

# Transparent armor glazing solutions for increased protection

PLASTICS IN  
SECURITY  
AND SAFETY

by SABIC Innovative Plastics

**A**mid heightened concerns about personal protection and security from both natural and human threats, transparent armor laminates are gaining popularity for glazing applications. Armor laminates can be found in applications ranging from buildings, guardhouses, armored vehicles, and detention centers to schools and banks to critical infrastructure such as power plants, government buildings and embassies.

Laminates made of polycarbonate and glass deliver exceptional heat and impact resistance, along with outstanding energy absorption, lightweight and anti-spall (the spray of glass fragments) properties. These glazing products meet widely recognized standards — such as ASTM, UL, HP White, NIJ, and European standards EN356, DIN 52290 PART3, EN1063 and DIN52290 Part2 — and may provide protection against many of the overpressures and fragments associated with explosions. They have been tested to absorb up to 57 psi — the equivalent of 4,300 pounds of TNT detonated from 115 feet away — and may withstand gunfire from weapons ranging from 9 mm handguns



*Armorgard\*, Suregard\* and Lexgard\* laminates from SABIC Innovative Plastics have the potential to provide formidable defense against major threats. Major industry segments that may benefit from the use of these materials include guard booths, military vehicles and bases, embassies, government buildings, corporations, manufacturing facilities, schools, detention centers, gas stations, banks and critical infrastructure areas such as chemical sites.*

to 7.62 mm NATO high-powered rifles.

With the many different security concerns facing us today, a variety of armor laminates have been engineered to help defend buildings — and their occupants — against ballistics, forced entry and bomb blast. These products can help provide greater safety, protection and peace of mind in a wide range of threatening situations.

## **Laminated glass and polycarbonate sheet**

Laminated glass and polycarbonate (PC) sheet grades may help provide a highly effective barrier against a variety of ballistic assaults without spalling on the protected interior surface. They meet the full requirements of UL 752 up to Level 8 and are available in no-spall or low spall design. No-spall designs feature an exterior glass (threat side) surface with a polycarbonate sheet interior (safe side) surface for increased UV and mar resistance, while the low spall version provides glass on both interior and exterior surfaces and is designed to help stop bullet penetration.

## **Glass-clad polycarbonate laminates**

Designed to help withstand impact from implements ranging from hammers and axes to propane torches and fire extinguishers, glass-clad PC laminate is targeted primarily as protection against smash and grab raids. This product is designed to protect an opening where forced entry or exit is of main concern. This type of laminate combines the excellent aesthetics of glass with the forced entry protection of a polycarbonate core and can be formed into curved shapes. In detention facilities, for example, curved glazing can improve monitoring by eliminating blind spots and restricted viewing caused by metal bars.

## **Glass-free polycarbonate laminates**

Polycarbonate laminates can help provide ballistic, bomb blast and forced entry protection. Constructed from PC sheet



*SABIC's Lexan\* Margard\* sheet can be an excellent candidate for store security partitions and doors.*

layers bonded with proprietary interlayers, these glass-free laminates offer extremely high impact resistance and absorb impact energy without spalling. They also provide significant weight savings over conventional glazing. They are protected against abrasion, chemicals and UV light by a polycarbonate sheet coating. These laminates are suitable for flat applications only.

In addition to armor laminates, polycarbonate sheet can be an excellent candidate for security glazing to help prevent burglary from forced entry. It may help delay a burglar to the point where he/she simply gives up the attempt or is detected. Either way, it helps protect premises and property, and re-glazing costs may be eliminated.

Safety glazing polycarbonate sheet will not shatter or splinter, greatly reducing the risk of accidental injury in applications like internal partitions and doors. It is also an excellent candidate for safety screening in sports stadiums and other outdoor applications like acoustic screens for deflection of traffic noise in built-up areas. ■

For further information, contact SABIC Innovative Plastics, (800) 845-0600, [www.sabic-ip.com](http://www.sabic-ip.com).