

Glass Handling and Safety Guide

Glass handling and safety advice

Viridian Glass offers these recommendations for handling and safety as a general guide only and it is recommended that advice should be sought from professional glass handlers.

It should be noted that with regards to glass storage and handling recommendations, please be advised that other methods exist which the user may wish to undertake. However, it is strongly recommended that professional advice is sought as to the appropriateness of the method being considered.



Personal Protective Equipment (PPE)

PPE is used in the workforce to protect employees from hazards. PPE refers to necessary items such as protective clothing, hard hats, eyewear, footwear, gloves and gauntlets. PPE does not control workplace hazards. Instead, PPE aims to protect employees in the event a hazard occurs.

Where PPE is required by workers, it must be supplied by the employer and comply with the relevant Australian Standard or equivalent. Workers must be trained in how to use and maintain their PPE. It is good practice to provide a choice of PPE e.g. a selection of different types of gloves, to allow workers to choose the type that suits them best.

Glass can be an extremely hazardous material to handle, and use of the correct PPE is critical in maintaining a safe work environment.

Requirements

All personnel involved in glazing tasks must use the following PPE:

- Eye protection
- Level 5 cut protection gloves
- Level 5 cut protection forearm guards or gauntlets
- Level 5 cut protection apron
- Long sleeves and long trousers
- Safety footwear

'Level 5' is the highest cut protection rating for PPE, and care must be taken that PPE selected conforms to this. It is a management responsibility to ensure workers are using the correct PPE.

If management believes that these requirements should be varied, tasks must be subject to a detailed risk assessment, to identify the most suitable PPE for the work being carried out.

Where jobs involve additional duties other than regular glazing tasks, those jobs must also be risk assessed to identify any additional PPE and other hazard controls. This includes processing, transporting, loading/unloading operations and those tasks performed on a site that is significantly different to your regular workplace.



Handling of glass

Employees should learn how to detect flawed glass, the correct lifting techniques, the procedures for using various lifting and carrying aids and the personal protective equipment (PPE) required when handling glass.

Factors to consider are:

- Use appropriate lifting equipment to reduce manual handling wherever possible or seek assistance if such equipment is not available
- Minimise the carrying distance of the glass
- NEVER attempt to catch or stop falling glass
- NEVER move end-caps on the blades of a forklift
- Always wear cut and puncture resistant gloves and gauntlets when handling glass

Viridian employees are NOT authorised to operate third party mobile plant or lifting equipment on a customers site.

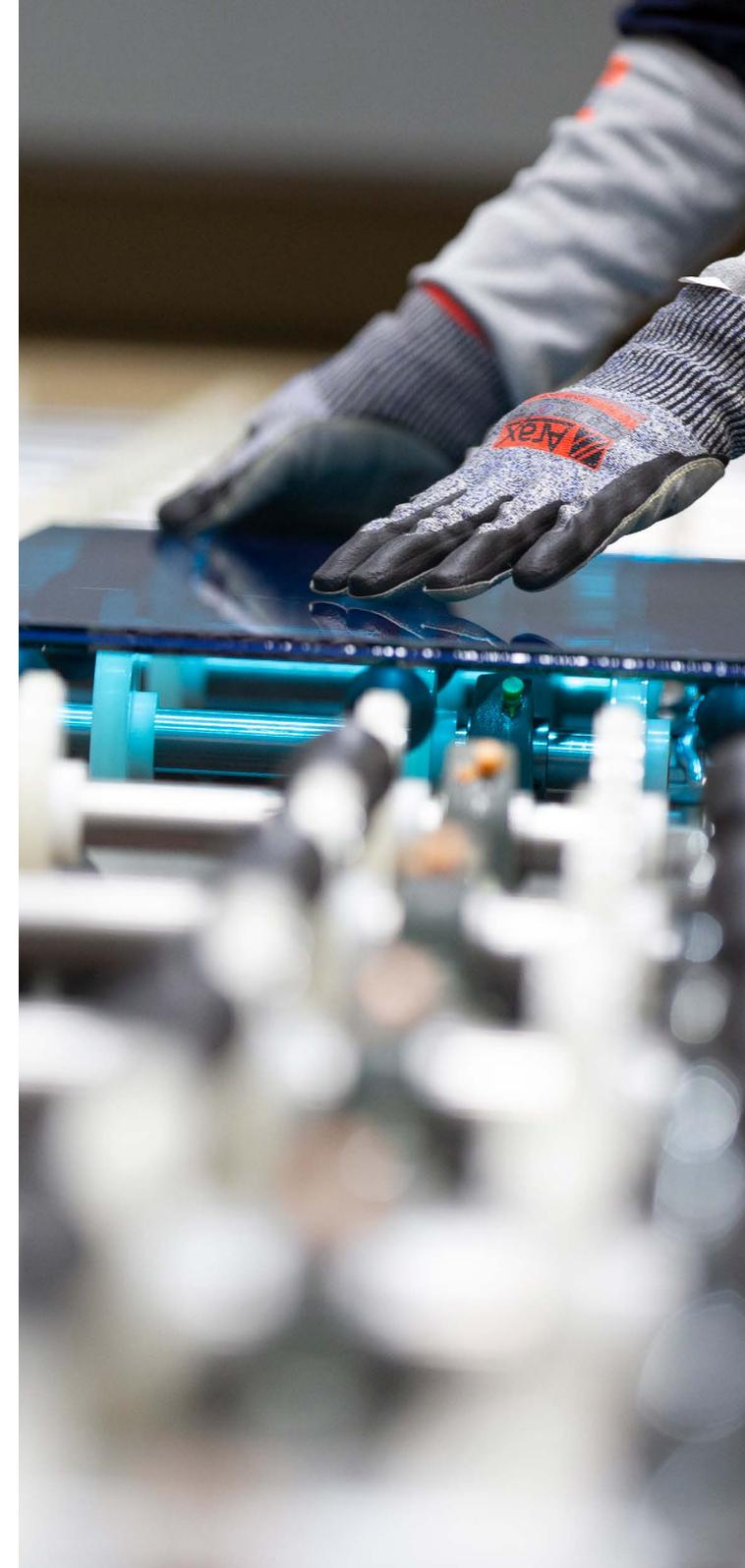
Whilst mechanical means of moving the glass should be initially investigated and adopted, it is recognised that this is not always possible.

If the glass has to be moved manually, the load associated with the glass must be able to be suitably managed by the number of people moving the glass, with any physical restrictions relating to the people involved being noted and managed accordingly. This may be achieved

through the use of straps or slings, webbing lifts, suction pads or glass carriers.

Whilst the size and the thickness of a particular piece of glass will determine the number of people required to lift the glass, a number of key factors apply regardless:

- Correct PPE is being used at all times
- The condition of the glass must be checked, in particular checking for any venting or glass runs present
- Ensure that there is plenty of space available to manoeuvre, that any potential obstacles have either been noted and/or moved and that the pathway is dry
- The destination of the glass has been prepared with appropriately prepared racking or storage in place
- A safe lifting posture should always be adopted



Glass storage

Storage of glass in factories or customers premises

Glass should be stored in clean, dry conditions, on its edge and on a surface which is NOT harder than the glass itself. As such, there are a number of factors to consider:

- No part of the glass should be in contact with stone, concrete or any ferrous metals. Further benefits can be accrued by cladding the supporting structure with rubber, felt or timber. If any screws are present on the supporting structure it is important to ensure that they are counter sunk below the surface
- If the glass is being stored on static racks, it is recommended that the angle/lean from the vertical should be 3°. This can be increased to 5° - 6° for glass stored on stillages, pallets or transportable racks. Increasing the angle beyond these recommended angles can lead to extra load being placed on the glass at the back of the pack with subsequent breakage being incurred
- Which edge the glass is stored on depends on the glass thickness, size or availability of space in the storage premises. However, it is important to ensure that the edge of the glass is evenly supported over its surface area
- Support would ideally be the total length or

width of the glass, although support by flat bearers of at least 50mm width should be considered

- With over 99% of the glass weight load bearing downward when stored at a 3° angle, it is important that the floor is strong enough to support the weight of the glass being stored on it
- Whether being stored or transported, each individual piece of glass should be separated by either glass interleaving materials such as Lucite®, rubber pads, paper or plastic wrapping to prevent the glass pieces rubbing together
- If glass is received wet, or becomes wet during storage for whatever reason, it should be separated as quickly as possible, dried and restacked using separators to aid air circulation and the drying process

Types of storage

There are a number of different types of storage racking options available, each type designed for either the size of glass, the type of warehouse, the method of handling available or the volume of glass needing to be stored or handled.

Examples of storage types:

- Wall racks
- End caps
- Toast racks
- Glass supporting frames
- A frames
- Pallets

Whatever the method of storage, there are specific guidelines for each type to ensure safe and appropriate storage which should be discussed with the manufacturer or distributor of the storage racks prior to installation.

Glass storage

Storage of glass on site

Whilst each site will be different and the areas to focus on possibly unique, there are a number of potentially hazardous areas which need to be considered. These include, but are not limited to:

- The suitability of the ground to safely store and protect the glass with suitable racking
- Sufficient access and space to safely unload manoeuvre and store the glass
- The product is not subjected to prolonged storage or exposure to outside environments prior to installation, and is installed in a manner that prevents prolonged contact with moisture at the glass edge
- Care should be taken with protective films to minimise prolonged exposure which may cause damage to the glass
- Once delivered, if the product is exposed to outside environments prior to installation it is advised that the product is wrapped in a protective plastic that is UV stable
- The ability to provide dry storage conditions out of direct sunlight; this is applicable to all types of glass but especially tinted or toned glass which absorbs a high % of the heat
- The need to protect the glass from accidental damage or site contamination caused by

other materials and building practices which may induce breakage or damage to the glass such as welding, sandblasting or floor sanding

- Protection from freak weather conditions, such as high winds
- Glass is a finished product, it is delivered to site in its ready to use state, any damage or processes on site post supply may void the warranty



Glass delivery standards

Our drivers must be able to deliver your glass safely, that is without risk to themselves or to your employees and/or property. Customers are responsible for unloading glass delivered to their site, Viridian drivers are available to assist.

Factors to consider include:

- There must be safe access to, and egress from, your property or site
- Preferably in a forward direction
- Clear vehicle access to delivery point/area
- Load and unload floor surface to be level and suited to withstand the load
- Sufficient clearance to manoeuvre the delivery vehicle
- Unload path to be clear of hazards and obstacles
- Delivery point within 10 metres of unloading area
- Sufficient room to complete the unload safely
- Sufficient racking/storage to receive the delivery
- Storage and racking must meet the required standard
- Viridian employees are NOT authorised to operate third party mobile plant or lifting equipment on a customers site unless

inducted and trained

- Correct PPE to be used
- Viridian drivers main responsibility is to ensure the remaining unclamped glass is safely restrained on the vehicle while unloading occurs

Important Note: Unloading of glass is one of the most dangerous tasks undertaken; several fatalities have occurred.

General Work, Health and Safety (WHS) considerations

- Workers trained in all tasks including but not limited to manual handling, glass handling, glass grabs and sucker use, dogman and crane use
- Workers trained in hazard identification
- New risk assessments undertaken for out of ordinary situations
- Safe work method statements/JSA or similar in place and followed
- Correct PPE to be used and maintained

Safety factors to consider

- Licensed trained operators only to operate equipment e.g. forklift, crane, dogman, etc.
- All equipment must be suited to the task, including load capacities
- Storage equipment to have correct angle
- Load restraints e.g. clamps, binders, etc. only to be removed when safe to do so
- All storage and unloading areas should be free from slip/trip hazards
- All vehicles should be guided into a safe unload position
- Clear access and egress to load
- All loads should be inspected for any damage or load shifts prior to unloading
- Load and unload floor surface to be level and suited to withstand the load
- Truck must remain level during unloading.
- Hydraulic ramps on truck or other methods may be required
- Glass should be unloaded evenly

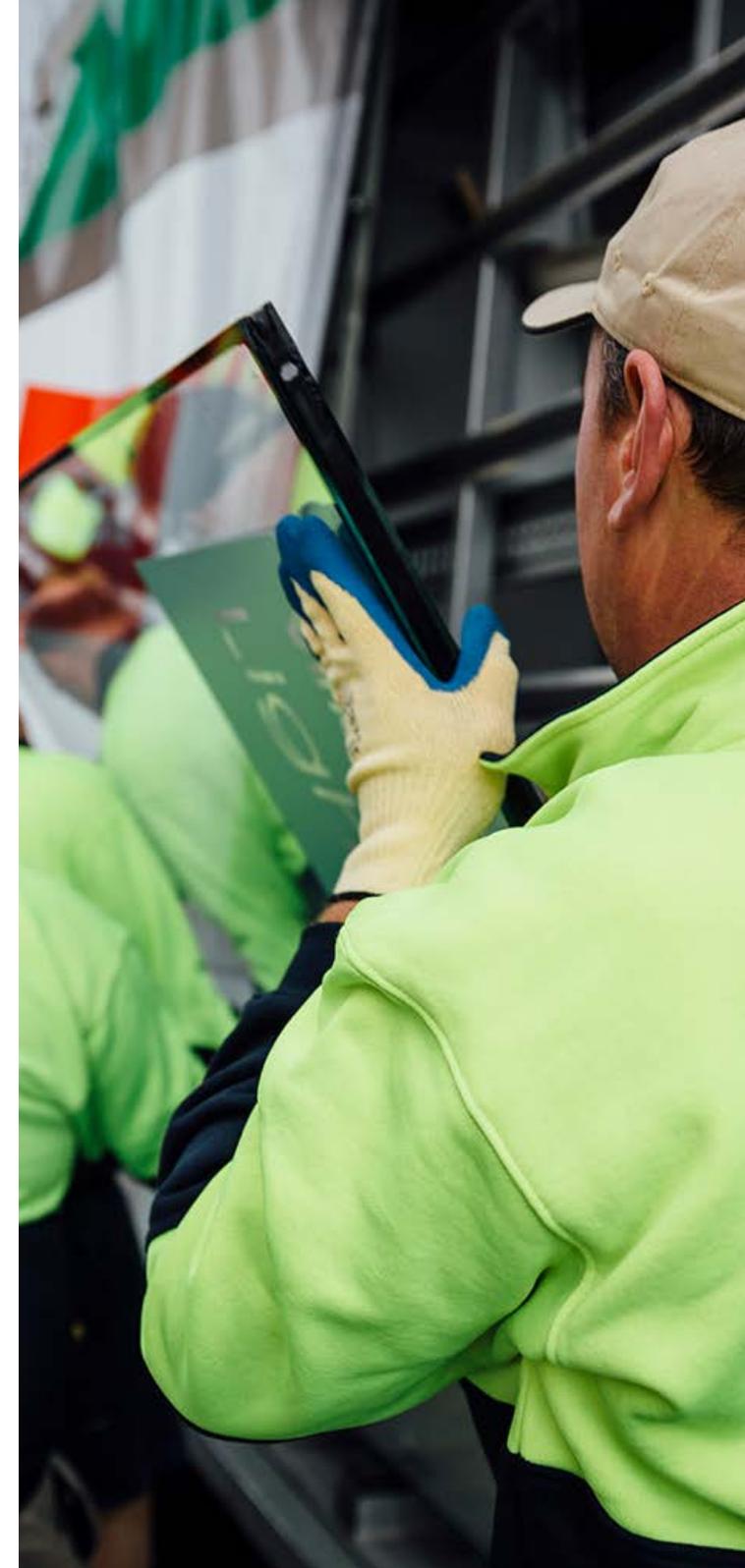
Glass unloading standards

Unloading loose glass

- Upon receipt of the load the recipient should read carefully any warning labels affixed to the packs of glass
- Before the release of any clamp bars, arms, winches or other restraining equipment, the load must be stable for off-loading the glass from the vehicle
- Glass packs delivered on a stillage may be unloaded by in-house crane
- The type of storage rack selected obviously depends on the size of the glass to be held, the volume or number of sheets to be stacked, and the method of handling to and from the particular rack e.g. mechanical handling devices may require a specific type of rack construction
- Whilst unloading loose glass in windy conditions any glass remaining must be secure
- Once unloading has started, ensure that the safe angle or correct lean is maintained and that the driver does not move the vehicle until they have re-secured the load
- Angle of inclination for glass frames
- Jumbo A-frame: 5 degrees
- Free fall rack: 3 degrees from the vertical

Unloading cases

- Check lifting points and case condition prior to the lift
- 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 & prevent forward movement of individual sheets or the case
- Cases that can lean on an A-frame or other purpose designed racking that can support the material in a stable manner at a lean of 3 - 6 degrees from vertical is commonly recommended
- 5 - 6 degrees is recommended for transportable racks, pallets and stillage



Glass unloading standards

Unloading end-caps

- Check lifting points and end-cap condition prior to the lift
- End-caps should be banded or suitably restrained individually to allow them to be withdrawn one at a time safely
- When end-caps are removed, they must be placed on the floor on suitable racking or restraints e.g. props
- Whilst unloading glass from a single end-cap it should be placed on case or block supports set at 4 - 5 degree 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

Unloading on site

- Floor loadings of the building or platform should be sufficient to take the weight
- Access needs to be clear to allow a delivery vehicle entry to the site
- Racking should be sufficient capacity to suit glass weight
- Suitable means of handling should be available to unload glass from the truck to the racking area
- Beware of any freak wind conditions on the site
- Use suitable restraining methods when leaving glass unattended on site





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