

# Optical Distortion in Sea-Storm® Laminated Glass Fabricated with an Encapsulated PET Film

Laminated glass is typically utilized in window applications requiring safety glazing, security glazing, burglary resistance, sound control, ultraviolet filtering and hurricane resistant glazing products.

Laminated glass is produced by bonding a plastic interlayer (typically polyvinyl butyral) between two or more panes of glass under heat and pressure in the autoclave. Sea-Storm® PET laminated glass is produced by bonding a plastic PET (polyester) film encapsulated within the PVB interlayer. The result is a durable high performance glazing composite material, which if broken, tends to retain glass fragments and reduces the risk of injury or property damage. The Sea-Storm® product was developed by Cardinal to meet the new hurricane impact codes that are being required in some areas along the seacoast.

- Sea-Storm® PET laminated glass can be utilized in applications requiring advanced penetration resistance, such as meeting hurricane impact codes. With the

PET film, the laminated glass' penetration resistance is enhanced due to the PET films' mechanical properties that resist tearing and stretching. The optical properties of the PET film are closely matched to the properties of the PVB interlayer and glass substrate, however the PET film can be visible or noticeable under certain viewing conditions.

- The PET film is most visible when viewed under reflectance conditions. Under critical viewing conditions, the reflected light from the PET film will sometimes be noticeable as ripples, dimples or waves with an inconsistent pattern. The PET film ripples will not distort visible images in transmission viewing. The PET film ripples when used in conjunction with tinted (gray, green, bronze, white, etc.) PVB interlayers may alter the color or visible transmission of these glass composites. This condition may create a spotted or streaked appearance.

Cardinal's manufacturing processes (laminated lay-up and autoclave lamination) are tightly controlled to minimize the appearance phenomenon as detailed above with the Sea-Storm® PET laminated glass product.

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