

# Glass-Gard Anti-Spall Laminates

Featured Benefits and Applications

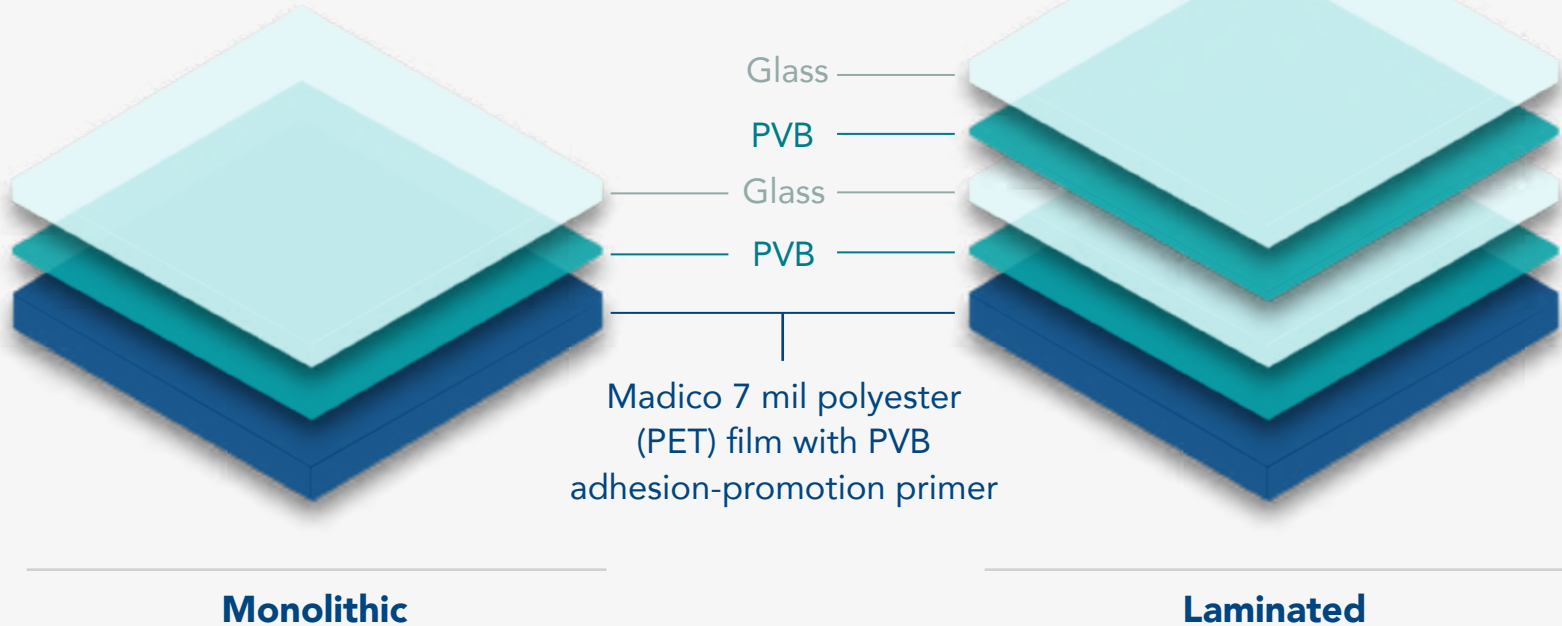


Madico's Glass-Gard is a PET-based laminate that can be used with any brand PVB to achieve an additional protective layer to the interior (air) side of glass.

This protective layer when combined with glass and PVB through an auto-clave or lamination oven process, increases the overall strength of the final glass construction and achieves superior anti-spall performance. Glass-Gard can be used with monolithic glass as a light weight solution, or in laminated glass to increase the overall strength without the need for additional layers.

Glass-Gard anti-spall laminates combines Madico's trusted hard coat, to create an excellent scratch and chemical resistant layer, so you can feel confident in the lifespan of our products.

## Material Construction



**PVB layers reduce weight, add strength, and improve safety**

# What to Expect

## Featured benefits of Glass-Gard Anti-Spall Laminates

### Ease of Fabrication

The fabrication process with Glass-Gard laminates can be done with typical lamination equipment. Our laminates are used by many customers in both autoclave and lamination oven systems, requiring very little to no modification to the lamination process.

### 7MIL and 15MIL Options

Madico offers the Glass-Gard anti-spall laminates in two thicknesses to help you achieve the glass performance necessary for today's standards. Our 7MIL laminate is designed for typical anti-spall and additional strength that you commonly see in the industry and our 15MIL laminate offers additional strength and performance for higher risk applications.

### No Spall

When glass is impacted by an object, the pieces of glass can be dangerous to people inside of buildings, vehicles, or public transportation. Glass-Gard anti-spall laminates is a protective layer between the glass and people.

### Used With Any Brand PVB

As an OEM glass fabricator, you want options when it comes to your suppliers. Madico's Glass-Gard products are primed on one side to increase adhesion and can be used with any brand PVB.

### Light Weight Layer

Glass-Gard anti-spall laminates serves as a lightweight and efficient solution for enhancing the strength of the overall glass system. Through various testing, our anti-spall laminate has helped our clients reduce weight and thickness of their overall glass make-ups.

### Strength and Durability

The strength of Glass-Gard anti-spall laminates when combined with PVB, lies in its ability to withstand high-velocity impacts, dispersing energy and minimizing risk. Our laminates use Madico's proven chemical and scratch resistant hard coat that offers glass-like properties.



# Where Glass-Gard Anti-Spall Laminates are Used

## Forced Entry Resistant Glazing

Glass-Gard anti-spall laminates is a security-enhancing solution designed to aid in fortifying windows and glass doors against unauthorized entry attempts. The anti-spall laminate plays a crucial role in preventing the glass from shattering into dangerous fragments when subjected to forceful impacts, such as attempted break-ins or vandalism. By containing and minimizing spalling, our laminates when combined with glass, not only deters intruders but also ensures the safety of occupants and valuable assets within a secured space.



## Bullet Resistant Glazing

Bullet-resistant glass combined with Madico's anti-spall laminates creates a specialized type of transparent armor, designed to provide protection against ballistic threats, while minimizing the risk of spall formation. Typical con our anti-spall laminates is composed of multiple layers, including a tough outer layer that resists penetration and an inner layer coated with Madico's anti-spall laminates. This laminate acts as a barrier to contain and reduce the fragmentation or spalling of glass in the event of a ballistic attack.

**Make your spaces  
safe and secure.**



## Public Transportation Glazing

Glass-Gard anti-spall laminates play a vital role in enhancing the safety and security of public transportation vehicles. Whether applied to the windows of buses, trains, or other modes of transport, the anti-spall laminate acts as a protective barrier during unforeseen incidents, such as accidents, debris, or acts of vandalism. In the event of an impact, the anti-spall laminate works to contain glass fragments, minimizing the risk of injury to passengers and preventing shards from dispersing within the vehicle. This feature is especially critical in public transportation, where the well-being of passengers is of utmost importance. By incorporating anti-spall film, public transportation authority's aim to mitigate the potential hazards associated with shattered glass, ensuring that passengers can travel with an added layer of protection.



## Storm Resistant Glazing

Storm-resistant glass performance requires anti-spall features as part of the protective glazing to withstand the impact of severe weather conditions, such as hurricanes, tornados, and other high risk storms. The inclusion of Madico's Glass-Gard anti-spall laminates, adds an extra layer of safety by minimizing the risk of glass fragmentation during high-velocity impacts. In the event of extreme weather, the anti-spall laminates helps hold the glass together, preventing dangerous shards from dispersing and causing harm. Storm-resistant glass using our anti-spall laminates is commonly used in buildings located in hurricane-prone regions, offering both structural protection and the assurance of reduced injury from shattered glass.

Improve safety,  
without making  
things cloudy.



## Automotive Glazing

Glass-Gard anti-spall laminates adds a significant advancement in vehicle safety technology. Glazing systems designed with Madico's anti-spall laminates enhances passenger protection by minimizing the risks associated with shattered glass during accidents or collisions. In the unfortunate event of a crash, the anti-spall film holds the glass together, preventing it from breaking into hazardous shards that could cause harm. This technology is especially crucial for windshields, side windows, and larger sunroofs, offering an additional layer of safety and strength in the event of rollover or impact. Automotive glazing with Glass-Gard anti-spall film contributes to overall vehicle safety standards.



## Architectural Glazing

Architectural glazing with anti-spall laminates by Madico is used in various applications such as commercial buildings, government facilities, healthcare facilities, residential, and in any application where additional strength and protection is required. Beyond its safety benefits, this solution maintains transparency, allowing natural light to enter the building while ensuring a secure and aesthetically pleasing environment. Typical construction can comprise of both monolithic or laminated glass fabricated with our anti-spall laminates to the most inside surface of the overall glass construction.



## Physical Properties

Tensile Strength	<b>&gt;90%</b>
Elongation at Break	<b>10%</b>
Scratch Resistance <1.0% Delta Haze ASTM D-1044-85 Peel Strength (ASTM D-3167 Results)	<b>&gt;130lb / in.</b>
Mounting Adhesive	<b>None</b>



## Visible Light

Transmitted	<b>&gt;90%</b>
Reflected Exterior	<b>10%</b>



## Haze

Pre-processing (film only)	<b>&lt;0.50%</b>
Post-autoclaving on 1/4" glass with 30 mil PVB	<b>&lt;0.40%</b>



## Cross-hatch Adhesion

ASTM D3359 % Area Removed	<b>0.0</b>
Test B Rating	<b>5B</b>



## Chemical Resistance

Alcohols	<b>Resistant</b>
Aldehydes	<b>Resistant</b>
Hydrocarbons	<b>Resistant</b>
Chlorinated Solvents	<b>Resistant</b>

### Acids

Diluted (<10%) Includes Hydrofluoric Acid	<b>Resistant</b>
Concentrated	<b>Limited Resistance</b>

### Alkalies

Diluted (<10%)	<b>Resistant</b>
Concentrated	<b>Limited Resistance</b>

# Performance Measurements

# Need a customized solution?

You've come to the right place. Our scientists, engineers, and research and development team have the experience and expertise to help meet your challenge and achieve your objectives.

727.388.2111 • [infosf@madico.com](mailto:infosf@madico.com) • [madico.com](https://www.madico.com)

9251 Belcher Road N., Pinellas Park, FL 33782

