

HAWORTH

Site Safety Guidelines for Glass Handling

August 2014

HAWORTH

SITE SAFETY GUIDELINES

Safe Handling and Storage of Glass

published- August 8, 2014

The handling of glass is a high risk task that places the handler at risk of serious personal injury or death if done incorrectly. **EXTREME CAUTION MUST BE TAKEN!** To help glass handlers reduce these risks, Haworth has prepared the following guidelines for the safe handling and storage of flat glass.

These guidelines are necessarily general in nature and do not address all situations or risks that individuals may face when handling or storing glass. Haworth makes no and disclaims any representation or warranty, express or implied, that these guidelines are complete or accurate, or that following these guidelines will reduce or eliminate risks associated with handling glass. Individuals handling glass do so at their own risk, and Haworth assumes no and disclaims all responsibility or liability resulting from or relating to any action taken or omitted in compliance with these guidelines or any claim that these guidelines are incomplete or inaccurate.

Personal Protective Training and Equipment

All personnel must be trained in safe handling of glass and must wear a hard hat, safety glasses, cut resistant gloves, vest, glass protective arm sleeves and steel toed boots at all times when handling glass.

Risk Assessment

Risk assessments should be done frequently -

1. Prior to Delivery
 - a. Audit the site and assess any risks that may jeopardize the safe off-load and storage of the glass panels. If the site presents risks, either eliminate them or find alternate areas on site to off-load and store the glass.
 - b. Assess whether weather and wind conditions are conducive to safe off-loading of the glass.
2. Prior to Handling
 - a. Each time a crate, pack or panel of glass is to be moved, assess whether the immediate area, the travel path to be used and the area of work itself are free and clear of all obstacles and potential risks, such as slippery floors, open flooring, materials, tools, equipment, other trades people, etc. Eliminate the risks if they exist.
 - b. Do not proceed until the conditions are deemed safe to do so.
3. Prior to Using Equipment and/or Racking
 - a. Assess all equipment and racking to ensure they are safe to use and in proper working order; repair or replace if they are not.
4. Prior to Lifting and/or Hoisting
 - a. Have the operator assess if equipment is capable of lifting the load and is in good working condition; if it cannot provide a safe lift or hoist, do not proceed.

HAWORTH

Truck Delivery

Before the off-load begins -

1. Make sure the trailer bed is level;
2. Inspect the shipment of glass in the secured position it was shipped in and look for damage and/or shifting of the load either within the trailer or within the crate.
3. If all is secure and there is no damage, you may proceed with the off-load.

CAUTION: Do not undo any restraining devices until you have determined that the glass is in a safe and secure position; otherwise you risk serious personal injury and/or death.

When removing any restraints/bracing, never stand where a load would shift or fall and be sure you have room to escape if the glass does move.

4. If the load is not secure or there is broken glass, extreme caution must be taken when taking the appropriate action to deal with it.
5. Special care must be taken when off-loading the last two packs or crates. The glass load may become de-stabilized when you move the 2nd-to-last crate or pack. Be sure that the last crate or pack is secured before removing the 2nd-to last crate; failure to do so may cause the last pack or crate to fall over when the 2nd-to-last pack or crate is removed.

Mechanical Off-Loading

For palletized crates of glass -

1. Mechanical means must be used to safely and efficiently off-load large amounts of glass off of a truck. Generally the glass arrives in palletized crates and either a forklift or a bobcat, equipped with forks, is used. The correct length and strength of forks must be used for the size and weight of the crated pallets; ensure the operator has confirmed that his/her equipment can lift the load.
2. Crates should be kept as level as possible when off-loading and be removed at slow speed with no unexpected movements.
3. Operators of the equipment must be certified drivers for that particular piece of equipment and must be experienced in the proper handling and off-loading of glass.

Mechanical Hoisting

1. By Zoom-Boom or Overhead Crane –
 - a. If palletized crated glass is to be off-loaded directly to the floor, it is generally lifted on to the floor using a zoom-boom or a crane lift.
 - b. The size and weight of the crated pallets must conform to the equipment lift capacities; ensure the operator has confirmed that his/her equipment can lift the load.
 - c. Loads should be kept as level as possible, and removed at slow speed with no unexpected movements.
 - d. Zoom-boom or crane lift operators must be certified in the use of that type of equipment and must be experienced in the safe lifting of glass.
 - e. Personnel must not stand or pass directly below the loads and should stay a safe distance away.

HAWORTH

2. By Freight Elevator –
 - a. If lifted to the floors by way of a freight elevator, the palletized crated glass would be opened up in a designated area (see Unpacking of Crates) and individual sheets of glass would be moved into or on to the freight elevator in the quantities stipulated by the freight elevator operator. Use safe glass handling techniques to move the glass (see Glass Handling).
 - i. If on top – 1 panel maximum, stored on end in properly secured racking, at the appropriate angle and strapped in.
 - ii. If within – 4 panels maximum.
 - b. Ensure the operator has confirmed that the weight of the entire load (glass, crating, equipment and personnel) is within the load capacity of the elevator.
 - c. The operator must be certified in the operation of the equipment and experienced in the safe handling of glass.

Unpacking of Crates

1. Unpacking of crates must be done by workers trained in the safe handling of glass.
2. Take care when removing metal banding from crates. Stand to the side, away from where the glass would fall if it were to shift and prior to cutting the banding, ensure the fall area is free and clear and no one is near enough to be struck by the metal band once it is cut.
3. Dispose of all shipping packing material following the site protocols.

Glass Handling

1. When moving glass, move 1 pane at a time; never 2.
2. When lifting, keep the glass upright and the movement smooth to avoid flexing the glass.
3. When adding or removing a glass panel from a vertical stack of glass (whether on a rack or not), always stand at either end of the stacked load; never along the length of the glass in case the panel, panels or racks were to fall over.
CAUTION: Serious injury and/or death could result.
4. When viewing glass panels in a vertical stack, never tilt 1 panel out to view the panel behind; always remove the panel in front, store it safely (see Temporary Storage), and then view the glass panel you want to look at.
5. When installing, always stand 1 glass panel at a time; care must be taken not to load the weight of the panel on a single corner; always lay the full bottom of the panel to the floor before raising the top of the panel to a vertical position; all overhead work is to be done on ladders.
6. When handling a glass panel, it is to be handled by no less than 2 people using proper lifting techniques to avoid back strain.
 - a. Keep loads within the manageable capacity of those handling them.

HAWORTH

7. When moving a glass panel, use proper equipment and inspect the equipment before use to ensure it is safe to use –
 - a. Suction Cups - When lifting single glass panels, use 2 to 4 rubber cups per glass sheet; suction cups must be clean, dry and free of dust; use only suction cups intended for this purpose.
Ensure glass is clean and dry before affixing them to the glass panel.
Be familiar with the User Instructions prior to use and if used for extended periods of time, release the suction cups and re-affix the cups to ensure vacuum suction is maintained.
 - b. Glass Panel Carts - Use carts for moving single glass panels. Carts can be as simple as a wooden base with protective padding on a set of wheels centrally placed under the glass; support the glass manually using suction cups or by a vertical extension from the cart that is equipped with a suction cup.
8. Before moving the glass, check clearances and turn radiuses along the path of travel.
9. If glass begins to fall, allow it to fall and do not attempt to stop it. To do otherwise, would put you at risk of personal injury and/or death.

Storing Glass Panels

1. Glass should be stored on edge and under dry conditions. Whether stored on the short or long edge depends on its size and the space available to store it.
2. Glass sheets should be stored on an angle at all times –
 - a. When on fixed racks or up against a wall - a 5° angle off of the vertical;
 - b. When on moveable racks or pallets - a 5°– 6° angle off of the vertical.

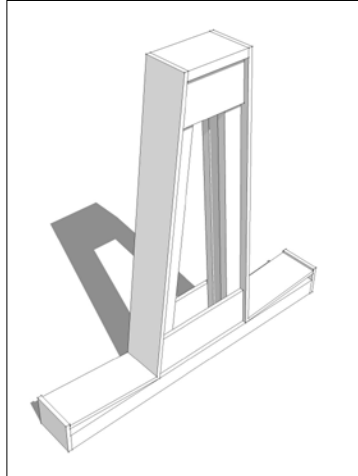
*CAUTION: Any angle greater may result in damage to the back sheets of glass and/or injury.
3. Glass should be supported as evenly as possible, either along its total length or its total width.
4. Glass should never be allowed to come into direct contact with any surfaces that are harder than the glass itself, such as metals, concrete, stone, brick, etc.
Failure to do so could cause breakage and/or injury.

Storage Racks for Glass Panels

1. All materials used in the construction of storage racks should be free of defects, be of sound quality, and be routinely inspected and deemed safe for use.
2. All screws used in the fabrication of the structures MUST be counter-sunk below the surface of the structure material to avoid direct contact with the glass.
3. All support/storage structures should be lined with a padding material of some kind, such as carpet, rubber, plastic, etc., and their bases should distribute the load weight over as wide a floor area as possible.
4. Glass stored on edge and at an angle of 5° off of the vertical will load most of its weight on the floor, not the rack or wall; verify that the floor structure can handle the load prior to the delivery and placement of the glass on to the floor.

HAWORTH

5. There are various means of storing glass panels on site -
- a. A-Frame Storage - This is the ideal means of storage for the staging of glass whether on the floor or in a storage area.
 - i. Store glass sheets on end in a 90° A-frame rack; maximum 12 panes per A-frame (6 panes per side max.).



Example - 90° A-Frame Rack

- ii. Floor beneath the racks must be flat and even; the A-frames must not move or rock when they are empty or lightly loaded.
 - iii. Position A-frames every 914mm (3'-0") minimum along the length of the glass.
 - iv. Load and unload the A-frame evenly by alternating sides when adding or removing glass panels.

CAUTION: Serious injury and/or death could result if only one side of the A-frame is loaded or unloaded at a time; it could overload the one side and cause it to tip over.
 - v. Maintain a clear pathway at all times in front of the racks to avoid any tripping hazards.
 - vi. Do NOT exceed the rack's safe working load.
- b. Temporary Storage - This is the simplest storage to do on the floor on which the glass is to be installed; NOT recommended for anything other than temporary short-term storage -
- i. Stand glass panel on carpet or if on slab, on strips of wood that are at right angles to an immovable structure e.g walls. The 1st piece of glass is set on the carpet or on blocks of wood and leaned at a 5° angle to the vertical wall; its leading edge is protected using a cushioning material between its edge and the wall. Any subsequent sheet should be protected from the next using the same type of cushioning material.
- NOTE: This type of storage is not recommended for large numbers of glass panels. Maximum stack load shall not to exceed the dead weight limit of the wall it is up against; damage and/or serious injury may otherwise result.

HAWORTH

- c. Long-Term Storage – If space is a problem and glass panels must be stored for a longer period, this is the way to go –
 - i. It is recommended that single sided free standing racks be used up against a wall; the imposed loads of the glass should be independent of the wall structure; glass should be stored at a 5° angle to the vertical. This type of racking must be a structure that has been engineered to withstand the imposed loads of the maximum volume of glass to be stored and must be free and clear of the wall behind it.

NOTE: Do not exceed the maximum number of panels the rack was engineered for; damage, serious injury and or death may otherwise result.
- 6. Post signs at each of the storage rack units with the following message; “Caution: Do NOT Touch - Risk of Serious Injury and/or Death”.
- 7. Before handling or moving glass stored in a rack, see Glass Handling.

End of Site Safety Guidelines