

ISO BLAST TESTING SUMMARY

TEST STANDARD: International Organisation for Standardisation [ISO 16933:2007](#)

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 ISO 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.



Air Blast

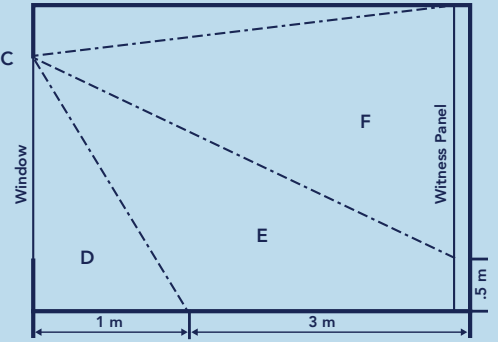



FIGURE 1. ISO Hazard Ratings

ISO BLAST TESTING

Test Standard: International Organisation for Standardisation (ISO)

Test Standard		Blast Pressure		
ISO Hazard Rating		Minimum blast pressure 50 kPa (7.25 psi) – EXV33		
		Glass Construction		
	Film Type	Single Pane Toughened	Double Pane Toughened	Double Pane Annealed
A - No Break Glazing does not break.	200 micron (8 mil)			
B - No Hazard Glazing cracks but is retained by the frame.				
C - Minimal Hazard Glazing cracks. Small fragments enter space up to 3 m with a united dimension < 250 mm.		Wet Glaze	Wet Glaze	
D - Very Low Hazard Glazing cracks allowing large fragments to enter the space no further than 1 m & small fragments up to 3 m with a united dimension < 250 mm.		Flexible		Wet Glaze & Mechanical
E - Low Hazard Glazing cracks allowing large fragments to enter the space no further than 3 m & small fragments < .5 m of the vertical witness panel.				Flexible
F - High Hazard Glazing cracks allowing > 10 fragments to enter the space > .5 m of the vertical witness panel.				

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

DEFINITIONS:

Hazard Rating: A hazard rating is applied to glazing based on its performance under the blast conditions chosen for the test. The rating is specific only to those blast conditions.

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 utilising a flexible membrane with high bonding tape applied along the perimeter securing the film to the frame.

Mechanical (MC): An anchoring system utilising 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 55 kPa (8 psi).



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Navigating the Summary Chart continues on page 2

NAVIGATING THE SUMMARY CHART

For example purposes, let's use single pane toughened glass as the primary glass in the building.

The hazard rating columns provide the performance achieved by the system identified.

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

This area of the chart refers to the target blast pressure indicated in the ISO Standard

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Test Standard: International Organisation for Standardisation (ISO)				
Test Standard	Film Type	Blast Pressure		
ISO Hazard Rating		Single Pane Toughened	Double Pane Toughened	Double Pane Annealed
		Minimum blast pressure 50 kPa (7.25 psi) – EXV33		
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D - Very Low Hazard Glazing cracks allowing large fragments to enter the space no further than 1 m & small fragments up to 3 m with a united dimension < 250 mm.		Flexible		Wet Glaze & Mechanical
E - Low Hazard Glazing cracks allowing large fragments to enter the space no further than 3 m & small fragments < .5 m of the vertical witness panel.				Flexible
F - High Hazard Glazing cracks allowing > 10 fragments to enter the space > .5 m of the vertical witness panel.				

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

A 200 micron film with a flexible anchoring system achieves a hazard rating of a "D"

If a better hazard rating is required, a 200 micron film with a wet glaze anchoring system achieves a hazard rating of a "C".



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