

A perspective view of a long, arched tunnel. The tunnel's interior is lined with multiple layers of corrugated metal rings, creating a ribbed structure. A large, dark pipe runs along the left side of the tunnel. The floor is dark and appears to have some tracks or a path. The lighting is warm and focused, highlighting the texture of the metal and the depth of the tunnel.

# Mining and Milling

## Reliability Solutions for Piping Systems





## Mining and Milling

Fiber Glass Systems has a wide selection of lightweight abrasion resistant & corrosion-proof piping systems to provide you with install it and forget it reliability in your remote and demanding environment.

Our unique solutions combine innovation with proven technologies. We understand abrasion is only one part of the corrosion/erosion cycle so we embed structurally reinforced epoxy resin pipe and fittings with high alumina ceramic. The result is a piping system with the durability of ceramic and the corrosion-proof structure of epoxy. Ceram Core™ products are lightweight and long lasting in abrasive slurries like mine tailings.

Another example of Fiber Glass Systems innovation is Fiberspar™, our GRE and HDPE hybrid pipe that gives you the durability of HDPE and pressures capabilities greater than 1500 psi even at 180°F – this isn't just any composite pipe.

Our proprietary Z-CORE™ resin system outperforms plastic lined steel pipe in the toughest chemical applications for a fraction of the cost and weight.

Whether you need a solution to water hammer for dewatering, or chemical resistance for acids and organics we have the solutions to your challenges. Our broad range of piping systems offers performance from full vacuum to 3,500 psi, temperatures from -75°F up to 275°F for liquids and 300°F for air. These products can be heat traced, steam cleaned, grounded, buried and used for downhole tubing and casing.

### Reliability

Our products never need cathodic protection and rarely require thrust blocking. They substantially reduce maintenance because they never rust or corrode.

For fluid conveyance from 1-1/2" to 72"+ for brine, acids, bases, organics, process piping, fuel, abrasive slurries or simply potable water, we have the install it and forget it reliability to the piping challenges you face in whatever remote part of the globe mining takes you.



## Key Advantages

- **No Maintenance:** Impervious to corrosion and resistant to chemical attack caused by acids, solvents and bases, eliminating the need for protective coatings, wraps or cathodic protection.
- **Low Installation Costs:** Lightweight construction enables easy installation, reducing personnel and equipment needs.
- **Improved Flow Capacity:** Smooth interior pipe surface resists scaling and eliminates corrosion.
- **Long Service Life:** Calculated design life of 20 years, with an actual service life of over 30 years.
- **Reliability:** “Install It and Forget It” performance.

## Engineering Design

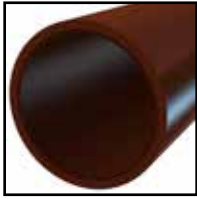
The Fiber Glass Systems’ Success by Design engineering software sets the industry standard for design assistance. From material selection to flow calculations and comparisons; anchor, guide and support calculations; and thermal expansion solutions, this design package assists the engineer and owner in designing a highly reliable system. Our applications engineers can assist you in the selection of the proper piping system for your application.

## Installation and Fabrication

With regional fabrication locations in North America and around the world, Fiber Glass Systems will rapidly fabricate your project for minimum field installation. All of our fabrication locations are staffed with ASME B31.3 certified bonders. Training and certifications of field installation crews to ASME B31.3 is available.



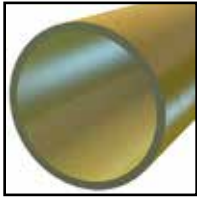
## Epoxy Piping Systems



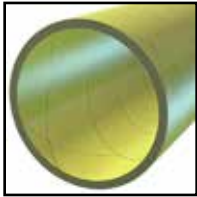
**Centricast RB-2530** pipe is available in 1"-14" diameters with pressure ratings from 125-300 psig and temperatures up to 250°F (121°C), and is recommended for most caustics, salts, solvents and acids for chemical process solutions and abrasive slurries.



**Centricast RB-1520** pipe is available in 1½"-14" diameters, with pressure ratings from 125-300 psig and temperatures up to 250°F (121°C), and is recommended for chemical process solutions, solvents, acids, caustics and salt solutions.



**Green Thread HP** pipe is available in 1"-42" diameters up to 225°F (125°C) (see note on HP pressure classes), and is recommended for dilute acids and caustics and industrial waste.



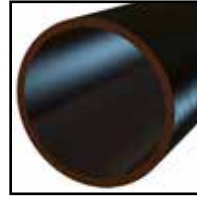
**Red Thread HP** pipe is available in 2"-42" diameters (see note on HP pressure classes) and temperatures up to 210° (99°C). Pipe sizes 2"-6" have special profile threads for quick and reliable assembly. This product is recommended for general industrial service.



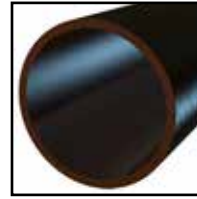
**Bondstrand 2000** pipe is available in 1"-16" diameters with pressure ratings up to 450 psig and temperatures up to 250°F (121°C). This product is recommended for dilute acids and caustics, and industrial waste.



**Bondstrand 2400** pipe is available in 2"-40" diameters with (see note below for pressure capabilities) temperatures up to 250°F (121°C). Recommended for salt water, brackish water, fire protection, potable/waste water and sewage. Available in a conductive version for SX-EX applications.



**Bondstrand 3000, 3200 y 3300**, series piping. They are recommended for general industrial service up to 210°F (99°C). The 3000 series pipe is available in 2"-16" diameters with pressure ratings up to 450 psig. The 3200 and 3300 series pipe are available in 8"-16" diameters with pressure ratings of 200 and 300 psig, respectively.



**Bondstrand 4000** pipe is available in 1"-16" diameters with pressure ratings from 150 to 300 psig and temperatures up to 250°F (121°C) and is recommended for acid drains, chemical processes, slurries, non-oxidizing chemicals and acids.

### NOTES:

HP pressure classes are 16, 20, 25, 32, 40 and 50 bar.

Bondstrand 2400 pressure classes are 10, 12, 14, 16, 20, 25, 32, 40 and 50 bar.

The above pressure classes are not available in all sizes.

## Vinyl Ester Piping Systems



**Centricast CL2030** pipe is available in 1"-14" diameters with pressure ratings up to 150 psig and is recommended for most chlorinated and acidic mixtures up to 175° (80°C) and other chemicals up to 200°F (93°C). This pipe is manufactured with a 100 mil liner.



**Centricast CL1520** pipe is available in 1"-14" diameters with pressure ratings up to 150 psig and is recommended for most chlorinated and acidic mixtures up to 175°F (80°C) and other chemicals up to 200°F (93.3°C). This pipe is manufactured with a 50 mil liner.



**F-Chem** pipe is a special order product available in 14"-72" with a pressure rating of 50-150 psig and temperatures up to 225°F (121°C).



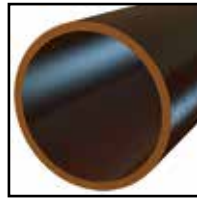
**Bondstrand 5000** pipe is available in 1"-16" diameters for temperatures up to 200°F (93°C). This pipe is manufactured with a 50 mil liner. This is a custom vinyl ester pipe available in Asia, Europe and South America and is recommended for most chlorinated and acidic mixtures.

**Polyplaster** pipe is hand lay up pipe in diameters 1"-8" and is wound on a C.A.M. machine up to 100". A variety of vinyl ester/poly ester resin systems and liner thicknesses can be specified. Joint is butt and wrap.

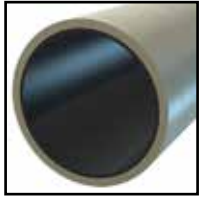
## Advanced Performance Specialty Products



**Z-Core** products are a propriety thermosetting resin capable of enduring severe environments such as concentrated sulfuric acid, hydrochloric acid, hot caustics and mixtures of acids, solvents and bases. Z-Core is an excellent alternative to fluoropolymer lined pipe and expensive alloys. Temperature ratings are up to 275°F and 1" to 8" diameters.



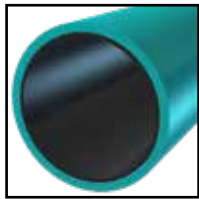
**Ceram Core** are made from high-alumina ceramic beads suspended in an epoxy resin matrix, making it an ideal material for extreme abrasive and corrosive environments. Applications include ore slurries, mine tailings, salt slurries, concrete slurries and Diatomaceous Earth. Diameters are available from 6" to 16".



**Silver Streak** products are made for abrasive applications. This product is available 1"-48" diameters with a pressure rating up to 225 psig and a temperature rating up to 225°F (107°C).



**Downhole Tubing & Casing** products are capable of pressure up to 3500 psig and temperatures of 210°F (99°C) for corrosive application like CO<sub>2</sub>, saltwater/brine and other such services for methane gas, chemical disposal or brackish water wells. Diameters are available from 1½"-9" for pressures up to 3500 psig and diameters up to 24" for lower pressure brackish/RO water wells.



**Fiberspar LinePipe** products are continuous spoolable piping systems with HDPE liners wrapped with a glass fiber epoxy thermoset matrix for corrosive and abrasive applications up to 2500 psig and up to 180°F (65°C). Diameters are available 2"-6" and continuous lengths up to 2 miles. A downhole version is available.



**High Pressure** products are available in sizes 1½"-36" diameter for pressure of 150 psig up to 4000 psig at temperatures up to 210°F (99°C). Typical applications include water, hydraulic fluids, and other difficult mining and milling applications in a variety of industries including severe elevation changes.

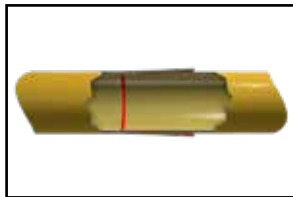
## Joining Systems



**Key Lock™:** Self-restrained mechanical joint provides quick assembly by means of locking keys inserted between bell and spigot. Used to install Bondstrand 2400 series pipe in sizes 2"-40" (50 - 1000 mm).



**Flanged:** Available for all piping systems and diameters; factory assembled or shipped loose for assembly in the field.



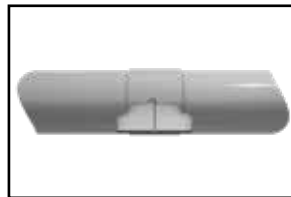
**Taper x Taper:** Matched taper joint secured with epoxy adhesive. Self locking feature resists movement, facilitating joining on RT/GT HP 16/20/25 bar piping without awaiting adhesive cure.



**Butt & Wrap:** Plain end pipe or pipe and fittings butted together and wrapped with multiple layers of resin-saturated glass reinforcement. For use with all piping systems



**Quick™ Lock:** Straight spigot/ tapered socket adhesive bonded joint for precise make-up to facilitate close tolerance piping. Used for 1 "-16" (25-400 mm) Bondstrand 2000/4000/5000/6000/7000 piping.



**Socket Joint:** Adhesive bonded straight socket joint with positive stops. This is the standard for Centricast piping systems



**Fiberspar Mechanical Connectors**  
**Pipe-to-Pipe Connector and Flanged**



**Service-End Connector:** Available in Carbon Steel or 316/316L Stainless Steel. Other corrosion resistant alloys available upon request.

## Secondary Containment

Two-piece secondary containment fittings are available in 3"-16" diameters for primary pipe sizes up to 14". The system is designed for maximum field flexibility, ease of installation, and the ability to use one size larger containment. When higher pressure, larger diameter or severe temperature changes are required, special fittings can be provided to handle the added requirements.

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