

DEFENDER™

Bullet-Resistant & Forced Entry Protection Glass

- + Bullet Resistance
- + Safety
- + Design Freedom
- + Sound Attenuation
- + Increased Productivity
- + Lower Insurance Premiums

UNM McKinnon Center

Thompson's line of Defender® glass products offers a clear view of the outside while protecting those inside.

As an industry leader in advanced glass and lamination technologies, Thompson Innovative Glass offers customers throughout North America a full line of custom glass products. Our Quality Management System is ISO 9001:2015 Certified, delivering the highest quality products.

The Defender glass series offers many choices and eliminates specific threats. Defender's forced-entry protection products have been tested to withstand extensive physical attacks.

Several Defender products also offer different levels of bullet resistance (BR). Our Defender BR-rated products are certified through third-party testing to meet and exceed industry standard UL safety code requirements for those levels.





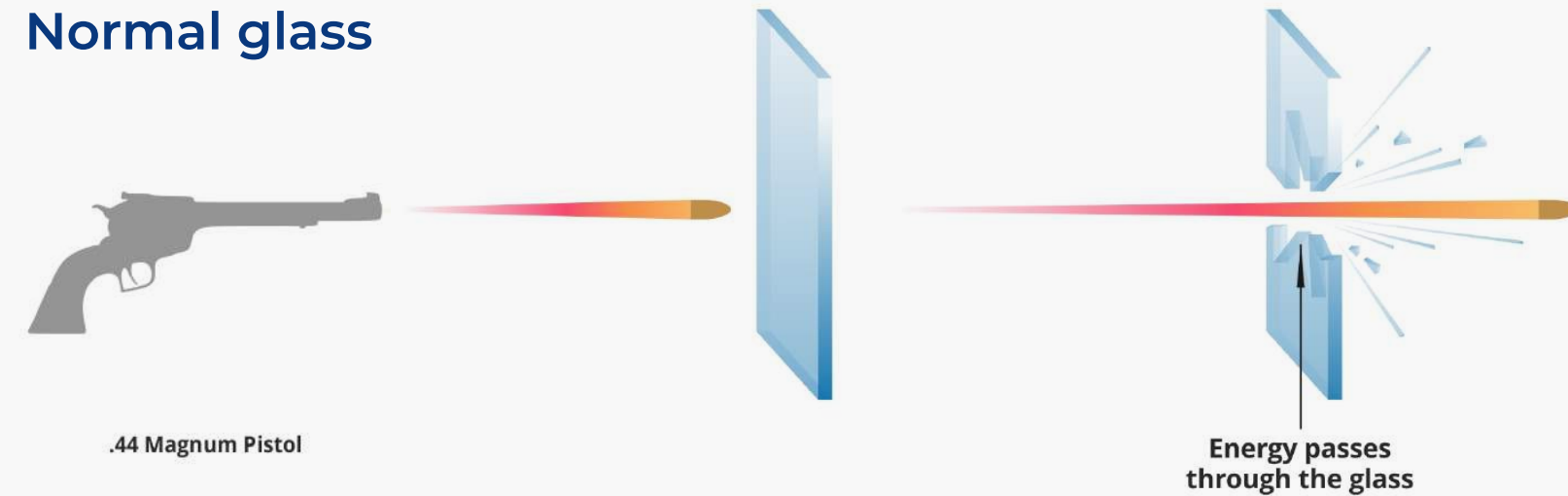
Bullet-resistant levels explained

Bullet-resistant level ratings are specified by UL-752 based on the type of weapon used and the type and number of rounds fired. As weapons get larger, the ammunition gets bigger in size and also increases in speed, resulting in higher amounts of energy hitting the glass. Generally, more layers and thicker packages are needed to

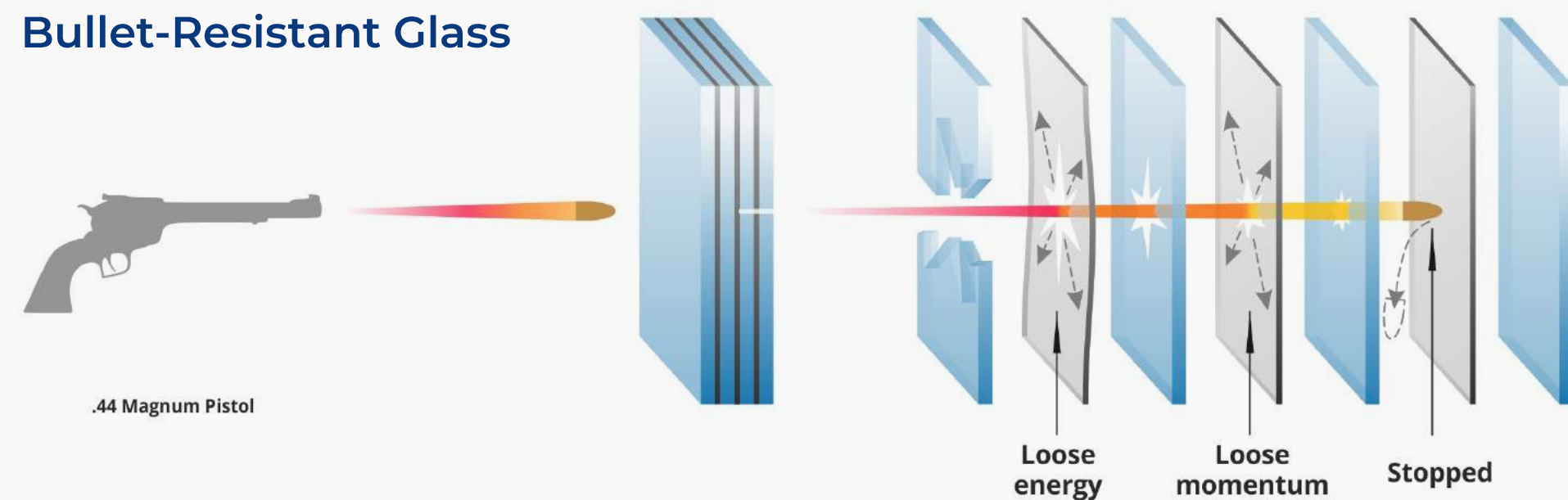
successfully dissipate that energy and stop the bullet.

In accordance with UL-752, bullet-resistant glass starts at level 1 and levels increase based upon weapon size and more powerful ammunition. Our Defender BR products follow these levels and, for many of these levels, offer no-spall and low-spall versions.

Normal glass



Bullet-Resistant Glass



No-spall vs Low-spall

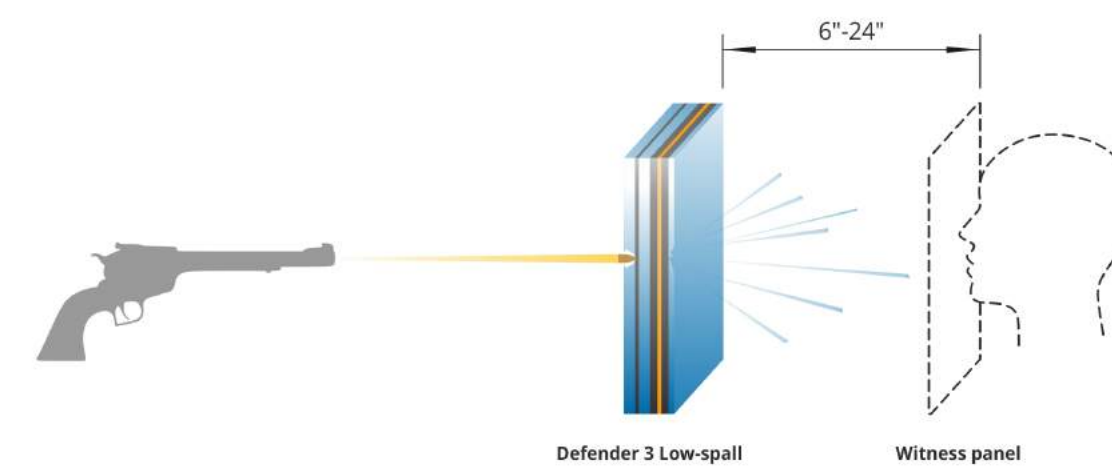
Any glass that gets hit by a bullet must absorb a large amount of energy in a split second. For certain glass make-ups, this may result in some very small fragments of glass coming off the witness-side (the inside) of the unit. These small fragments are referred to as 'spall'.

Our Defender products offer no-spall (NS) and low-spall (LS) versions for several UL-752 levels.

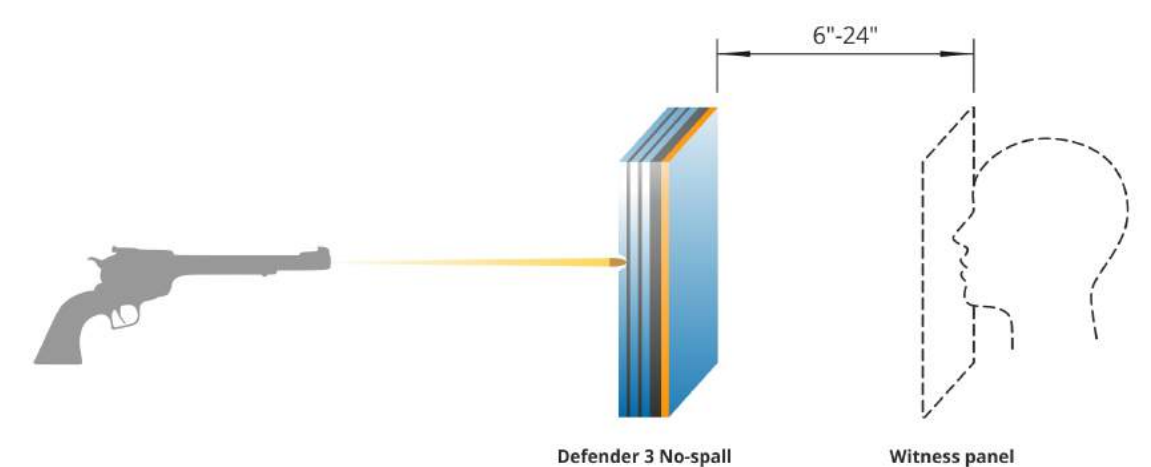
To determine spall during the testing procedures, a witness panel, made of thin cardboard or aluminum, is placed behind the glass to determine how far glass fragments may travel without penetrating this panel.

Our low-spall products provide a cost-effective way to offer protection where no-spall is not required.

Example of Low-spall




Example of No-spall



Defender Glass – Overview

Defender Glass meets your needs in the education sector as well as for retail and commercial applications.

Additionally, the Defender Glass products can be customized in various ways such as using low-E, tints or mirrored glass.

Product	Spall	UL 752 level (Ballistic Rating)	Weapon		Ammunition	Construction	Nominal Thickness	Average thickness	Other tests passed	Weight (lbs/sq ft)	
Defender 1	low	1 modified		9mm Pistol		9mm Full Metal Copper Jacket with Lead Core	All Glass	1 ^{3⁄16} "	1.190"		14.96
	no	1 (indoor-only)					All Plastic	3⁄4"	0.748"		4.52
Defender 2	low	2 modified		357 Magnum Pistol		357 Magnum Jacketed Lead Soft Point	Glass-Clad	1"	0.991"		10.97
	no	2					Glass-Clad Polycarbonate	1 ^{1⁄4} "	1.210"		13.00
	no	2					All Plastic	1"	0.991"		6.13
Defender 3	low	3 modified		44 Magnum Pistol		44 Magnum Lead Semi-Wadcutter Gas Checked	Glass-Clad	1 ^{1⁄4} "	1.214"	Forced Entry (HPW-TP-0500.03)	13.83
	no	3					Glass-Clad Polycarbonate	1 ^{1⁄16} "	1.011"		10.92
							All Plastic	1 ^{1⁄4} "	1.250"		7.70
Defender 4	low	4 modified		30-06 Hunting Rifle		30 Caliber Rifle Lead Core Soft point (30-06 Caliber)	Glass-Clad	1 ^{1⁄4} "	1.250"		14.15
	no	4					Glass-Clad Polycarbonate	1 ^{1⁄8} "	1.090"		11.77
Defender 5	low	5 modified		AR-10 Assault Rifle		7.62mm Rifle Lead Core Full Metal Copper Jacket Military Ball (308 caliber)	Glass-Clad	1 ^{9⁄16} "	1.540"		17.30
	no	5					Glass-Clad Polycarbonate	1 ^{7⁄16} "	1.350"		14.78
Defender 6	no	6		Uzi Sub Machine Gun		9mm Full Metal Copper Jacket with Lead Core	All Plastic	1 ^{1⁄4} "	1.250"		7.70
SchoolDefender	n/a	n/a	 Sledgehammer /  Baseball bat			All Glass	3⁄8"	0.375"	ASTM-F1233 Class 1.1		3.79
SchoolDefender IG	n/a	n/a	 Sledgehammer /  Baseball bat			All Glass	1"	1.000"	ASTM-F1233 Class 1.2		5.69
SchoolDefender 1-IG	low	1 modified	 9mm Pistol	 Sledgehammer	 Baseball bat	 9mm Full Metal Copper Jacket with Lead Core	All Glass	1 ^{1⁄8} "	1.125"	ASTM-F1233 Class 1.3 Forced Entry (HPW-TP-0500.03i)	7.33
Defender 8	no	8		NATO Semi-Automatic Rifle		7.62 x 51-mm, 150-grain M80 FMJ copper jacket	Glass-Clad Polycarbonate	2 ^{1⁄4} "	2.220"		26.51
Defender NIJ.IV.NS	no	NIJ 4		30-06 Hunting Rifle		30 Caliber Rifle Lead Core Soft point (30-06 Caliber)	Glass-Clad Polycarbonate	2 ^{1⁄4} "	2.220"		26.51

Defender Glass – Benefits

Even though safety is generally considered to be the number one priority of those looking for forced-entry protection or bullet-resistant glass, there are actually many additional benefits.

- + Provides time for occupants to react and first responders to arrive
- + Increases mental well-being of building occupants
- + Offers the same aesthetics as regular insulated glass
- + Allows damaged glass to be replaced at your convenience because it remains functional
- + Reduces sound
- + Provides immediate safety
- + Deters criminals after initial attempt at impact
- + Adds additional benefit of severe weather protection when used as an exterior application



Why choose Defender Glass?

We know you have choices when it comes to forced-entry protection and bullet-resistant glass. So what makes Thompson's Defender glass unique?

1. One-stop shop

As a full-service glass fabricator, Thompson I.G. offers a full line of glass products including insulated glass and laminated glass. This means that projects requiring safety glass and 'regular' insulated glass can get it all from the same source.

2. Insulated BR-rated glass

Unique in the marketplace, we can offer bullet-resistant rated glass that is insulated and will fit most window frame systems, combining safety with comfort and energy savings.

3. Customizable

Because we are a full-service fabricator, we can offer customized safety glass. Customizations can include low-E, tinted glass or one-way mirror glass.

4. Faster Lead Times

With a large team of dedicated employees, Thompson I.G. has the flexibility to pool manpower where most urgently needed. This results in faster lead times for you when you need your glass 'yesterday'.

5. Competitive pricing

As a full-service fabricator, we work on 'regular' insulated glass as well as on specialty glass products like bullet-resistant glass. This translates to zero downtime and lower overhead, resulting in very competitive pricing for you!

6. High-quality

With state-of-the-art dedicated clean rooms and multi-step inspection procedures, we guarantee high-quality.

7. A partner, not just a supplier

We partner with our customers. We offer advice, on-site visits and informational presentations to make sure that you end up with the best possible solution for your project.

DEFENDER GLASS. SAFETY WITH A VIEW.



Your Partner.

At Thompson I.G. we are proud to do our part to keep building occupants safe. Instead of simply being a supplier, we enjoy partnering with you so you get the best solution and ROI for your specific project. When it comes to safety glass, we don't think one size fits all. So let's take a look at your project and figure out the best solution together.

Please contact us now at **810.629.9558** or send an email to **defender@thompsonig.com**

www.thompsonig.com

