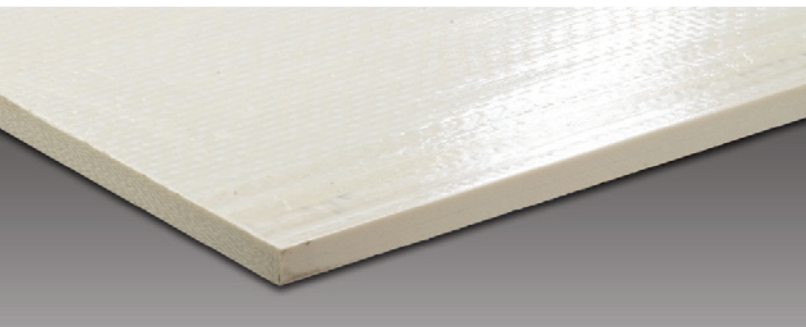




HS ARMOR PANEL

FIBERGLASS BALLISTIC PANELS



HS Armor Panels



Once installed, HS Armor can be finished with (or covered by) a variety of wall treatments.



HS Armor panels are available in sheets up to 4' in width and in any practical length.



HS Armor can be finished to imitate drywall, as was done in the waiting area of this municipal building.

Strongwell's HS Armor fiberglass armor panels are designed for ballistics resistance. The panels are manufactured using specially constructed glass reinforcements in a proprietary resin matrix. The panel components are then cured in a controlled cycle.

When struck by a bullet or other projectile, HS Armor panels delaminate in a way that absorbs the energy and stops the projectile. Thousands of these panels have been purchased by the military, law enforcement, and numerous private and public sector organizations to provide an extra layer of protection for its people.

Panels are available in any length practical, widths up to 4', and in thicknesses from ¼" to ½". Strongwell typically tests panels in accordance with Underwriters Laboratories (UL) 752 requirements for Levels 1-8 (including Supplementary Shotgun), although other options are available upon request.

Common Applications:

- Judge's Benches
- Jury Boxes
- Convenience Stores
- Classrooms
- Bank Teller Areas
- Panic Rooms and Safe Rooms
- Storm Shelters
- Office Buildings

HOW TO SPECIFY

Panels shall be HS Armor as manufactured by Strongwell. Panels shall be manufactured in the U.S.A. using the pultrusion process. Resin shall be fire-retardant polyester. Panels shall meet the ballistic performance requirements of (UL 752 Level __) (other custom requirement).

HOW TO ORDER

In addition to indicating panel width and length dimensions (max panel width is 4' in any length practical), it is important to indicate either the panel thickness required or the ballistic performance required. Panels, as manufactured, range in thickness from ¼" to ½". If final thickness is to be greater than ½", panels will be layered to meet more demanding ratings. For panels greater than ½" thick, indicate whether panels are to be bonded or will be layered in the field during installation.



TESTING & REQUIREMENTS

Strongwell HS Armor panels are internally tested on a regular basis for conformance to Underwriters Laboratories (UL) 752 requirements and independently tested to verify results. Testing data is available upon request.

Additionally, HS Armor panels can be tested to a number of other domestic and international ballistic standards and protocols (NIJ, SD, MIL, etc.), or to a set of specific customer performance requirements.

Regarding fire performance, HS Armor panels are self-extinguishing and meet a UL 94 V-0 flammability rating.

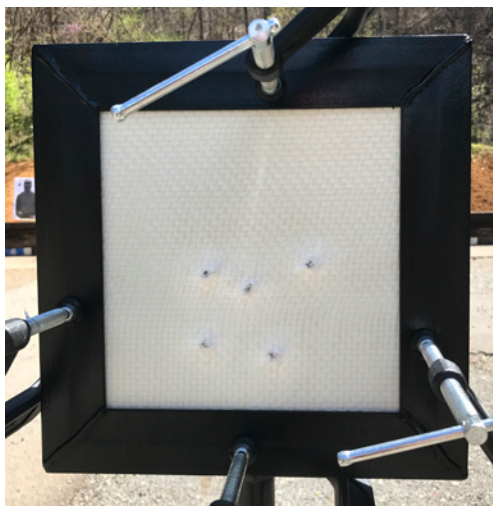
UL 752 Requirements

| APPROX. PANEL THICKNESS (IN.) | UL 752 RATING | WEAPON | AMMUNITION | VELOCITY (FT/SEC.) | NO. OF SHOTS | APPROX. WEIGHT (PSF) |
|-------------------------------|-----------------------|-----------------------|----------------------------------|--------------------|--------------|----------------------|
| 0.25 | Level 1 | 9mm Luger | 124gr. FMJ | 1175 - 1293 | 3 | 2.51 |
| 0.35 | Level 2 | .357 Magnum | 158gr. JSP | 1250 - 1375 | 3 | 4.10 |
| 0.50 | Level 3 | .44 Magnum | 240gr. Lead | 1350 - 1485 | 3 | 5.10 |
| 1.50 ² | Level 4 | .30 Caliber (.30-06) | 180gr. Soft Point | 2540 - 2794 | 1 | 15.30 |
| 1.50 ² | Level 5 | 7.62mm (.308 Caliber) | 150gr. FMJ | 2750 - 3025 | 1 | 15.30 |
| 0.50 | Level 6 | 9mm Luger | 124gr. FMJ | 1400 - 1540 | 5 | 5.10 |
| 1.00 ¹ | Level 7 | 5.56mm (.223 Caliber) | 55gr. FMJ | 3080 - 3388 | 5 | 10.20 |
| 1.50 ² | Level 8 | 7.62mm (.308 Caliber) | 150gr. FMJ | 2750 - 3025 | 5 | 15.30 |
| 0.50 | Supplementary Shotgun | 12-Gauge | 1 oz. Rifled Slug | 1585 - 1744 | 3 | 5.10 |
| 0.50 | Supplementary Shotgun | 12-Gauge | 1.5 oz. 00 Buckshot (12 pellets) | 1200 - 1320 | 3 | 5.10 |

NOTES: ¹ This configuration consists of two 0.50" panels, which can be bonded together.

² This configuration consists of three 0.50" panels, which can be bonded together.

FMJ - Full Metal Jacket **JSP** - Jacketed Soft Point **SWC** - Semi-Wadcutter **LRHV** - Long Rifle High Velocity **RN** - Round Nose



Front View



Rear View

FABRICATION & INSTALLATION

Cutting, Drilling, and Attachment

Strongwell's HS Armor panels can be cut and drilled using ordinary carpenter's tools. A carbide or diamond grit edge blade is recommended for cutting. It is recommended to use high speed drill bits at slow speeds when drilling - carbide tipped drills are best for all drilling operations.

Installation and attachment of panels to existing structures is easily accomplished with bolts, screws, or industrial grade adhesive.

Adhesives

HS Armor panels can be attached to most substrates with adhesives, such as construction adhesive. For stronger adhesion, especially to non-porous substrates, including aluminum, steel and stainless steel, or bonding one panel to another, a two-part epoxy is recommended.

Adhesives should be used per the adhesive manufacturer's instructions.

Painting

HS Armor panels can be painted using high quality water- or oil-based paints. Urethane and epoxy paints/coatings will provide a more durable finish. For external applications, a paint with a UV inhibitor should be used to protect the armor panels from long-term UV exposure.

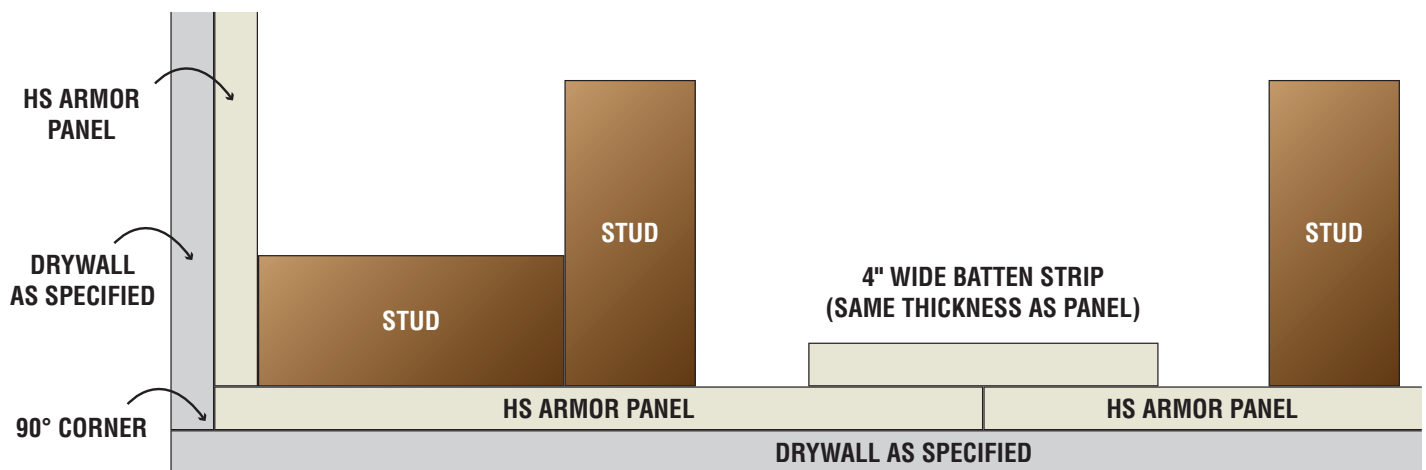
Wall Assembly Installation

For typical wall and millwork installations, a 4" wide batten strip of the same thickness material should be specified at the butt-joints to provide a minimum of 2" overlap from one panel to the next. Batten strips can be cut in the field from panels, or can be ordered from Strongwell.

Batten strips can be attached directly to the panels and should be used where any vertical or horizontal joints occur. Battens are not required in a 90° corner, as long as the panels overlap (see diagram).

Any required battens should be placed between studs, so the wall does not protrude out from studs farther than necessary and panels can be attached directly to studs.

Typical Wall Assembly Construction



NOTE: For laminated panel configuration, contact Strongwell for guidance in proper installation.



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