



## PERFORMANCE UPGRADE TABLE HUNG WINDOWS

Optimizing energy efficiency of building envelopes can contribute significantly toward LEED® certification. Windows and curtainwall play a vital role in overall envelope performance, as quantified by NFRC standardized thermal transmittance (U-Factor), Solar Heat Gain Coefficient (SHGC) and Visible Light Transmittance (VT). The following tables, organized by product family, present some leading-edge performers in Wausau’s standard product line, and a comparison with products typically employed.

 <b>WAUSAU</b> <small>WINDOW AND WALL SYSTEMS</small>		<b>PRODUCT FAMILY: HUNG WINDOWS</b> with insulating glass		<b>ADVANTAGE</b>  <small>BY WAUSAU</small>	
<b>LEED® Attribute</b>	<b>Best-Performing WAUSAU Product</b>		<b>Typical WAUSAU Product</b>		
	<b>Climate Zones 3 and 4</b> Charlotte San Francisco	<b>Climate Zones 5 and 6</b> Boston Chicago			
<b>Overall U Factor</b> <small>(BTU/sqft-hr-°F per NFRC 102)</small>	<b>0.45</b>	<b>0.45</b>	0.58		
<b>SHGC</b> <small>(Center of Glass)</small>	<b>0.17</b>	<b>0.27</b>	0.61		
<b>VT</b> <small>(Center of Glass %)</small>	<b>18%</b>	<b>65%</b>	74%		
Approx. Installed <b>Cost Premium</b>	<b>+7%</b>	<b>+15%</b>	-		
<b>Product Description</b>	<b>310i Series</b> 4' x 6' Single Hung	<b>310i Series</b> 4' x 6' Single Hung	3100 Series 4' x 6' Double Hung		
<b>Glass Selection</b>	Viracon VRE3-38 on Grey HS Glass Stainless Spacer ½" Argon Fill	Viracon VNE15-63 on Ultra-White® Glass Stainless Spacer ½" Argon Fill	PPG Sungate 500 on Clear HS Aluminum Spacer ½" Air Space		

**NOTES:**

1. Estimated test results and costs are representative of a broad range of products, to help in identifying sustainable design targets. Note size assumption in product description. Consult Wausau for specific performance and cost attributes on your project.
2. The maximization of LEED® points is dependent on integrated design, involving all disciplines and design professionals. Please share design goals, preliminary product selection, and proposed performance levels with architects, HVAC, lighting, and structural engineers, as well as interior designers, for appropriate coordination.
3. While not specifically cited in the LEED® rating system, condensation resistance can be an important performance attribute of windows and curtainwall in cold climates and high-humidity applications. Similarly, excessive air infiltration can significantly affect energy efficiency.
4. Inherent trade-offs exist between SHGC and VT, even using high-end spectrally-selective glass coatings. Please consult Viracon Technical Services to determine the optimum combination for specific building types in your Climate Zone. Even visually clear and neutral glass can be used in southern Climate Zones if innovative shading is employed. Recommendations above are based on the Climate Zone Chart found on [www.viracon.com](http://www.viracon.com).
5. NFRC labels for SHGC and VT are based on “whole window” results, which will always be lower than the more familiar center-of-glass values reported above, cited for ease of comparison.