

FRP Plywood

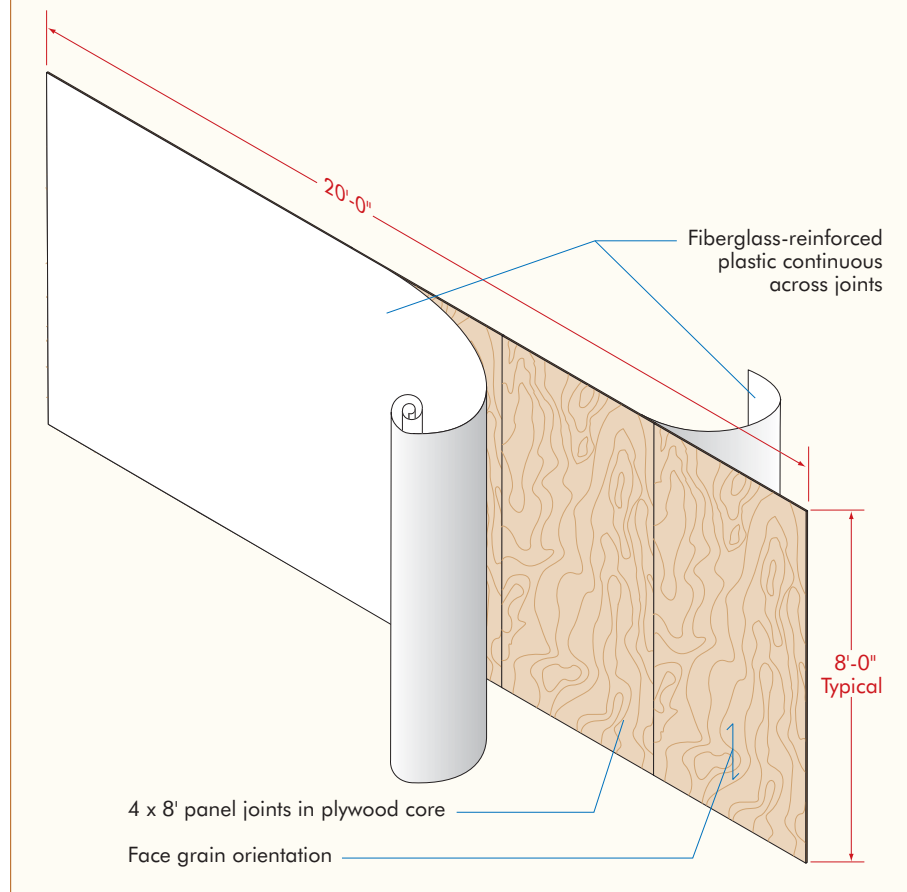
Fiberglass-reinforced-plastic (FRP) overlaid plywood is an engineered product consisting of APA trademarked plywood securely bonded between tough glass fiber-reinforced resin surfaces. The composite produces a strong yet lightweight panel. A thin nonporous surface finish provides color, weatherability and additional durability. Different surface finishes are available. Glass content and overall thickness of the overlay can be varied to suit the performance requirements and economies of a wide variety of end-use applications.

Specifications

Overlay materials: Overlay materials may consist of (1) fiberglass woven roving saturated with resin cured under heat and pressure, (2) glass-fiber mats saturated with resin, partially cured, bonded to plywood substrate and final cured in a hot press under heat and pressure, or (3) chopped glass strand and resin in sprayed up process, cured under ambient conditions or with heat. Overlay thickness typically ranges from 25 to 60 mils.

Glass reinforcing: Both the amount of glass and its form influence structural capability of the finished composite. Glass contents typically range from 3/4 ounce to 3 ounces per square foot. Long or continuous fibers oriented parallel to the maximum stress are preferred for heavy loads. Randomly oriented fibers provide strength in all directions.

TYPICAL FRP PLYWOOD CORE CONSTRUCTION



Core: Overlay materials are bonded to APA plywood panels 1/4 inch to 1-1/8 inches or thicker. The APA plywood grade and thickness, form and weight of fiberglass reinforcement, and formulation and quality of resin can be varied, depending on the desired balance between cost and performance. When a smooth overlay surface is desired on two sides, C-C Plugged Exterior plywood is the minimum grade recommended. Where the end use allows panels to have one side with minor indentations such as inside walls of trucks or trailers, C-D Plugged Exposure 1 is often used.

Glass fiber surfaces: Surfaces may vary from extremely smooth and flat, to natural flow smoothness, to textured skid-resistant and aggregate-filled surfaces. All surfaces are seamless and thus easily cleaned.

Surface finish: The surface material is a protective and decorative coat that helps panels endure stress from internal load abuse, damage from road debris, cracking, and varying weather and road conditions. FRP truck and trailer bodies have traditionally been finished with gel-coat, a non-porous material bonded to the panel with resin. Another finish product, PVF (polyvinyl fluoride), was introduced in 1981, and is widely used on truck trailer bodies manufactured with FRP. PVF, a lighter finish with less initial gloss, is an adhesive-applied lamination. Both gel-coat and PVF render panels impervious to stains, alkalis and solvents, impact and abrasions, and odors.

Color: Pigmentation is added in manufacture, during application of the surface finish. Several colors are available, depending on which finish is used. Some applications require minimum production runs. Pigmenting the finish strengthens panels against ultraviolet and weathering, and normally eliminates the need for painting.

Sizes: FRP plywood is available in 4 x 8-foot panels as well as in large seamless body panels 8 to 10 feet wide and 45 or more feet long for truck and trailer bodies, containers or other applications.

Uses and Advantages

FRP plywood is used for truck, trailer and van bodies, intermodal and reusable shipping containers, concrete forming, sewage treatment tanks, walk-in coolers, railcar linings and siding panels, and numerous other demanding applications.

The product combines the structural properties of plywood – durability, bending strength and stiffness, racking resistance, dimensional stability and workability – with the long-wearing and weatherproof surface of a fiberglass-reinforced-plastic overlay, which also provides added strength and stiffness.

Field experience has proven the material tough, rugged and durable. It will not buckle or tear and has no rivets to pop. In fact, pound for pound, FRP is stronger than either steel or aluminum.

Cargo area is greater because truck and trailer bodies and containers made of FRP plywood require no intermediate posts or vertical stiffeners. Inside dimensions can be four to seven percent larger than those of metal-skin bodies with the same outside dimensions. Framing is required only at boundary edges. Cargo control devices can be installed anywhere. No wall liner is required.

FRP Repair

Damaged FRP panels can be repaired quickly and economically with ordinary hand tools and relatively unskilled labor. Most can be fully restored to original strength and appearance. Repairs can be made in fleet maintenance or auto body shops capable of fiberglass repair. Boat repair firms are also sources of labor and materials.

Identification

Always insist on FRP plywood core panels bearing the trademark of the APA – *The Engineered Wood Association*. That trademark appears only on products manufactured by APA member mills. The mark signifies that the manufacturer is committed to APA's rigorous program of inspection and testing and that panel quality is subject to verification through APA audit – a procedure designed to assure manufacture in conformance with APA performance standards or the latest edition of *Voluntary Product Standard PS 1 for Construction and Industrial Plywood*.

Additional Information

For more information about APA panel products and applications, contact the APA – *The Engineered Wood Association*, 7011 So. 19th St., Tacoma, Washington 98466-5333. For a complete listing of other APA publications, ask for the *Publications Index*, Form No. B300.

We have field representatives in many major U.S. cities and in Canada who can help answer questions involving APA trademarked products. For additional assistance in specifying engineered wood products, contact us:

APA HEADQUARTERS: 7011 So. 19th St. ■ Tacoma, Washington 98466 ■ (253) 565-6600 ■ Fax: (253) 565-7265

APA PRODUCT SUPPORT HELP DESK: (253) 620-7400 ■ E-mail: help@apawood.org

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