

Benefits of Ballistic Glass and Security Films for Schools



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Ballistic Glass

According to FEMA 426, "ballistic windows, if required, should meet the requirements of Underwriters Laboratory (UL) 752 Bullet-Resistant Glazing for a level appropriate for the project"² Also according to FEMA 426, use of "burglary- and ballistic-resistant glazing in high risk buildings" should be considered.²

There are many levels of bullet-resistant glass, each with a varying amount of resistance to different types of bullets. UL 752 is the standard rating system for ballistic-resistant glass in the United States.⁴ As shown by Figure 1, levels of bullet-resistant glass protect against various bullet calibers and different numbers of shots. If a school implements and utilizes bullet-resistant glass, students and faculty inside can be better protected from an active shooter incident. This glass can slow down the shooter, allowing time for police to respond to the incident. Another benefit of using bullet-resistant glass is that the glass remains transparent, enhancing visibility. Ballistic-resistant glass may also resist burglary and explosions, depending on its rating.

Often times, the various UL levels cover each other.⁴ For example, Level 1, as seen in Figure 1, is rated for 9mm bullets from handguns.



Level 6 is also rated for 9mm bullets, but those are from Uzi submachine guns, which have a higher velocity. According to Total Security Solutions Vice President Jim Richards, The Level 7 "M16" test uses ammunition traveling more than twice as

UL 752 Bullet Resistant Materials Standards³

Rating	Ammunition	Weight (in Grains)	Velocity (Min-Max Feet per Second)	# of Shots
Level 1	9mm	124	1175-1293	3
Level 2	.357 Magnum	158	1250-1375	3
Level 3	.44 Magnum	240	1350-1485	3
Level 4	.30 caliber rifle (i.e. .30-06)	180	2540-2794	1
Level 5	7.62mm rifle military ball (i.e. AK-47 assault rifle)	150	2750-3025	1
Level 6	9mm (i.e. Uzi submachine gun)	124	1400-1540	5
Level 7	5.56 rifle military ball (i.e. M16 assault rifle)	55	3080-3388	5
Level 8	7.62mm rifle military ball (i.e. AK-47 assault rifle)	150	2750-3025	5

Figure 1



For more information about this recommendation, please contact:

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fast as the Level 1 and 6 tests, but those bullets are less than half the weight (M16 bullets are only slightly bigger than the .22s used in a squirrel rifle). It's the extremely high speed of these 5.56mm bullets that causes damage on the battlefield, mainly through hydrostatic shock, an effect limited to living creatures and not found in bulletproof glass.⁴

According to the Department of Homeland Security, active shooter situations generally last between 10-15 minutes.¹ On average, emergency services respond within 4 and 11 minutes.⁵ During one of these situations, any delay of the shooter into the building can save lives.

Security Film

Security film is another method of making windows and glass doors safer. Security film wraps around the glass window and helps prevent the spread of glass fragments and slows the velocity of the shards should the glass fail. Security film, also known as fragment retention film, is very useful for pre-existing windows, as it can be applied to the outside of the window itself. Similar to ballistic glass, security film can also slow down an active shooter, which allows people

to get out of the school and allows police time to respond to the threat.⁶ Security film can also mitigate the effects of an explosion. Should a bomb explode in or near a school, security film on windows and glass doors can help mitigate the effects in one of two ways; either the film will prevent the glass from fully shattering, or it will help slow down the fragmentation, preventing further deaths/injuries. Security film also protects against burglary due to window shattering.

It is recommended that all schools meet with their local Police and Fire Departments when making decisions about physical security. This can ensure that all physical security changes adhere to fire codes and do not impede the ability of emergency services to respond to an incident.



References

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