

## NON-METALLIC ENCLOSURES FOR WIFI EQUIPMENT

Advances in technology have compelled the evolution of connectivity and network equipment from centralized data centers—where conditions can be carefully monitored and controlled—to distributed network and wireless applications—where sensitive equipment is subject to harsh environmental elements. To protect this equipment, specifiers should select enclosure and cabinet solutions that provide reliable protection. Solutions should isolate and secure vital devices and connections from demanding environments, thus ensuring optimal performance levels and operational life.



### CABLE MANAGEMENT INSTALLATION GUIDELINES

Lightweight, yet durable, cabinets featuring non-metallic, composite construction can provide an ideal solution for converging networking and industrial applications, such as wireless access points. Non-metallic materials are appropriate in many conditions that traditional steel enclosures cannot endure. Providing excellent corrosion and chemical resistance, non-metallics offer rugged durability—even withstanding rough handling—and enhanced longevity. These features make non-metallic cabinets well-suited for protecting indoor and outdoor WiFi equipment. Plus, the materials allow WiFi and WLAN signals to pass through the cabinet unimpeded.

Composite cabinets are available with the required ratings, such as type 4X, to seal out water and dust. They offer versatile features, such as solid or window covers secured with screws or quick-release latches. Material options include fiberglass and polyester—both are easy to modify in the field and ideal for applications in tunnels, floor vaults or marinas, as well as on outside walls and rooftops.

### FIBERGLASS: THE MOST POPULAR NON-METALLIC

A thermoset polyester material reinforced with glass fibers, fiberglass is the most popular non-metallic material used in networking applications. Fiberglass enclosures resist chemicals and temperature changes, offering a cost-effective alternative to stainless steel for corrosive environments. Composed of a high-performing, engineered composite resin, fiberglass enclosures are typically formed in one of two ways: compression molding or spray-up process.

The first method, compression molding, utilizes a material known as SMC—a long-glass-fiber pigmented polyester resin. These long fibers provide ultimate strength and, when formulated with UV inhibitors and aluminum trihydrate, they provide resistance



to material degradation and achieve the UL 94 5V flame rating—the highest performance requirement for a UL 508 enclosure. These precision-designed molds deliver superior part uniformity and material consistency.

The second method, the hand lay-up or spray-up process, also utilizes molds that provide part uniformity and material consistency. This material also achieves the UL 94 5V rating. The heavy, unfilled pigmented outer gel coat layer delivers exceptional protection and is available in numerous colors.

### POLYESTER (HYBRID POLYCARBONATE/POLYESTER BLENDS)

The use of hybrid polycarbonate/polyester blends for non-metallic enclosures is a relatively new option. While it is not as widely available as other non-metallic materials, it offers a wide range of benefits at a moderate price. This solution provides a practical alternative to traditional non-metallic enclosures. The thermoplastic material is processed using injection molding and delivers high impact resistance, excellent electrical properties, and superior chemical and moisture resistance.

Polyester provides excellent impact resistance. The glass in fiberglass gives rigidity to the material, however, rigidity differs from traditional strength.

While fiberglass alternatives eventually break under extreme pressure, polyester absorbs the pressure without shattering. Polyester is also less susceptible to scratches and abrasion than fiberglass and performs well under extreme temperatures. Since polyester is flame-retardant, it will not ignite when in contact with fire. It delivers excellent corrosion and chemical resistance, withstanding the highest range of solvents, alkalis and acids without failure.

Polyester produces almost no dust and can be easily drilled and punched for holes and cutouts, even in the field. Polyester causes less wear on tools and will not cause skin irritation because it does not contain glass particles. Plus, polyester is made of a recyclable, thermal molded material. It even takes less energy to



Polyester type 4X cabinets

recycle polyester than many alternative materials, making it an eco-friendly enclosure material choice that is broadly accepted worldwide.

### IN CONCLUSION

With the expansion of networking equipment outside of traditional data centers, including WiFi applications, enclosures and cabinets must offer the protection and flexibility to protect electronics investments—wherever they are located. Offering durable construction, corrosion resistance and more, non-metallic, composite enclosures and cabinets deliver versatile solutions that won't impede application performance.

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