



### **What is the difference between U-factor and R-value?**

While the U-factor is used to express the insulation value of windows, R-value is used for insulation in most other parts of the building envelope (walls, floors, roofs). To compare R-value and U-factor, divide 1 by the U-factor number, E.g.: a 0.25 U-factor equals a  $1/0.25 = 4$  R-value.

The rate of heat loss is indicated in terms of the U-factor (U-value) of a window assembly. The lower the U-factor, the greater a window's resistance to heat flow and the better its insulating properties.

The nationally recognized rating method by the National Fenestration Rating Council (NFRC) is for the whole window, including glazing, frame and spacers. Center-of-glass U-factor is also sometimes referenced, and describes the performance of the glazing alone without the effects of the frame. For most energy efficient windows, the whole window U-factor is higher than the center-of-glass U-factor.

High-performance double-pane windows can have U-factors of 0.30 or lower, while some triple-pane windows can achieve U-factors as low as 0.15.

Low U-factors are most important in heating dominated climates, although they are also beneficial in cooling dominated climates.

**This information comes from Efficient Windows Collaborative—view more detailed information at <http://www.efficientwindows.org/energystar.cfm>**

When building an indoor pool, double pane Low-E glass is recommended. All frames that are metal should be non-corrosive and must have thermal breaks. Single Pane Glass should never be used in an indoor pool environment due to lack of insulative qualities. Single pane glass reaches Dew Point and condenses very quickly when the outdoor temperature falls below the indoor pool room temperature.

When considering a manufactured enclosure, “glass” and frame, wood frame and glass, or other polycarbonate type materials, research enclosure companies carefully as they are “not all created equal”. Some enclosures are not built for indoor pool rooms. Solar gain and heat loss is much greater in these types of structures and careful consideration must be given when designing the pool room dehumidification system, heating and cooling for these types of buildings.

**Single pane glass should never be used in an indoor pool**— the lower U-Value makes it unacceptable for swimming pool environments when the outside temperature is lower than the indoor pool room temperature.