



Non-Metalized Window Film

Technology Overview

From an energy-efficiency perspective, windows are the weakest link in the building envelope, but replacing them can be cost-prohibitive. This non-metalized window film promises to improve window thermal performance while at the same time provide increased film durability and reduced visible reflectivity. Using non-metal components promotes a longer outdoor lifetime, despite exposure to the sun, moisture, and other elements. Unlike conventional metalized products, non-metal components don't oxidize or corrode, nor do they interfere with radio frequency signals (i.e., cell phone signals). The film's durable surface coatings allow the windows to be cleaned just as they were before the film was installed. The exterior version of the non-metalized window film receives full solar exposure, giving it the greatest impact to reduce heat transmission through the window and making it an effective option even on coated or tinted insulating glass units (IGUs).

Why is GSA Interested?

Window films are a cost-effective alternative to installing new, more energy-efficient windows. Most film installation to date has been interior, but exterior film can be a better choice for tinted or dual-pane windows. Interior film is not as effective at blocking solar heat gain, particularly on dual-pane windows. They also are not always compatible with tinted windows because of thermal stress. This exterior film promises a longer lifespan than previous exterior films and offers the opportunity to improve the performance of tinted and dual-pane windows without window replacement. In addition, an exterior application is less disruptive to tenants.

How Will Success Be Measured?

The testbed will assess three manufacturer claims: 99.9% reduction of ultraviolet (UV) wavelengths, 1.5 times improvement in solar heat reduction for the exterior version compared to an interior film on dual-pane bronze glass, and payback in less than 15 years.

Deployment Potential

Non-metalized window film is best suited to buildings with a window-to-wall ratio greater than 30% and is appropriate for historic buildings where glass appearance cannot be changed. The exterior version is most advantageous for dual-pane windows, where other window films have not been effective.

Green Proving Ground (GPG), in collaboration with the U.S. Department of Energy, is evaluating the real-world performance of non-metalized window film in federally owned buildings within GSA's inventory. The technology will be provided by 3M and NGS and coordinated with other ongoing evaluations of this technology.