

Window Material Selection and PVC Window Frames

Recent studies show that PVC window frames offer the best performance and lifespan out of any other window frame option besides wood (which requires maintenance). There is a sometimes a hesitancy by the US buyer to view PVC window frames as a better option than wood. Modern unplasticized PVC window frames like the ones used by Intus have an estimated lifespan of over 30 years. Modern engineering advances and the use of UV rejecting exterior laminates on the PVC have really made PVC a long-term window frame that does not require maintenance except for the occasional cleaning.



Madison Park Passive House (certified), Seattle, WA
Passive House Consultant: Harrison Architects, Hammer and Hand
Builder: Cascade Built
Architect: NK Architects
<http://www.aia.org/practicing/awards/2014/housing-awards/ParkPassive/>

Photo Credit: © Aaron Leitz Photography
Interior Designer: Donna Bergeron Interior Design
AIA 2014 One/Two Family Custom Housing Winner

PVC compounds are 100% recyclable. After mechanical separation, grinding, washing and treatment to eliminate any impurities, it is reprocessed using various techniques and reused in the production. In mechanical recycling the PVC waste is ground into small pieces that can be easily processed into new PVC compounds that are ready to be melted and formed into new products. In parts of Europe over 250,000 tons of PVC is recycled on a yearly basis.

PVC windows are 100% recyclable when compared to alternative frame materials. The World Health Organization and the European Union have undertaken numerous studies which have repeatedly shown that PVC is safe. John Battle MP, former Minister of State for Science, Energy and Industry stated, *“Ministers have made clear that independent evidence such as that from Professor Rappe, the*

independent scientific advisor to the EU and World Health Organization, demonstrated that PVC is a safe material.”

PVC is used everywhere in our lives. Hospital operating rooms use PVC products, the products we cook and store our food in, our cars, airplanes, our computers; it's basically everywhere and everything we touch and use.



While white PVC is the most commonly used color in window frames. The truth is that dozens of laminate color options are available for PVC window frames. These laminates are applied at the window factory and one can choose from light colors to dark colors and everything in-between. The laminate options that Intus offers will not dull, peel, or flake off. These laminates are engineered to reflect heat and UV thereby protecting the PVC frames.

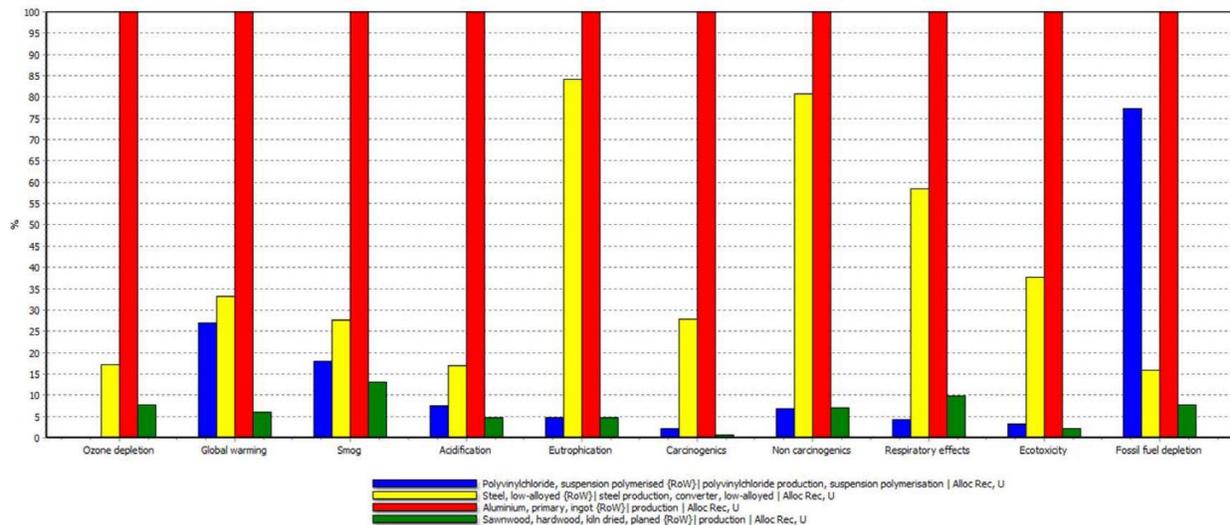
As of 2012 vinyl windows accounted for almost 70% of all residential windows sold in the U.S. Wood comes in at around 20% and the remaining 10% of residential windows sold are either aluminum or fiberglass. Consumers like PVC windows because they are low maintenance, durable and affordable. Wood windows require maintenance and are subject to rot and termite damage. Every few years the

wood frames should be stained to prevent the wood from rotting. People like to have low maintenance and trouble free windows for their homes. PVC offers that option and that is why they are so popular with residential homes. Research shows that high-quality PVC windows have been estimated to last 30 years or greater.

PVC will not rust, rot or mold and is termite resistant. PVC windows like the ones that Intus manufacturers come with steel Galvanized U-Channels sealed within the chamber profile. Approximately 90% of the windows strength comes from these reinforcements. Intus PVC Windows have been tested and achieve a DP70 rating and they have even been tested and approved for hurricane zones with wind speeds of up to 200mph.

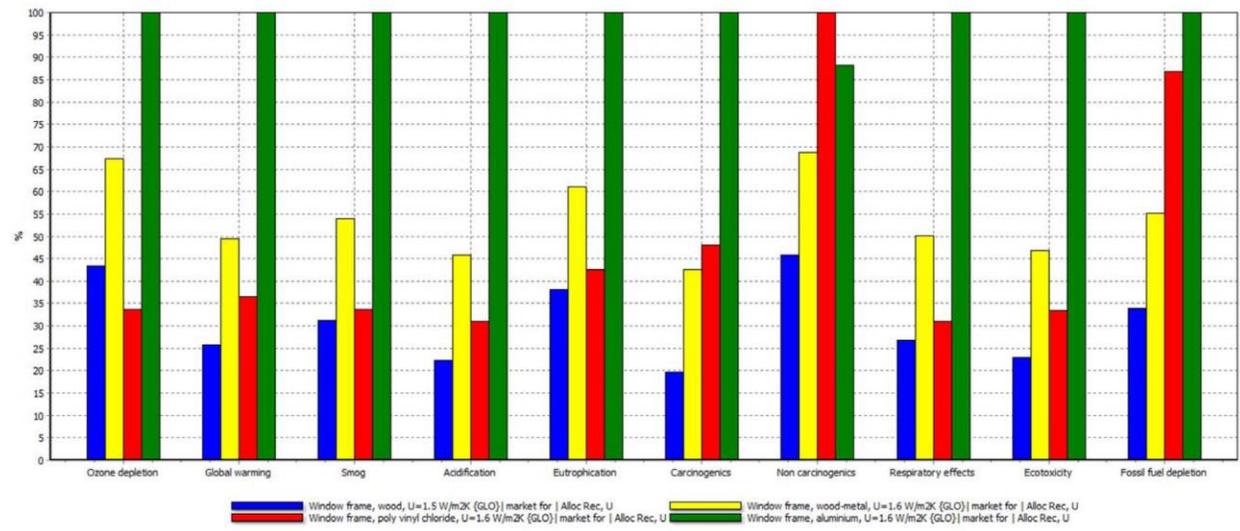
Many years ago some window manufacturers used substandard techniques and additives so yellowing occurred on their profiles. With the advancements we have today and strict quality control during manufacturing; it is not an issue with today's high-quality window frame manufacturing practices. The use of uPVC or unplasticized polyvinyl chloride, means that no plasticizers are added. Quality additives ensure that the white colored window frames remain that way for their entire service life. PVC window frames are difficult to ignite and are naturally self-extinguishing. A very high temperature is required to ignite it and in the absence of a flame source it will stop burning. This is a significant positive for fire safety. PVC windows will not cause, support or enhance the development of fire. The same cannot be said for wood windows and doors.

Material comparison:



The above graph shows that in general, pound for pound, PVC and wood are less toxic and environmentally detrimental than are steel and aluminum. This is only a rough reference as all materials have very different uses and performance per pound. It does however dispel the rumor that PVC is leagues worse than other commonly used building materials.

Window frame comparison:



Overall we can see that the wood frame window has the lowest environmental impact in most categories. PVC is generally the second best performer with the exception of toxicity and fossil fuel depletion. Based on documentation it appears that maintenance is not considered. Service life is assumed to be the same for all options. These assumptions tend to give advantage to wood-only systems as they will need regular treatment to maintain in service. Frame treatment could significantly alter these results.