



ENERGY FOCUS

Extreme Temperatures Require High-Quality Windows

By Adam Wasch, Energy Outreach Consultant for CCHRC and CES

Back in November, we discussed basics to look for in windows. These qualities included efficiency ratings from the National Fenestration Rating Council (NFRC), low-emissivity (Low-E) coatings, and double or triple panes. That was before temperatures plunged into the -40s Fahrenheit and reports of cracked windows and frames became common. What happened? Well, our advice wasn't complete. We neglected to recommend that everyone move to Hawaii for the month of December.

Windows that are not manufactured to deal with Alaska's extreme climate don't work so well here even if they look good for other reasons – like a lower price. Even well-insulated windows can develop problems. Mass produced windows that might function just fine in the Lower 48 may fail in Alaska. Blown seals, cracked panes, and warped frames are all signs that your windows aren't up to snuff.

Widely promoted Energy Star ratings do not take the interior Alaskan climate into account – they consider northern climates limited to the Lower 48. We recommend a minimum U-factor rating of .25 (R Value of 4) for interior Alaska. To determine whether a window is designed to perform in Alaska, ask to what temperatures they are guaranteed and read their warranties carefully. Slider units are especially ill-suited to our climate.

Wood, vinyl, or fiberglass frames are superior choices to metal in terms of thermal performance. Each material has advantages and disadvantages. Wood is versatile, but requires maintenance and can vary widely in quality. Vinyl expands and contracts significantly with changes in temperature, but can function well if built to allow for movement between the frame and glass panes. Fiberglass windows can withstand extreme temperatures because they expand and contract very similarly to glass itself, but the windows may require more labor to install correctly because they are not formed in a single piece like vinyl units. Yet another way to avoid pressure cracking is to purchase double-strength glass.

When shopping for windows, ask about the durability of the window's gaskets and weatherstripping. Cheap materials can crack or fail prematurely. Inspect demonstration windows to see how locking mechanisms engage. On bigger windows double-locking mechanisms or sliding bars can make a huge difference in sealing. Edge spacers matter, too. Metal edge spacers that exist between the panes can facilitate heat loss and cause frost build-up. "Warm" edge spacers made of synthetic materials are a better choice.

Finally, compare the warranties offered by manufacturers and installers. What is covered? Are window panes covered for one period and frames or seals for another? Does the warranty cover the entire window system? Some warranties exclude hardware or will not guarantee that windows will open and close correctly. Warranties are a good indication of how long manufacturers are confident your windows will continue to perform well.

More information is available from NFRC (<http://www.nfrc.org>) and the University of Alaska Fairbanks Cooperative Extension Service. Look up Publication HCM-04458 and others at <http://www.uaf.edu/ces/pubs>.

Adam Wasch promotes energy awareness for the Cooperative Extension Service (CES) and the Cold Climate Housing Research Center (CCHRC). For questions or comments please contact CCHRC at (907) 457-3454