



Home of the ForceShield™ family of Protective Glass and Glazing

## Low-Spall vs No-Spall Ballistic Glass

**Spall** refers to fragments that break off a larger solid surface.

In the world of ballistic glass, when a projectile strikes the “attack-side”, particles may or may not liberate from the opposite surface - the “safe-side”. Products designed to prevent all spalling are referred to as No-Spall. Products that are designed to stop the projectile without preventing spall are called Low-Spall. Spalling is a very important consideration when choosing ballistic materials. **Spalling has the potential to cause serious injury** if an occupant is in close proximity to the safe-side while under attack. Spalling is much less of a risk when occupants are not in close proximity to the safe-side while an attack is occurring.

While it may seem intuitive that all ballistic glass products should be No-Spall, as is often the case adding features comes with tradeoffs. In the case of ballistic glass products, the most common way to achieve No-Spall properties is to have polycarbonate laminated to (and fully exposed on) the “safe-side”. Unfortunately, polycarbonate is more expensive than glass.

So, the first drawback of no-spall is it typically costs more. In addition, Polycarbonate is a plastic material that is extremely susceptible to abrasions. Simply touching it with your hands can scratch it. Attempting to wipe dirt

and debris off with a towel can cause severe scratches. Besides just the aesthetic damage, with enough scratching visibility can be negatively impacted requiring the product to be replaced.

Polycarbonate is also vulnerable to catastrophic damage caused by relatively mild chemicals present in commonly used window cleaners and household cleaners. The damage caused by these chemicals can range from yellowing and fogging to severe cracking and crazing. Even if the product can be protected from unintentional scratches and cleaning damage, the exposed polycarbonate can degrade over time simply from solar exposure.

At BGAS, we always recommend the use of low-spall products when appropriate – meaning when occupants are not in constant proximity to the glass. As in the case of a transaction window. Because BGAS cannot possibly know the installation or occupant conditions when we manufacture these products, it is always and completely 100% the responsibility of our customer to consider the benefits and drawbacks of spall protection and specify/select the correct product for their application.

# SUMMARY



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## Factors to Consider When Selecting No-Spall vs Low-Spall Ballistic Glass Products



- ✓ Spall can cause serious injury if a person is close to the spalling surface during impact by a projectile
- ✓ Spall protection is a critical requirement to the extent that all of the following are true;
  - Attack is likely
  - The safe-side occupant is likely to be very close to the glass surface
  - The safe-side occupant is likely to be unable to distance themselves from the attacker before a shot is fired
- ✓ No-Spall products are much more susceptible to damage causing the need for replacement
- ✓ No-Spall products are typically more expensive and will have a more limited life-span even in ideal conditions
- ✓ Low-Spall are designed to stop the specified projectiles while still allowing some spalling