

VIEWING WINDOWS FOR SWIMMING POOLS AND AQUARIUMS

VIRACON TECH TALK

Glass viewing windows in swimming pools and aquariums are subjected to hydrostatic pressures. This document provides guidance for selecting the appropriate glass type and thickness based on the specific hydrostatic pressure to which the glass will be exposed.

VIEWING WINDOWS FOR SWIMMING POOLS AND AQUARIUMS

DESIGN APPROACH

When considering glass for viewing windows in swimming pools and aquariums, it is important to follow these general rules:

1. Use laminated glass. Viewing windows that are exposed to hydrostatic pressures cannot utilize single monolithic glass.
2. Use a safety factor of ten. Figure 2 is based on this safety factor.
3. Use a lamination of two fully tempered glass plies. Annealed or heat-strengthened glass can be used, but this often results in very thick laminations. For large sizes and/or deep water, a 3- or 4-ply lamination of 1/2" fully tempered glass may be required.
4. All glass plies must be of the same thickness. The thickness of the interlayer does not affect the strength of the lamination.

Determining Glass Makeup

To help determine the best glass makeup for viewing windows, it is important to calculate the equivalent water depth. The equivalent water depth is equal to one-third multiplied by the water depth at the top edge of the viewing window plus two-thirds multiplied by the water depth at the bottom edge of the viewing window in feet.

For example, an 8-foot-deep pool has a 3-foot by 6-foot window located one foot below the surface. It also extends to one foot above the bottom of the pool (Figure 1). First, calculate the equivalent water depth.

$$(1/3 \times 1') + (2/3 \times 7') = 5'$$

Next, calculate the window size in square feet.

$$3' \times 6' = 18'$$

The window area measures 18 square feet and the equivalent water measures 5 feet. Use Figure 2 to pinpoint the location where the glass area and water depth intersect. Figure 2 applies to fully tempered glass that is firmly supported on all four edges. The minimum glass thickness is represented by the diagonal line directly above this intersection, providing you with the minimum recommended laminated glass makeup of two plies of 1/2" fully tempered glass.

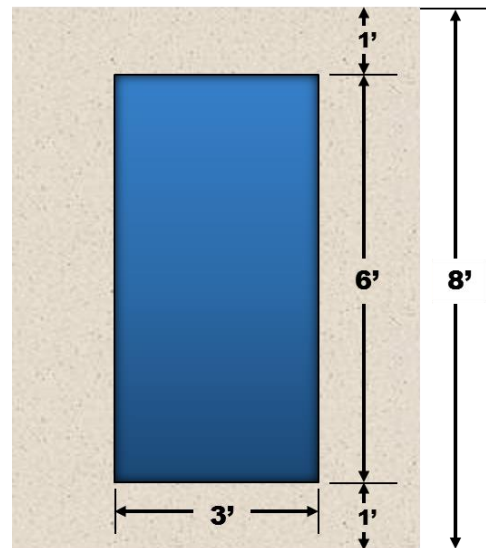


FIGURE 1: VIEWING WINDOW EXAMPLE

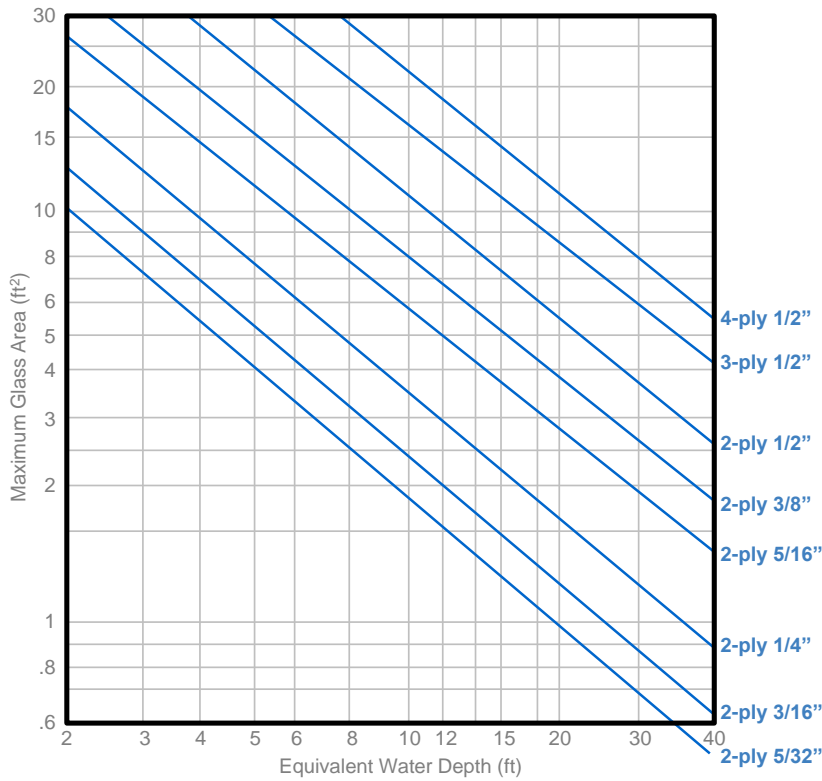


FIGURE 2: SELECTION CHART—LAMINATED FULLY TEMPERED GLASS



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