Fulcrum Weather-Resistant WR Series Loudspeaker Enclosures

Coating plywood cabinets with fiberglass is a generally accepted process for creating weather resistant (WR) loudspeaker enclosures for outdoor use. However, this construction method is prone to a number of maladies. When the inner plywood core is subject to moisture or humidity it can swell, causing cracking of the exterior fiberglass shell. And, the plywood can rot or decay over time.

For years, Fulcrum Acoustic has used composite materials for smaller WR loudspeaker enclosures, thereby eliminating wood entirely from those products. More recently, we have researched and engineered a more modern construction technique that replaces plywood with advanced Fiberglass Reinforced Polyurethane (FRP) composite sheets for our larger WR products.

For decades, FRP composites' many advantages over conventional materials have revolutionized industries ranging from aerospace and defense, to transportation and construction. Now, Fulcrum leverages FRP's remarkable strength-to-weight ratio and material consistency to completely eliminate plywood, and its inherent shortcomings, from our WR loudspeakers, and deliver the following unique benefits over traditional weatherized products.

STRONG

- Dual layers of fiberglass mat embedded in FRP foam optimize the composite's structural strength
- FRP is virtually impervious to damage by water, sand, salt, UV radiation, mold, mildew and temperature fluctuation

LIGHTWEIGHT

- Fulcrum FRP cabinets weigh less than plain wooden cabinets, and significantly less than conventional fiberglass-covered, weather-resistant enclosures
- Lighter cabinets facilitate installation while lightening the load on rigging and support structures

CONSISTENT

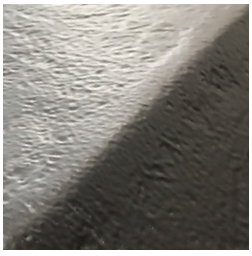
Fulcrum FRP enclosures provide greater dimensional and surface finish consistency than conventional weatherized products.

Dimensions:

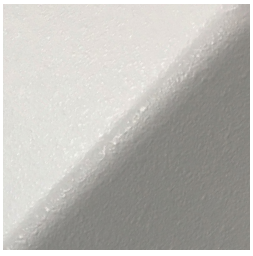
- Fiberglass-covered wooden cabinets can crack due to moisture-related dimensional instability of the underlying plywood
- Fiberglass buildup can vary depending upon the spray application process, resulting in less control over external cabinet dimensions

Finish:

- FRP presents a smoother, more consistent finish than fiberglass-covered wood
- FRP's smooth finish and uniform sheen facilitates painting for more accurate color matching than colorized fiberglass
- Fulcrum FRP enclosures' neat appearance and familiar formats have improved aesthetics



Typical Fiberglass Finish



Typical White FRP Finish

PRODUCTION FRIENDLY

While many U.S. loudspeaker companies manufacture overseas to take advantage of low-cost labor and relaxed environmental regulations, Fulcrum FRP enclosures are built by experienced loudspeaker fabricators in our Massachusetts shop in an environmentally responsible manner.

- Our inherently VOC-free, clean manufacturing process complies with all U.S. environmental and worker safety regulations
- Fulcrum FRP enclosures have fewer and shorter curing times than fiberglass-clad cabinets, resulting in faster turnaround and more timely order fulfillment
- The tremendous design flexibility of FRP composites combined with Fulcrum's domestic manufacturing efficiencies enhance our ability to custom-build products to meet your specific needs

OTHER BENEFITS OF FULCRUM WR PRODUCTS

- A three-step zinc plating and powder coating process allows our grilles to provide superior resistance to weather and scratching
- Stainless steel mounting hardware offers durability, strength and rust resistance
- Weatherized woofer cones are standard on all Fulcrum speakers

Fiberglass Reinforced Polyurethane Panels Used in WR Series Enclosures

The fiberglass reinforced polyurethane panel is self extinguishing (when heat source is removed, the flame goes out). The material conforms to UL-94HB as well as Federal Motor Vehicle Safety Standard 302 for flammability. European Standard FMVS: EC Type Approval No. 95/28/EC

Electrical Safety Testing: The material has passed ASTM D 149-09, Method A testing up to 24,000 volts AC.

Water Absorption per ASTM D2842 (96 hr immersion test): Less than 1%

12 mm Thick Material Properties

Nominal Density	Lb/ft^3		28
Tensile	Strength, psi	ASTM D 1037	6570
	Modulus, psi		327000
Flexure	Strength, psi	ASTM C 393	6760
	Modulus, psi		550000
Compression	Strength, psi @2.5% strain	ASTM D 1621	523
	Modulus, psi		21300

18 mm Thick Material Properties

Nominal Density	Lb/ft^3		26
Tensile	Strength, psi	ASTM D 1037	5330
	Modulus, psi		281000
Flexure	Strength, psi	ASTM C 393	6110
	Modulus, psi		502000
Compression	Strength, psi @2.5% strain	ASTM D 1621	538
	Modulus, psi		21800