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The ORFA warns of an increased number of incidents involving workers when replacing or handling arena dasherboard shielding. Remember your legal obligation to develop Standard Operating Procedures (SOP) and to provide proper training for workers who are responsible for these tasks.

A recent fine of \$55,000 + 25% victim surcharge was imposed by the courts for an accident caused when two workers were unpacking a crate containing sheets of tempered arena glass. The workers removed the front panels of the crate and looked at the glass inside. The glass looked like it was tipped away from them. One of the workers left the area while the other worker cut the straps securing the glass in the crate. The glass, which was not actually tipped backwards in the crate, fell onto the worker. The worker sustained leg injuries. A Ministry of Labour investigation found that the worker had never unpacked glass crate this way and the worker had not been advised that it was a safety hazard to unpack glass without assistance. Representatives for the facility pleaded guilty to failing to acquaint the worker with any hazard in the unpacking of the glass.

Dasherboard professionals with expertise on handling shielding have pointed out several contributing factors to these issues:

I am aware of a number of injuries that have occurred while arena staff was unloading tempered glass being delivered to facilities. Part of the problem is that the suppliers don't ship the crates

properly or don't use a transport company that has the ability to handle the crates. The transport companies and most community arenas are not equipped to properly handle a crate of glass. They are shipped straight up vertically and strapped to the side wall of the transport van. In many cases the arena has to empty the crate by hand. Since the crate is completely vertical, the glass inside is not leaning back and will fall forward in most cases when the crate is opened. Crates should be propped back on a slant to ensure that the glass does not fall out.

The facility should schedule to have a forklift on site with proper straps to lift crates out of the van. Facilities that if they don't own one then they should rent one (assuming that someone on site has the proper training on a forklift). The crate should be leaned back with a slight tilt to ensure that the glass does not tip out.

Handling of the crates with a pump truck and using tailgate service on a delivery van is a common practice and will work well for small crates with a couple of pieces of glass, but is very dangerous if the crate is large.

One common reaction, when glass starts to fall, is to try and grab it and stop it from falling. I have done this myself and almost had glass fall on me. If the glass starts to tip out of the crate, or fall, get out of the way and let it go. Don't try to stop it.

Types of Arena Shielding

It is important that workers are able to identify what type of shielding is used in their facility – tempered or acrylic?

Tempered shielding is durable, easy to maintain but heavy to lift. It will maintain its high visual clarity qualities over time. By design, heat-treated tempered glass breaks into many small blunt pieces.

Acrylic shielding is less durable, has a tendency to cloud and become scratched over time. Acrylic is approximately 64 percent lighter and 20-25 times more

flexible than an equally sized tempered glass panel. It will break into large pieces.

Weights:

Tempered Glass

7lbs per square foot @ 1/2-inch thick
(34.22kg per square metre @ 12mm thick) 8.5lbs per square foot @ 5/8-inch thick (41.57kg. per square metre @ 15 mm thick)

Acrylic Glass

3lbs per square foot @ 1/2-inch thick
(14.67kg per square metre @125mm thick) 4lbs per square foot @ 5/8-inch thick (19.56kg per square metre @15mm thick).

Tempered glass is a better choice for facilities that require few ice rink changeovers. *Acrylic glass* is the better choice for facilities that regularly host other events that require ice rink conversions.

Arena shielding is not all the same size but to the untrained eye it will all look similar. Well prepared arena operations will create a master layout plan of their shielding system including all glass panels and applicable hardware numbered. Each piece is measured to identify its “exact” size to assist in a quick and efficient replacement.



Well prepared facility managers will keep in stock a minimum of 1-piece of all standard shielding sizes as well as 1-piece of each off size shielding. It is considered acceptable to replace a broken piece of tempered glass with acrylic glass (or plywood) until a more permanent replacement can be arranged. However, some leagues are specific to what materials can be used for replacement purposes and as such should be researched in advance of developing an SOP.

Dealing with Broken Shielding

When a piece of shielding breaks during game play facility staff need to be prepared to act and respond accordingly. Tempered glass will often explode into millions of small pieces; these pieces will fall onto the

ice and into public seating areas. A quality industrial styled vacuum must be on hand to help clean up the pieces. However, acrylic is less of a challenge to replace since the large pieces can often be quickly removed and disposed of.

Facility staff is often “working alone” when a piece of shielding is broken. It is recommended that facility management provide clear guidelines on how the worker is to respond under these conditions. Shielding replacement is at minimum a two (2) person task with larger pieces of shielding requiring additional equipment and manpower. Since shielding replacement requires task specific training and special equipment, the use of volunteers for this task is not recommended.



Standard operating procedures should be facility site specific; no one procedure will work for all situations given the variables and other contributing factors in each building. The ORFA Facilities Library has on file examples of well written procedures that are available upon request to ORFA Members. The following sample provides some basic, generic steps to consider when performing this task.

Caution: It is important to protect the edges of the tempered glass shielding when handling, as this is the weakest point of the shield. Arena shielding should always be set down on a sheet of plastic, wood or cloth to ensure that nothing on the floor causes the shield to break and should be available for unloading or moving a tempered shield. Unlike acrylic, it cannot be dragged along a surface.

When replacing shielding, especially tempered glass, it is also important to check the alignment of the shield support system to ensure everything is secure and properly aligned.

SAMPLE SHIELDING REPLACEMENT GUIDELINES

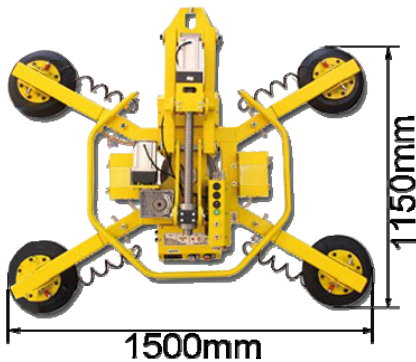
Reason for Replacement: Broken Shielding

Standard Operating Procedure:

- 1) Attend location and assess for injuries
- 2) Refer to master shielding plan

- 3) Remove patrons from the area
- 4) Secure area
- 5) Review facility SOP for this task
- 6) Wear proper PPE
 - a. Head protection
 - b. Foot protection
 - c. Eye protection
 - d. Hand protection
- 7) SHATTERED Tempered glass
 - a. Sweep up areas on and off the ice – push broom, corn broom, shovel, large garbage can
 - b. Vacuum patron side of area as well as all channels in dasherboard
 - c. Remove, inspect and clean all installation hardware
 - d. Drop in a piece of plywood or acrylic shielding
 - e. Resurface ice – thoroughly clean ice resurfacer when complete
 - f. Consider how to deal with ice shavings containing shards of glass
 - g. Clean tools
 - h. Dispose of broken glass
 - i. Complete report

Facilities that conduct frequent conversions should invest in proper glass handling suction clamps and proper glass storage carts.



- 8) BROKEN Acrylic glass:
 - a. Attend location and assess for injuries
 - b. Remove broken pieces
 - c. Refer to the master shielding plan
 - d. Remove, inspect and clean all installation hardware
 - e. Replace shielding with new acrylic or plywood
 - f. Dispose of broken shielding
 - g. Complete report
- 9) Schedule a complete shielding replacement if it is required

Note: a typical 6 x 4 foot piece of tempered shielding will require 4-6 persons and take 1.5 to 2-hours to safely complete.

- 10) Risks
 - a. Broken glass – eyes, cuts
 - b. Lifting new glass or garbage can full of broken glass
 - c. Shielding falling over onto workers
 - d. Improper storage of spare glass
- 11) When creating a Standard Operating Procedure for this task, the facility management should review and determine the best and safest way to replace or remove the shield supports. Supports should be two part supports that can be removed safely from the ice surface.

Remember what our experts advised earlier: *“If the glass starts to tip out of the crate, or fall, get out of the way and let it go. Don't try to stop it.”*



Conclusion

Developing and practicing safe operating procedures and policies is the first step toward worker safety. Occasionally arena shielding will break during a significant facility event; staff may find themselves unprepared to effectively respond in the most efficient and safest way possible. Responding without an existing plan to follow places workers at risk of injury.

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