



How Fiberglass Conduit Advances Performance and Savings vs. Traditional Conduit Materials

Fiberglass conduit (also known as RTRC, or Reinforced Thermosetting Resin Conduit) is designed to optimize savings while offering benefits unmatched by traditional conduit materials. Discover how project owners, engineers, and contractors across industries are enhancing installation success through the use of this lightweight-yet-strong conduit, and how it builds positive long-term project results and savings.

Q. What benefits does fiberglass conduit offer?

When compared to other in-market conduit products, fiberglass conduit offers many benefits, from up-front cost savings to long life in many ambient conditions. This conduit material is extremely lightweight (15 times lighter than PVC-coated steel), which contributes to lower installation costs. Most diameters (when comparing a 100-foot length of conduit) are also lighter than aluminum, PVC SCH 40, PVC SCH 80, and galvanized rigid steel. Fiberglass conduit is lightweight without sacrificing strength; it retains its original shape after impact or compression. Fiberglass is an excellent material for avoiding burn through when pulling cable – it also features one of the lowest coefficients of friction of any in-market conduit system.

Q. How is fiberglass conduit manufactured?

The differences – and the benefits – of using fiberglass conduit start with the manufacturing process. The construction process begins with glass filaments under tension winding over a rotating mandrel. The strands are laid in a precise pattern and impregnated with resin as they are wound onto the mandrel. Once the desired thickness is reached, the conduit is cured at a high temperature, thereby ensuring maximum strength. This process results in a lightweight, strong conduit product that retains its shape after impact or compression and stands up to extreme conditions better than other options.

Q. What kinds of fiberglass conduit are available, and how are they used?

For every challenging cabling environment, there is a fiberglass conduit designed to offset risk and support savings.

Many manufacturers' base product is divided between conduit designed for above or below ground applications; some manufacturers offer a single conduit versatile enough (in temperature range and corrosion resistance) for both environments.

For particularly hazardous environments, Champion Fiberglass offers Champion Haz Duct® XW Type fiberglass conduit, designed and rated for use in Class I, Div 2 areas. When comparing hazardous location conduit types, look for those that are approved by the National Electrical Code (NEC) for use in Class I, Div 2 installations, or by the Canadian Electrical Code (CEC) for Zone 1, Div 2 installations.

Finally, there is Champion Flame Shield®, a conduit system that utilizes a phenolic resin base. This system eliminates the cable-fault and zinc compatibility issues associated with galvanized rigid steel conduit and two-hour fire-rated cables. Champion Flame Shield® conduit is used in tunnel and transportation raceways due to its superior flame resistance and the absence of smoke and toxic emissions when burning. It features a high temperature rating, zero smoke characteristics, and a low coefficient of thermal expansion. This makes it a natural choice for replacing rigid metal conduit in high-temperature or fire-rated conditions, whether damp or dry, hot or cold. Champion Flame Shield® is particularly popular in transit passenger rail and tunnel systems because of the improved system longevity it provides.

These core products are supplemented with a range of hangers, strut, and elbows, all designed to enhance the speed of installation and overall savings offered by fiberglass conduit.

Q. Why are more project stakeholders across industries specifying fiberglass conduit?

In recent decades, project owners, engineers, and contractors have sought to optimize project economics, streamline installation, and ensure long-term performance, adopting fiberglass conduit for an increasing number of industrial and commercial applications. Today, fiberglass conduit is becoming the conduit of choice for electrical engineers, and the reasons for increased usage vary from industry to industry.

- The transportation industry relies on RTTC for enhanced electrical safety in tunnels, often choosing phenolic conduit that has received a two-hour fire rating (that is, a conduit that has been tested and can withstand fire at 1850 degrees Fahrenheit for two hours).
- Utility providers value fiberglass conduit's low coefficient of friction and its impact and corrosion resistance.
- Data center build-outs value fiberglass elbows' ability to withstand cable pulling burn through.

Due to its light weight, low material cost, and superior UV stability, fiberglass conduit has been successfully used

around the world in the previously mentioned industries and is also heavily used by the mining, port authority, industrial/commercial, petrochemical, and pipeline industries.

Q. What safety benefits does fiberglass conduit offer?

Increased safety is an inherent attribute of fiberglass conduit. Fiberglass conduit will not melt or weld the wire to the inside of the conduit under fault conditions, nor does it release toxic halogens when burning. It also acts as an excellent insulator. It's light weight also contributes to faster, easier installations for added safety benefits. Its light weight also contributes to faster, easier installations for added safety benefits.

Q. How can I get additional information about specifying fiberglass conduit for an upcoming project?

Contact Champion Fiberglass by phone at 281.655.8900 or fax at 281.257.2532. You can also visit our website at ChampionFiberglass.com for more information, including the latest catalogs and spec sheets, and a wealth of industry-specific case studies and information. You can also reach out to Champion Fiberglass directly at info@championfiberglass.com.

BETTER MATERIALS. BETTER RESULTS.

Champion Fiberglass is making a big impact in the industry. From tunnels to data centers to pipelines, when an engineer specs our conduit, the result is a stronger, lighter weight, corrosion-resistant conduit – with lower costs overall.

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