

GSA BLAST TESTING SUMMARY

TEST STANDARD: General Services Administration
GSA TS01-2003

OVERVIEW: Solar Gard® Armorcoat® safety & security window films have been tested to various blast mitigation standards over the years. This document provides a summary of the results when tested in accordance with the GSA standard. For specific details refer to the individual test reports. Examples on how to reference this chart to select the Armorcoat safety film to meet your buildings requirements is on page 2.

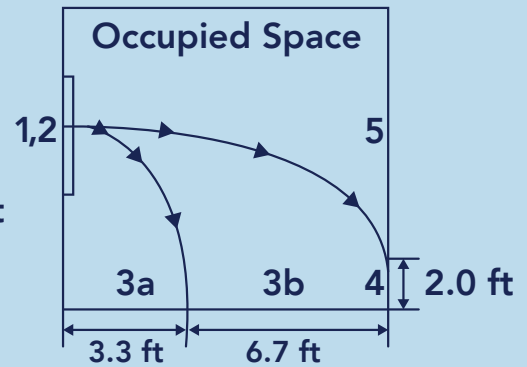


FIGURE 1. GSA performance conditions

TEST STANDARD / BLAST PRESSURE

		GSA Performance Condition					
		Minimum pressure of 4 psi (28 kPa)					
Film Type	Glass Construction	1	2	3a	3b	4	5
		Glazing does not break.	Glazing cracks but is retained by the frame.	Glazing cracks. Fragments enter space and land on floor no further than 3.3 ft. from the window.	Glazing cracks. Fragments enter space and land on floor no further than 10 ft. from the window.	Glazing cracks. Fragments enter space and land on floor and impact a vertical witness panel	Glazing cracks and window system fails catastrophic-ally.
4 mil	SP-A				DL		
7 mil	SP-A				DL, WG		
	DP-A			DL			
8 mil	SP-A			WG	DL, FL		
	SP-T		WG		FL		
	DP-T						
	DP-A		WG				
		Minimum pressure of 9 psi (62 kPa)					
14 mil	SP-A			M			

GLASS TYPE: SP-Single Pane / DP-Double Pane / A-Annealed Glass / T-Tempered-Toughened Glass

ANCHORING SYSTEM: DL-Daylight / WG-Wet Glaze / FL-Flexible / M-Mechanical

DEFINITIONS:

Performance Condition: The performance condition is a number or number/letter combination based on several criteria including breach and distance of glass fragments in the chamber post blast.

Daylight (DL): An applied film covering only the daylight / vision area of the opening with no anchoring system applied.

Anchoring system: A system applied to the perimeter of the glazing securing the film to the frame to decrease the likelihood of glass fragment entry. Sometimes referred to as "attachment system"

Wet Glaze (WG): A high strength structural silicone applied along the perimeter securing the film to the frame. In some cases, total perimeter application is not required.

Flexible (FL): An anchoring system utilizing a flexible membrane with high bonding tape applied along the perimeter securing the film to the frame.

Mechanical (MC): An anchoring system utilizing metal profiles applied along the perimeter with fasteners securing the film to the frame. In some cases, total perimeter application is not required. This system is typically used to mitigate pressures above 8 psi (55 kPa).



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Navigating the Summary Chart continues on page 2

NAVIGATING THE SUMMARY CHART


The scorecard result in the document "[DETERMINING THE SECURITY LEVEL OF YOUR BUILDING](#)" is a Facility Security Level (FSL) of II. When referencing the [Leasing Desk Guide](#), it requires a minimum GSA performance condition of 3b when tested in accordance with the [GSA TSO1-2003 standard](#) at a minimum blast pressure of 4 psi. In the chart below we can see several Solar Gard Armorcoat safety & security films have been tested on various glass constructions achieving a 3b or better.

For example purposes, let's use single pane annealed glass (SP-A) as the primary glass in the building.

These columns provide the glass construction and film type utilized in testing.

This area of the chart refers to the minimum blast pressure indicated in the GSA Leasing Desk.

The performance condition columns provide the performance achieved by the system identified.

		TEST STANDARD / BLAST PRESSURE					GSA Performance Condition	
		Minimum pressure of 4 psi (28 kPa)						
Film Type	Glass Construction	1 Glazing does not break.	2 Glazing cracks but is retained by the frame.	3a Glazing cracks. Fragments enter space and land on floor no further than 3.3 ft. from the window.	3b Glazing cracks. Fragments enter space and land on floor no further than 10 ft. from the window.	4 Glazing cracks. Fragments enter space and land on floor and impact a vertical witness panel	5 Glazing cracks and window system fails catastrophically.	
4 mil	SP-A				DL, M			
7 mil	SP-A				DL, WG, M			
	DP-A			DL				
8 mil	SP-A			WG, M	DL, FL, M			
	SP-T		WG		FL			
	DP-T		WG					
		Minimum pressure of 9 psi (62 kPa)						
14 mil	SP-A			M				

GLASS TYPE: SP-Single Pane / DP-Double Pane / A-Annealed Glass / T-Tempered-Toughened Glass
ANCHORING SYSTEM: DL-Daylight / WG-Wet Glaze / FL-Flexible / M-Mechanical

- The options for film type are 4 mil, 7 mil and 8mil. These films have all been tested on single pane annealed glass (SP-A)
- 4 mil, 7 mil and 8mil can meet the requirement as a daylight (DL) application.

If a better performance condition is required, an 8 mil film with a wet glaze (WG) or mechanical (M) anchoring system achieves a performance condition of 3a.



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