
## About Norplex-Micarta

Norplex-Micarta is the leading manufacturer of high performance thermoset composites. Norplex-Micarta's vast product line of tubing, sheet, pre-preg, and rod products serves power generation, military/aerospace, oil & gas, medical device, electrical device, electronics assembly, construction, heavy industry, and transportation industries throughout Asia/Pacific, Europe, and the Americas.

Norplex-Micarta global headquarters in Postville, Iowa, USA

**Norplex-Micarta**
**Global Headquarters**
665 Lybrand Street
Postville, Iowa 52162-0977

Customer Service: 800-350-9490
International: +1 563-864-7321
Email: info@norplex-micarta.com

**Norplex-Micarta Asia**
**Micarta Composite Material (Shanghai) Trading Company, LTD. (MTC)**
916-917, Building #1, 58 East Xinjian Road
Minhang District, Shanghai, 201101
PR China

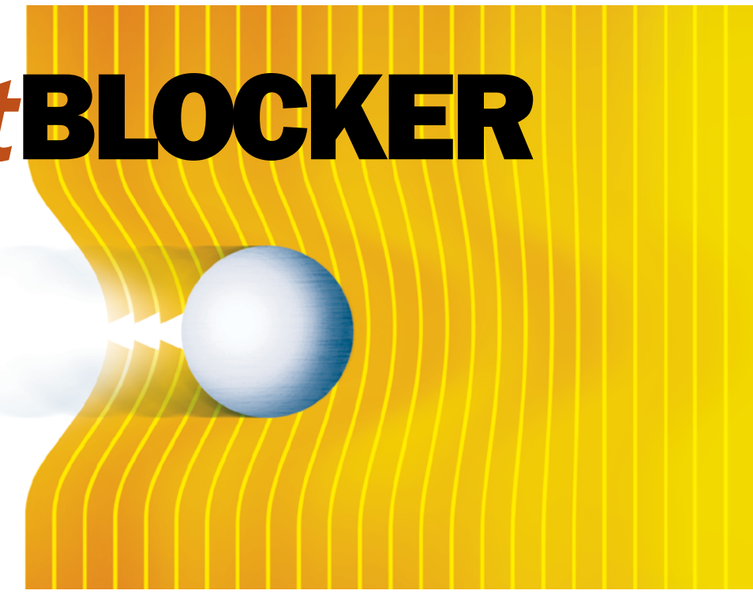
Customer Service: +86 (0) 21 6760 1690/91/92/93
Email: info@norplex-micarta.asia



www.norplex-micarta.com

NORPLEX MICARTA
High Performance Thermoset Composites

# *Shot*BLOCKER



EXCELLENT ANTIBALLISTIC PROPERTIES • LIGHTER THAN STEEL
RICOCHET-RESISTANT • EASILY INSTALLED

NORPLEX MICARTA
High Performance Thermoset Composites

# *Shot*BLOCKER

EXCELLENT ANTIBALLISTIC PROPERTIES • LIGHTER THAN STEEL

RICOCHET-RESISTANT • EASILY INSTALLED

## Ballistic Protection

To meet the world's growing requirement for ballistic protection, Norplex-Micarta has developed specialty high performance thermoset sheets, pre-pregs, and molded shapes that can withstand the most destructive military and civilian threats. *Shot*Blocker™ antiballistic material is an advanced fiberglass-based composite that offers several important benefits: 1) resistance to a projectile or blast, fire, and forced entry; 2) ease of installation; 3) light weight; and 4) moderate cost.

*Shot*Blocker is manufactured in six levels of bullet-resistance, depending on the threat and security function. The material can also be configured for threats exceeding Level 8 requirements. *Shot*Blocker can be cut and drilled in the field with commercial quality circular, table, or panel saws. For aesthetic conformity, the material can be surfaced on site with veneer, drywall, wallpaper, or other wall coverings.

## Architectural Applications

*Shot*Blocker meets the requirements for courtroom, check-cashing, gas station, and convenience market armor, providing superior security and protection in walls, doors, and counters. The material can also be used for military/defense architectural applications in the field, such as guard stations. Overall, *Shot*Blocker performs similarly to that of conventional S-glass laminates, which cost considerably more.

**Superior protection for courtrooms, check-cashing, and convenience stores**

## Government Facilities

*Shot*Blocker significantly lowers the weight and cost of embassy safe rooms, while maintaining the structural integrity to protect government documents and personnel. The material is readily machined and is far lighter than steel, making it easier to install and repair. Its light weight also facilitates the relocation of safe rooms around the world.

*Shot*Blocker meets stringent standards for ballistic and forced-entry protection. Structures built with a combination of *Shot*Blocker and steel meet the highest Department of State certification standard (Level 8) for ballistic-resistant structures.

## Vehicle Armor

*Shot*Blocker is a light-weight, cost-effective alternative to steel for armoring automobiles, trucks, jeeps, and aircraft. The material can also be combined with ceramic or steel strike plates as well as steel backer plates to increase impenetrability, formability, and durability.

In the case of ground vehicles, the weight of large ballistic steel armor panels requires stronger suspensions, brakes, and engines than would otherwise be necessary. Steel armor may also compromise handling properties by raising roll centers and centers of gravity.

Excessive weight is also a problem in airborne applications. The use of steel armor would result in significant reductions in aircraft performance, range, and payload.

**Alternative to steel for armoring trucks, jeeps, and aircraft**

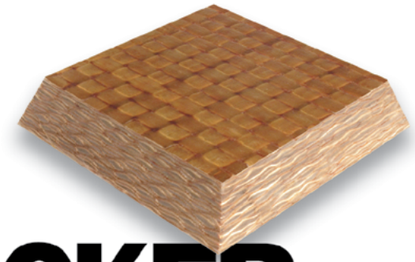
## Phenolic Glass Thermoset Composites

*Shot*Blocker consists of woven glass fabric impregnated with a high-temperature phenolic resin system. The material provides superior flexural, compressive, and impact strength at elevated temperatures, as well as excellent creep resistance. Also, the phenolic resin system yields a ballistic laminate with superior fire, smoke, and toxicity ratings (ASTM E84) over conventional polyester resin fiberglass laminates.

Glass fabric-based, anti-ballistic materials, such as *Shot*Blocker, are far lighter than ballistic steel armor plate. The lower weight makes the material less cumbersome to fabricate, handle, and install.

## Multi-Step Manufacturing Process

Norplex-Micarta utilizes state-of-the-art equipment for each step in the manufacturing process, from material preparation and treating to pressing and finishing. First, the substrate is processed through the resin compound. Then, the impregnated material is semi-cured in a treater oven. Once the material is treated, it is either issued to the customer as pre-preg, or sent to the press for sheet grades. Finally, the material is trimmed and packaged as required.



| Typical *Shot*Blocker Properties | Value |
|---|---|
| Impact Strength | 15.0 ft-lb/in (crosswise) |
| | 15.0 notched (lengthwise) |
| Flexural Strength | 23,200 psi (crosswise) |
| | 17,200 psi (lengthwise) |
| Compressive Strength | 65,000 psi (flatwise) |
| | 9,300 psi (edgewise) |
| Tensile Strength | 63,000 psi (crosswise) |
| | 39,000 psi (lengthwise) |
| Rockwell Hardness | M Scale 110 |
| Bonding Strength | 400 lb |

| *Shot*Blocker Manufacturing Standards | | | |
|---|---|---|---|
| **Normal Available** | **Minimum Thickness[1]** | **Typical Weight** | **Sheet Size Available** |
| **UL-752 Performance Level Standard** | | | |
| Level 1 | .242" | 92 lb | 48 X 96 in |
| Level 2 | .352" | 137 lb | 48 X 96 in |
| Level 3 | .396" | 149 lb | 48 X 96 in |
| Level 4 | 1.188" | 446 lb | 48 X 96 in |
| Level 5 | 1.188" | 446 lb | 48 X 96 in |
| Level 8 | 1.320" | 492 lb | 48 X 96 in |
| **NIJ 0108.01 Performance Level Standard** | | | |
| Type IIA | .352" | 137 lb | 48 X 96 in |
| Type II | .396" | 149 lb | 48 X 96 in |
| Type IIIA | .396" | 149 lb | 48 X 96 in |
| Type III | 1.188" | 446 lb | 48 X 96 in |
| **Federal Aviation Regulation 25.853** | .396" | 149 lb | 48 X 96 in |
| **Class 1-A Fire- and Smoke Rated Building Material (ASTM E84)** | .396" | 149 lb | 48 X 96 in |

[1]The minimum thickness is the thickness needed to assure compliance with the listed Standards. Sheets produced will always be thicker than the minimum.

*Shot*BLOCKER