



Passive House designs balance energy gains and losses to attain a level of energy efficiency that transcends both economical and environmental issues. These designs allow homeowners to save money on their energy bill throughout the life of their home.

Serious**Windows** for **Passive House**

Beautiful, high performing windows that are energy efficient and cost effective

First Carbon Neutral Urban Homestead

The Nauhaus Prototype (NHP) is an ambitious project from the Nauhaus Institute (NHI) that includes passive solar and super insulation technology which meets Passive House Institute U.S. (PHIUS) standards, and uses heat exchange ventilation, locally sourced materials, on-site renewable energy production, and edible landscapes, food production and animal habitat.

A key component of the NHP is the inclusion of SeriousWindows 925 super insulating, fiberglass framed casement and awning windows, and fiberglass framed doors. These beautiful windows have high full frame R-values and come with dark bronze exterior frames, stainable oak veneer interior frame, Prairie style grilles and oil rubbed bronze hardware.

"We selected SeriousWindows from Serious Materials because they were the only U.S. manufacturer that we could find that could allow us to reach the high-performance specifications required for Passive Haus certification. Not only can they meet the spec but they look great," stated Clarke Snell, Executive Director of the Nauhaus Institute.

The Nauhaus Institute (NHI) is the research and educational branch of the Nauhaus Group whose mission is to make carbon neutral building systems an affordable reality for everyone. The Nauhaus System takes a holistic approach to carbon emission reduction including low embodied energy and carbon sequestering construction materials, smaller building size through integration of outdoor rooms and on-site collection of energy, water, and food.

NHP will be the only carbon neutral urban homestead of its kind. It will need no furnace or air conditioning in most climates, is 90% more energy efficient than present code mandates, delivers energy savings that help make these homes affordable and achieves LEED Platinum certification with 20 points to spare.

SeriousWindows™

SAVES MORE ENERGY THAN ANY OTHER WINDOW. PERIOD.

Passive House refers to a rigorous but voluntary standard for super energy efficient buildings. The standard focuses on passive solar design, super insulation, advanced window technology, air tightness, and ventilation.

The design does not need to be complex but it does involve knowledge of heat loss by conduction and air leakage through the building. The results are a home with high insulation values, extremely high performing windows and strict airtight requirements.

Choosing the windows in your design impacts the overall building performance. Windows in a Passive House must be highly efficient with super insulating frames and glazings that are "tuned" to the climate. Choosing glazings that maximize solar gain in the winter and minimize it in the summer can effectively achieve these goals.

Serious Materials is a leading U.S. manufacturer of highly efficient, high performance windows that meet the strict Passive House requirements. Not only do they produce some of the highest performing vinyl windows but industry leading fiberglass windows as well.

SeriousWindows fiberglass windows exceed competitive offerings by:

- Meeting stringent Passive House air infiltration requirements
- Delivering full-frame R-values from R-4.5 to R-11.1
- Advanced warm-edge spacer system
- Revolutionary suspended coated film glass packages

Serious Materials has been working with leading passive-solar architects and energy consultants worldwide for more than two decades to produce some of the most energy efficient windows and glass. SeriousWindows fiberglass products have very low heat loss, resulting in excellent year-round thermal comfort even near the windows.

Why SeriousWindows Fiberglass Windows

Super insulated fiberglass frames. SeriousWindows fiberglass framed windows are durable and sustainable, weathering extreme external conditions. Fiberglass framed windows have fully insulated, foam filled frames and a unique warm-edge spacer system. The low coefficient of thermal expansion and contraction creates dimensional stability and limits the stress put on seals, caulk and joints. And the tight seals make the windows highly resistant to air leakage and water penetration.

Significant condensation control. Because of the low thermal conductivity of the windows, the inside temperature of SeriousWindows' fiberglass units remain fairly constant with the dew point, significantly decreasing the potential for any condensation buildup. The fiberglass frames also have high condensation resistance which keeps humidity within a proper range and virtually eliminates the growth of mold and mildew.

Revolutionary Suspended Coated Film (SCF) glass packages. The combination of glass-based and film-based coatings creates a lightweight, multi-cavity super insulating glass unit that reflects heat and harmful UV radiation while maximizing light transmission and insulating capabilities. The triple edge seal technology around the edges of the glass units provides the most reliable, strongest glass packages in the market. Prior Passive House



window designs have depended on triple-pane windows to meet the energy efficiency requirements.

The advantage of using SeriousWindows SCF glass packages over triple-pane glass windows include:

- Less weight, no need for specialized framing systems
- Larger air spaces than triple-pane glass in the same glass pocket for better thermal performance
- Less stress on the frame and operable portions of the window and window hardware
- Lighter weight allows for more natural light in the overall design

Energy efficiency allowing for the maximum amount of glass in the design. The energy efficiency and design of SeriousWindows fiberglass products allows for more direct natural lighting in the overall building design which leads to less energy used to provide the required indoor lighting.

Operable windows for natural ventilation. Operable windows take full advantage of natural ventilation to help maintain comfortable temperature year-round, depending on the local climate.

99.5% UV protection. Harmful UV light can significantly fade furniture, drapes and carpeting and cause interior damage. SeriousWindows - using our SCF glass technology - creates windows with high UV protection allowing for natural light, not the sun's damaging rays, to come in.



SeriousWindows are offered in a wide assortment of style, color, grille, and hardware options

Series/ Model	Product Type	Full Frame Properties (NFRC size)				Center-of-Glass			Sill			Jamb			Structural Tests		
		U-value	R-value	SHGC	VT	U _{cg}	SHGC	VT	U _{fs}	U _{egs}	h _s	U _{ff}	U _{egj}	h _j	Air Infiltration L/s/m ² (cfm/ft ²)	Water Penetration Resistance Test Pressure Pa (psf)	Design Pressure
725 Series	Low Profile, Fixed Picture	0.14	7.1	0.27	0.49	0.110	0.298	0.551	0.277	0.183	0.127	0.316	0.182	0.127	<0.05 (<0.01)	580 (12.11)	C-50
725 Series	Low Profile, Fixed Picture	0.20	5.0	0.50	0.65	0.178	0.563	0.730	0.283	0.236	0.127	0.322	0.235	0.127			
725 Series	High Profile, Fixed Picture	0.14	7.1	0.24	0.44	0.110	0.298	0.551	0.185	0.184	0.237	0.210	0.185	0.237	<0.05 (<0.01)	580 (12.11)	C-45
725 Series	High Profile, Fixed Picture	0.19	5.3	0.45	0.58	0.178	0.563	0.730	0.187	0.237	0.237	0.211	0.238	0.237			
725 Series	Casement	0.18	5.6	0.21	0.38	0.110	0.298	0.551	0.243	0.182	0.238	0.270	0.182	0.238	0.0 (0.0)	360 (7.52)	C-45
725 Series	Casement	0.22	4.5	0.39	0.50	0.178	0.563	0.730	0.247	0.236	0.238	0.273	0.235	0.238			
725 Series	Awning	0.17	5.9	0.21	0.38	0.110	0.298	0.551	0.243	0.182	0.238	0.270	0.182	0.238		See note 1	
725 Series	Awning	0.22	4.5	0.39	0.50	0.178	0.563	0.730	0.247	0.236	0.238	0.273	0.235	0.238		See note 1	
925 Series	Low Profile, Fixed Picture	0.11	9.1	0.22	0.38	0.072	0.240	0.426	0.272	0.151	0.128	0.306	0.153	0.128	<0.05 (<0.01)	580 (12.11)	C-50
925 Series	Low Profile, Fixed Picture	0.14	7.1	0.42	0.57	0.107	0.472	0.648	0.277	0.179	0.128	0.311	0.181	0.128			
925 Series	High Profile, Fixed Picture	0.11	9.1	0.19	0.34	0.072	0.240	0.426	0.171	0.156	0.235	0.190	0.158	0.235	<0.05 (<0.01)	580 (12.11)	C-45
925 Series	High Profile, Fixed Picture	0.13	7.7	0.38	0.52	0.107	0.472	0.648	0.172	0.184	0.235	0.191	0.186	0.235			
925 Series	Casement	0.15	6.7	0.17	0.29	0.072	0.240	0.426	0.235	0.153	0.236	0.259	0.153	0.236	0.0 (0.0)	360 (7.52)	C-45
925 Series	Casement	0.17	5.9	0.33	0.45	0.107	0.472	0.648	0.238	0.181	0.236	0.262	0.180	0.236			
925 Series	Awning	0.14	7.1	0.17	0.29	0.072	0.240	0.426	0.235	0.153	0.236	0.259	0.153	0.236		See note 1	
925 Series	Awning	0.17	5.9	0.33	0.45	0.107	0.472	0.648	0.238	0.181	0.236	0.262	0.180	0.236		See note 1	

Note 1: Testing expected to be completed by 11/09.

Passive House Equations for Fixed/Casement/Awning Windows* (rectangular shapes only)

Full window U-factor:

$$U_w = \frac{U_{cg}A_{cg} + U_{eg}A_{eg} + U_fA_f}{A_w}$$

$$U_{eg} = \frac{U_{egs}A_{egs} + U_{egj}A_{egj}}{A_{eg}}$$

$$U_f = \frac{U_{fs}A_{fs} + U_{fj}A_{fj}}{A_f}$$

$$A_{cg} = \left(L_s - 2h_j - \frac{5}{12}\right) \cdot \left(L_j - 2h_s - \frac{5}{12}\right)$$

$$A_w = A_{cg} + A_{eg} + A_f$$

$$A_f = A_{fs} + A_{fj}$$

$$A_{fs} = 2(L_s - h_j)h_s$$

$$A_{fj} = 2(L_j - h_s)h_j$$

$$A_{eg} = A_{egs} + A_{egj}$$

$$A_{egs} = \frac{5}{12} \left(L_s - 2h_j - \frac{5}{24}\right)$$

$$A_{egj} = \frac{5}{12} \left(L_j - 2h_s - \frac{5}{24}\right)$$

U_w : Window overall heat transfer rate $\left(\frac{BTU}{h \cdot ft^2 \cdot ^\circ F}\right)$

U_{cg} : Center-of-glass overall heat transfer rate $\left(\frac{BTU}{h \cdot ft^2 \cdot ^\circ F}\right)$

U_f : Frame overall heat transfer rate $\left(\frac{BTU}{h \cdot ft^2 \cdot ^\circ F}\right)$

U_{fs} : Frame sill overall heat transfer rate $\left(\frac{BTU}{h \cdot ft^2 \cdot ^\circ F}\right)$

U_{fj} : Frame jamb overall heat transfer rate $\left(\frac{BTU}{h \cdot ft^2 \cdot ^\circ F}\right)$

U_{eg} : Edge-of-glass overall heat transfer rate $\left(\frac{BTU}{h \cdot ft^2 \cdot ^\circ F}\right)$

U_{egs} : Edge-of-glass sill overall heat transfer rate $\left(\frac{BTU}{h \cdot ft^2 \cdot ^\circ F}\right)$

U_{egj} : Edge-of-glass jamb overall heat transfer rate $\left(\frac{BTU}{h \cdot ft^2 \cdot ^\circ F}\right)$

A_w : Window overall area (ft^2)

A_{cg} : Center-of-glass area (ft^2)

A_f : Frame area (ft^2)

A_{fs} : Frame area sill (ft^2)

A_{fj} : Frame area jamb (ft^2)

A_{eg} : Edge-of-glass area (ft^2)

A_{egs} : Edge-of-glass sill area (ft^2)

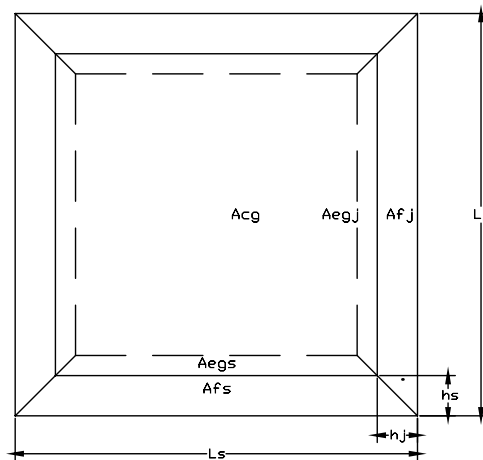
A_{egj} : Edge-of-glass jamb area (ft^2)

L_s : Frame sill length (ft)

L_j : Frame jamb length (ft)

h_s : Frame sill height (ft)

h_j : Frame jamb height (ft)



* Based on North American Passive House model

About Serious Materials

Serious Materials develops and manufactures sustainable green building materials that save energy, save money, improve comfort, and aggressively address climate change. Super-insulating full-frame R-value SeriousWindows™ reduce heating and cooling energy costs by up to 50%. For the same or less cost as commonly specified glazing, SeriousGlass™ super-insulating commercial glass delivers rapid payback and higher energy savings. QuietRock® Soundproof Drywall reduces material use, enhances livability, and supports dense urban construction. EcoRock™ is the only true green alternative to gypsum drywall. Serious Materials products are manufactured in the company's five facilities across North America. SeriousWindows and SeriousGlass support energy efficiency funding programs as outlined under the American Recovery & Reinvestment Act (ARRA) including Weatherization (WAP), Green Federal Buildings, State Energy Program (SEP), Energy Efficiency – Conservation Block Grants, Energy Tax Credit for Consumers, and Tax Deductions for Commercial Buildings. The company was commended by both President Obama and Vice President Biden for its advanced energy-saving materials and the work it is doing to re-create American green manufacturing jobs. For more information, visit www.SeriousMaterials.com.



1250 Elko Drive
Sunnyvale, CA 94089
(800) 797-8159
www.seriousmaterials.com

PN# 102-00023-101409



**GREEN JOBS
GET SERIOUS**

Save energy.
Save money.
Create green jobs.
Build green.