Understanding Window U-Factor
By Tom Herron, LEED Green Associate

Windows account for 40 percent of a building's energy loss, and with energy costs and public demand for efficient buildings on the rise, using proven tactics to lessen this loss has become more important than ever. Finding the best materials to contribute to a building's performance targets is essential, but knowing which products will actually shrink the envelope's energy footprint can be daunting. When it comes to windows, U-factor is a key figure to consider and comes standard on all National Fenestration Rating Council (NFRC) labels.

U-factor indicates how much heat will be lost from a building through its windows by specifying how many BTUs can pass through one square foot of material in an hour. Most windows today have U-factors between 0.15 and 1.20, which NFRC-certified labs calculate using thermal measurements from the center and edges of the glass, the frame and along any dividers the window may have. In other words, whole product performance. The different measurements capture the total impact of the numerous components of a window, including glazing, gas fills, spacers, frames, weather stripping and sealants.

When considering a fenestration product, "window shoppers" should look for the NFRC label, which provides U-factor data, along with information for solar heat gain, visible transmittance and air leakage. Like the miles-per-gallon sticker on a car, the NFRC label – which can be affixed to the glass of all certified residential products or on a separate label certificate in the case of products in commercial applications – gives reliable, unbiased performance data to help architects, builders and even homeowners determine whether a product will meet their energy efficiency needs.

While NFRC does not recommend target U-factor values, the Efficient Windows Collaborative gives suggested thresholds based on climate zones:

- Northern states: 0.35 or less
- North Central or South Central states: 0.40 or less
- Southern states: 0.60 or less

The ENERGY STAR® program, which relies on NFRC ratings to determine product eligibility, uses even stricter limits:

- Northern, North Central and South Central states: 0.30 or less
- Southern states: 0.40 or less.

Since NFRC began rating fenestration products more than 25 years ago, the program has helped to foster a 50 percent reduction in the average U-factor of certified products, a trend that has helped lower U.S. per-capita energy consumption to pre-1970 levels. As state and federal energy policies and building codes evolve, window manufacturers and builders will continue to find innovative solutions to curb window energy loss, helping to save Americans some of the $40 billion lost each year – and to significantly reduce the production of associated greenhouse gas emissions.

For more information about U-factor and window energy performance, visit www.nfrc.org.

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