

## New Coupling Technology for Joining Advantex® Glass Reinforced FRP Pipe

After decades of research by organizations including Owens Corning, fiberglass technology has advanced to produce a material that today offers a superior alternative specification for pipe systems located in corrosive environments when compared to traditionally-used pipe materials including stainless or coated steel and alloys.



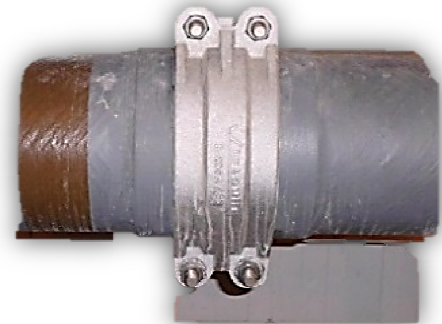
**Figure 1** Installation of Advantex® Glass reinforced FRP pipe in South Korea

This material is fiberglass-reinforced polymer or FRP made with Owens Corning's Advantex® glass, a patented, boron-free E-CR glass. Besides being corrosion resistant, FRP material is lightweight, durable, and non-conductive. It is also high in strength, fatigue resistant, and offers significant design flexibility. "Its outstanding performance has made it a pipe material of choice in diverse industries including power and energy; chemical processing; mining; water and sewage treatment; and food processing, said Matt Lieser, Owens Corning Global Specification Leader. "To ensure long-lasting FRP assets, always specify Advantex® glass reinforcements for FRP used in corrosive environments," asserted Lieser.

Although FRP pipe itself outperforms traditional materials in certain corrosive environments, the standard methods in which pipe is joined using epoxies and adhesives can pose a challenge in freezing temperatures or other types of inclement weather. A power plant in central Michigan experienced firsthand the challenge of using adhesive to join FRP pipe during a major pipe installation project.

Midwest winters can be daunting, and frigid temperatures slowed the chemical process of adhesion, costing the Michigan-based company extra time and money to bring in curing technologies such as heat blankets and industrial blowers.

At about the same time, an innovative solution for joining FRP pipe was released by a company located in Easton, PA, named Victaulic, a leading manufacturer of mechanical pipe joining systems. The pioneering design is a mechanical coupling that can be installed in approximately 8 min. to 12 min. in any weather. The #5-EL Adaptor, an adapter developed by Industrial Fiberglass Specialties, Inc., is used with the mechanical coupling, providing a faster seal than the alternative methods of butt-and-wrap and adhesive bell-and-spigot pipe joint for projects being performed in severe weather conditions.

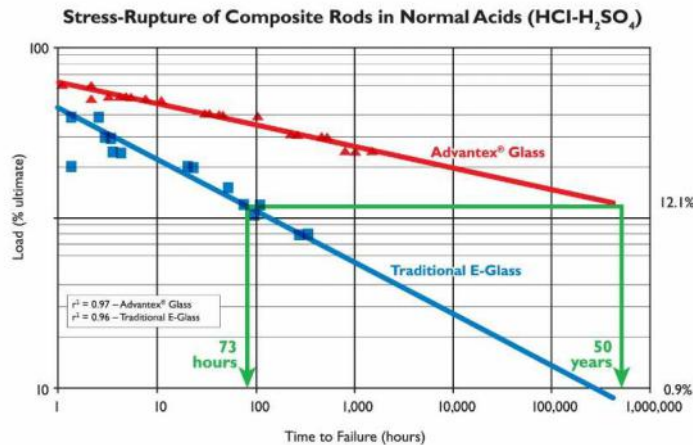


**Figure 2** Adapter and mechanical coupling joining Advantex® Glass reinforced FRP pipe

# CASE STUDY

Located in Dayton, Ohio, Industrial Fiberglass Specialties, Inc. is a custom manufacturer of corrosion resistant products built using reinforced composites. According to Diana Hall, President of Industrial Fiberglass Specialties, Inc., the company has been producing premium products for its customers since 1946 and is one of the earliest fabricators of FRP corrosion resistant equipment. "Our adapter is available in 1 in. to 12 in. diameters, and together with Victaulic's coupling offers a leak-free solution to joining FRP pipe in any weather and especially in inclement conditions," concluded Hall.

Although similar designs are used to join steel pipe, the mechanical coupling and adapter system is the first design that can be applied to fiberglass. And, after extensive testing at the Michigan power plant over the course of a year, this system appears to be a complete success.



**Stress Corrosion Testing:** The stress-rupture test results above show Advantex® glass reinforced for FRP offers a useful stress 12 times that of an FRP laminate made with E-glass in sulfuric and hydrochloric acid applications.

## Take Risk Out...Put **Advantex®** Glass In.

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