such as in interior glazing or in a drained or fully bedded external application).

If there is any chance that the glass edge may be in contact with moisture or in high humidity, such as swimming baths or tropical countries, a metal foil edge tape should be applied to all edges before glazing.

Tape must always be applied to Pyroguard Rapide Plus and Pyroguard Advance to avoid water damage in transport and in normal installed use of the product. Only Pyroguard recommended aluminium tape should be used to tape the edges of the cut sized glass.

All edges must be thoroughly dried before any taping takes place to ensure good adhesion of the tape.

Fold and apply the aluminium tape carefully onto the glass. The aluminium tape should be applied evenly along each edge of the glass and pressed smooth sealing all open creases. The corners of the tape should be ‘nibbed’ with a blade to allow a neat fold at the corners. If the glass is to be used for an IGU, cut the aluminium tape back on one side up to approximately 3 mm overlap.

Note: CNC milling type machines are not recommended for cutting Pyroguard products.

2.5 Storage and handling of Pyroguard Protect to ensure quality

Pyroguard Protect glass products should always be stored in its case or when unpacked on suitable racking as used throughout the glass industry. Particular attention should be given to the bottom/resting edge to ensure it is not in contact with an uneven or hard surface.

All glass should be stored in dry conditions, indoors and out of direct sunlight. Glass should be stored between -10 and +45°C. Care should be taken when handling the glass remembering that, until glazed, the individual glass layers may be damaged by small edge impacts.

For manual handling PPE should be worn, as normal in the glass industry, and care should be taken with the heavier weight of larger and thicker sheets.

3 Shipping

3.1 Pyroguard stock sizes

Pyroguard stock sheets are shipped in end caps. Further distribution of sheets should be in similar packaging or on appropriate A or L frames.

3.2 Stillage / case

Glass will often be transported by land, air and sea. The packaging required must allow for the risk of damage and in turn the safety of operators handling glass. Pyroguard products must be secured to a frame or packed securely prior to shipping. Usually, a stillage or a case is used. Packaging should guard against heavy vibration by setting the glass on soft materials. It should guard against direct impact during shipping and protect against rainfall usually by wrapping in a film. The stillage should be selected to be larger in face dimensions than the glass to be shipped to avoid direct glass impact during shipping.

Frails shall have an angle lean of at least 4º if the vehicle is parked on horizontal ground under the most unfavourable loading conditions for loading or unloading single plates or glass units the frail shall be provided with a device which indicates to the operator that the angle of lean is maintained correctly.

Protect against tipping of the package by having wide based stillage or case excessive stress on the glazing.

3.3 Glass retention devices

Provisions shall be made for retaining the glass. If retention devices are not part of the equipment, appropriate instructions shall be included in the accompanying documentation. The design of glass retention devices shall demonstrate sufficient resistance to the glass; the mass of the glass to be transported, the dynamic forces and the friction forces which can occur under extreme operating conditions therefore shall take into account for the following:

a. Prevention of damage to the glass;
b. Measures against failures or the unintended release of the retention devices.

The design of glass retention devices shall demonstrate sufficient resistance to the glass; the mass of the glass.

3.4 Belts / straps

Belts or straps are manufactured in accordance with the requirements of EN 13246. Glass should be strapped to the case or stillage to avoid it moving independently of the packaging. The supplier will ensure that the banding used is suitable to retain the glass in transit. Consideration should be given to the movement of the stillage and decanting where additional banding may be required. Panes can be banded or suitably restrained individually to allow them to be withdrawn from the stack one at a time.

Avoid excessive stress on the glazing. Glass should be lightly strapped, and edge protectors used to avoid glass and strap contact.

3.5 Edge protectors

Edge protectors are manufactured to EN 13393 in a wide variety of forms and sizes, which are categorised as follows;

- Flat: Flat or strip form used for product protection, normally folded or wrapped around the edge during application of the strap
- Corner protectors: Small molded cut or formed pieces (up to 100 mm in length) used as edge protectors where no additional packaging strength is provided
- Profiles: Pre-formed lengths (greater than 100 mm in length) used for edge protection or reinforcement

3.6 Pads

Due to the nature of glass transportation, there is a risk that a vacuum can be created between sheets. The supplier shall ensure that appropriate transit pads have been fixed to protect the glass and reduce the risk of injury when unpacking whereby a vacuum could cause a breakage of glass.

3.7 Shipping

Securing the load to the vehicle will be the joint responsibility of the driver and consignor. However, the supplier must ensure that the glass, stillage or packing crate is properly stowed on the vehicle. Information related to the correct storage of packed glass must be passed to the logistics department/company when transport is arranged. Ideally a loading/securing plan needs to be drawn up and agreed by the consignor and logistics provider. Due to its fragile nature and varying sizes glass must be secured on the vehicle. Using the similar process for stowing glass on a stillage or in a crate securing straps must be in good condition and of a suitable tensile strength, complete with edge protectors where necessary to secure the pack or stillage from moving in transit. Anchor points,

retaining straps and headboards are commonplace on flat bed, inloaders and curtain-sided trailers and should be utilised as an integral part of the load securing requirements where and when possible.

Anchor points must meet the relevant Standards. For example, eye bolts to BS 4278-19846 and shackles to BS 35517 and must be used to attach straps prior to departure. The supplier shall satisfy themselves that the glass is properly secured for transport before permitting its departure.

It is advised not to ship Pyroguard IGU by air due to problems of pressure equalization. The conditions created through transportation methods should be considered to avoid subjecting the Pyroguard glass to conditions beyond its capability.

At the destination, arrangement should be made for the product to be stored undercover and safely away from construction vehicles and moving equipment to avoid site damage. The conditions of storage should be considered to avoid subjecting the Pyroguard glass to conditions beyond its capability.

4 Glazing

4.1 Unpacking from shipping packaging

Check lifting points and stillage and case conditions prior to the lift. The size and configuration of these units must have already been agreed between supplier and principal contractors before dispatch, therefore an agreed method, and equipment to be used, should be in place before the consignment arrives on site. Stillages and cases should be banded or suitably restrained individually to allow them to be withdrawn from the stack one at a time. Whilst unloading, use appropriate restraints to retain remaining cases in position to prevent any movement due to wind, impact or other actions. Do not overload frames or racking when unloading single cases chocks must be used under them to give the required angle and prevent forward movement of individual sheets or the case. Cases that can lean on 'A' frames or other purpose-built racking that can support the materials in a stable manner at a lean of 3-6º from vertical is commonly recommended. 5-6º is recommended for transportable racks, pallets and stillages.

4.2 Installing

Unless stated otherwise hardwood or non-combustible setting blocks (Vermiculite, Promatect H, Supalux, etc…) should be used to position the glass in the aperture in order to give sufficient edge cover, to ensure room for thermal expansion, good fire performance, stable positioning, elevation of the glass in the rebate and to hide any edge sealant.

In doors, glasses are often glazed heel-toe with 4 setting blocks at a diagonal to ensure that the glass does not move.

The following table lists typical edge cover allowance for Pyroguard products.

Range	Type	Edge cover*
VI, TVI (IGU, TGU)		≥13 mm
Pyroguard Protect	Toughened nanocomposite gel	≥13 mm
Pyroguard Firesafe	Toughened-monolithic (and VF variants)	6-10 mm
Pyroguard Rapide	Cuttable resin	≥10 mm
Pyroguard Rapide Plus	Cuttable sodium silicate	≥10 mm
Pyroguard Advance	Cuttable nanocomposite gel	≥10 mm
		*please request specific guidance when planning testing

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