

DuroProtect® 1000 Series

Ballistics Sheets Handling, Installation, & Lay-Up Instructions

Protective Wear:

Handling: Cotton or leather gloves provide protection from cuts and abrasions associated with handling, drilling, or cutting fiberglass materials.

Breathing / Respiratory: Dust or particle masks or respirators provide respiratory protection against dust generated during cutting or drilling fiberglass materials.

Eyewear: Safety glasses with side shields should be used for all operations.

General Protective Wear: Skin should be covered to reduce the possibility of skin irritation from generated dust. A polymeric coated apron or other body covering is recommended when regular work clothing can become covered with the fiberglass dust.

Ventilation: Circulating fans or dust collection equipment is useful in reducing localized airborne dust. Ordinary woodworking dust collection can be used. Dust from the fabrication of panels can be disposed of by ordinary means.

Fabrication and Installation:

DuroProtect® composite panels can be cut and drilled using ordinary carpenters tools.

Drilling: DuroProtect® panels can be drilled using high-speed drills at low speeds for low-volume drilling. For larger volume hole drilling, or drilling of thick panels, a cobalt or carbide-tipped drill should be used.

Fastening: DuroProtect® panels may be attached using self-tapping drywall screws. When attaching a panel to a stud wall on which drywall will be the exterior surface, first use enough screws to hold the DuroProtect® panel in place. Finish with a complete screw pattern through the drywall to the studs when hanging the drywall over the DuroProtect® panels.

Pre-drilling holes will be necessary for panels over 1" in thickness. Countersink holes may also be necessary when applying a covering other than drywall over the DuroProtect® panels. A counter-bore or countersink hole may be necessary.

Cutting: DuroProtect® panels can be cut with a diamond-coated blade, such as the 7" RIDGID segmented diamond blade for low-volume cutting or a 7" diameter 40 grit diamond blade for thicker panels. Large volume cutting or a desire for faster cutting require diamond grit blades. A reciprocating saw with diamond grit blades can be used for panel cutouts. Some examples include:

RemGrit® "Grit Edge"

GC703 7" Circular

GC805 8" Circular

Adhesives: DuroProtect® panels can also be attached with the use of adhesives. Loctite PL - Premium Polyurethane Construction Adhesive or similar is acceptable. For stronger adhesion of panels to one another or to aluminum and steel, use methacrylate-based adhesive such as those from ITW Plexus. Lightly sanding or abrading the DuroProtect® surface that is to be bonded will improve the bond strength regardless of the adhesive used.

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Alternative Lay-Up:

Röchling Industrial Cleveland produces UL 752 levels 1, 2, and 3 ballistic sheet. To achieve levels 4, 5, and 8, please see below.

Levels 4 & 5: Level 4 and Level 5 can be achieved by bonding or stacking three (3) Level 3 panels together.

Level 8: Level 8 can be achieved by bonding or stacking two (2) Level 3 panels and two (2) Level 2 panels together.

Ballistic Sheet Thickness Tolerance:

Level 1	0.245" - 0.230"
Level 2	0.325" - 0.395"
Level 3	0.450" - 0.495"

Ballistic Protection Level	Minimum Thickness
Level 1	0.245"
Level 2	0.320"
Level 3	0.450"
Level 4, Level 5 (bonded)	1.35"
Level 8 (bonded)	1.54"

Enclosure or Wall Construction:

When constructing a wall or enclosure, care must be taken to ensure that panel butt-joints are overlapped with backing strips so that the ballistic protection is not compromised. For typical wall installations, a minimum of 4" wide backing strips of the same level DuroProtect® material should be used at the panel butt-joints to provide a minimal 2" overlap from one panel to the adjacent panel. The DuroProtect® backing strips should be attached directly to the panels and used where any vertical or horizontal joints occur. Backing strips can be cut from larger panels or purchased from Röchling Industrial Cleveland.

All panel cutout holes, or electrical box cutouts should be backed with a strip of the same level DuroProtect® material. The backing strip should be large enough to provide protection from angle shots. Unlike typical drywall installations, adjoining DuroProtect® panels between the studs allows the DuroProtect® backing strips to be attached without the need to space the wall out further.