

Comments to General Discussion Questions:

- i. Are there other Studies? **Yes**
 - ii. Are there any general concerns? **See comments below**
- 1.) Please find attached a window study published in 2011 involving storm windows evaluated for pre-1945 housing which included thermal glass units, low e coatings, gases, internal suspended films, and frame materials. Previously, the NFRC and window industry moved to a whole window U-factor for rating windows. Without a rating system for storm window attachments, storm window products have already been developed based on achieving U-factor and SHGC performance metrics, and not simply emissivity. Such operable and non-operable products are commercially available now. To encourage a truly “high efficiency” storm window market, there should be incentive for manufacturers to further develop products in that direction. **A hard coat low e coating on a single pane of glass is an improvement, as studies have shown, but the study attached demonstrates efficiencies beyond even new window efficiencies is possible.** In the study, a specific “high efficiency” storm window application rivaled R-5 windows. There is a place in the market for all storm products that improve window efficiency, but performance metrics needs to be all-encompassing and progressive to encourage further development, design, testing and advancements.
 - 2.) Have there been any studies as to the durability and longevity of an exposed Low E coating? We started using hard coat Low e coatings on #2 surface of single pane storm windows in 2005-2007, but discontinued due to concerns of coating failures and warranty issues. We found some glass manufacturers would warranty the pyrolytic low e coating, but others would not. That is when we started developing thermal and laminated glass storm window products to mitigate customer handling/cleaning problems and resulting warranty complaints.
 - 3.) From our experience, not all storm window applications require weep holes. While not a point of contention being a product requirement, it’s a point worth notation. Existing window type, storm window design and installation, glass type and location, weather-stripping, and climate can all influence if weep holes are necessary.
 - 4.) We recommend storm window weather-stripping for air sealing be a product requirement.

Thank you for your consideration,

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