Industrial Fiberglass Specialties, Inc.
521 Kiser Street
Dayton, Ohio 45404-1641
Telephone (937) 222-9000 - Fax (937) 222-9020

CorBan Series 7100-20 Filament Wound FRP Composite Pipe, Conduit, Duct, & Fittings

For general industrial piping & duct service; dual containment pipe; electrical, telephone and cable conduit; and bridge drain piping

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Uses and Applications:

For air, fume, ventilation, and HVAC ducting
For use as containment pipe in a dual containment system
Bridge drain piping & fittings
Electrical, telephone, and optical cable conduit
Waste water and sewage systems
Water lines
Cooling water piping
Air sparger lines
Roof collection drains and "downspouts"
Floor drains
Plant piping
Water treatment piping
Sewer lines and sewer force mains
Brine and brackish water
General industrial service for mildly corrosive liquids

Description:

Composition:

Filament-wound fiberglass reinforced polyester composite pipe. ASTM D-2996 Classification Type I, Grade 2, Class E.

Nominal 10 to 20 mil reinforced inner corrosion liner, followed by a fiberglass filament wound structural overwrap.

A premium grade vinyl polyester resin (Reichhold's Dion 7100, or equal), pigmented light concrete grey for UV inhibition, is used throughout all laminates.

Operating temperatures up to 225^{o} F, depending upon specific service environment and resin formulation.

Pipe & Duct Sizes:

Pipe & Duct Lengths:

137+ different diameters, ranging from a teeny 3/8" diameter up to a mammoth 168" diameter. Pipe available built to iron pipe outside diameters (ASTM D-2996, Table 3), as well as pipe built to chemical process piping inside diameter standards. A current list of pipe sizes is available upon request. New sizes are being added regularly.

3/8" and 1/2" diameter pipe and duct are built in 5 ft. lengths.

3/4" & 7/8" diameter pipe and duct are built in 7 ft. lengths.

1" through 1-1/2" diameter pipe and duct is built in 10 ft. lengths.

2" through 24" diameter pipe and duct is available in 20 ft. lengths.

8" through 144" diameter pipe and duct is available in 40 ft. lengths.

Performance:

Advantages:

Good corrosion resistance over a wide temperature range. Temperatures from sub-zero to 225°F.

Working pressures from NBS-PS-15-69 duct to 450 psi+, depending upon size and wall thickness.

Vacuum to -14.7 psig for all sizes, by selection of wall thicknesses, ribs and filament wind angle.

Available for earth burial, all depths, with selection of wall thicknesses, ribs and filament wind angle.

Weighs 1/6 as much as steel. Thus, lower installed costs.

Class I fire-retardant pipe and duct systems available. ASTM E-84 flame spreads of 25, and under.

Smooth inner surface produces very low frictional loss for reduced pumping and fan blower costs. Hazen-Williams flow coefficient of 150.

Recommended for a wide range of corrosion applications. Consult with Industrial Fiberglass, or the resin manufacturer, for specific project recommendations.

Joining Systems:

Bell (socket) and spigot structural adhesive weld bonded joints. Adhesive bonded joints are available as your choice of straight/straight, straight/taper and taper/taper.

Threaded joints (NPT) through 12" diameter. Other thread configurations available upon special order.

Flanges, all sizes through 144" diameter. Including the superior filament wound socket flanges for sizes of 1/2 diameter through 42" diameter. ANSI 150 lb., 300 lb. and 600 lb. all available as standard. Any pressure rating and drilling pattern available on order.

Van Stone, loose ring style, flanges.

Flange Spacers - all diameters, bolt hole patterns and thicknesses, built to order.

Bell and spigot O-Ring joints, thru 168" diameter.

Bell and spigot O-Ring joints with locking key for restrained ends.

Mechanical Couplings, including Victaulic and Taylor-Kerr.

Repair (maintenance) couplings.

Physical Properties:

Mechanical Properties:

See Table 1 for typical physical properties of Series 7100-20 filament wound FRP composite pipe and duct. These are conservative properties that can be used for the design of FRP pipe and duct for pressure, vacuum, supported span and burial conditions. Contact Industrial Fiberglass for recommendations on the appropriate design formulas to be used for FRP composite pipe and duct.

Burial Installations:

As a custom manufacturer of pipe and fittings, we can design and build pipe to handle burial conditions ranging from live loads due to highway and rail traffic - to earth loads of 100 ft. or greater. We even have experience with underwater installations. Our engineers will welcome the opportunity to work with you on a pipe design, backfill selection and installation methods to meet your specific requirements. The result will be your lowest cost per year of service life (installed basis).

Supported Span Installations:

We can also design and build pipe to provide you the lowest cost for supported span pipe. We are not limited to just a few pipe wall thicknesses and filament winding angles. Thus, we can select and choose the combination of pipe design and support design and cost that will provide your "best buy". Consult with our engineers for help with your specific requirements.

Fittings:

Elbows, standard are 22-1/2°, 30°, 45°, and 90°. Any angle elbow available on special order. Elbows through 48" diameter are available as smooth radius. Mitered elbows are available in all sizes.

Reducing elbows
Tees
Reducing tees
Concentric taper body reducers
Eccentric taper body reducers
Saddles, with FRP and stainless steel threaded outlets, bell outlets, spigot outlets and flanged outlets.
Wear pads (blank saddles)
Crosses
Reducing Crosses
Laterals
Reducing Laterals
True wyes.
P-Traps and 180° U-Bends.
Floor drains
Pipe couplings
Threaded (NPT) couplings
Adapters, bell by NPT thread (male or female threads available).
Adapters, spigot by NPT thread (male or female threads available).
Pipe nipples
Threaded nipples
Reducing bushings and threaded adapter bushings.
Fitting and pipe plugs. Pipe caps.
Blind flanges
Threaded flanges
Reducing flanges
Orifice flanges

All fittings are available as adhesive socket, plain end, flanged end, bell and spigot O-Ring; or any combination. See full Industrial Fiberglass' catalog "Reinforced Fiberglass Pipe Fittings & Accessories" for sizes, dimensions and tolerances. Fittings are available from 1/2" diameter through 168" diameter. We welcome the opportunity to work with our customers on special fittings.

Table 1

Industrial Fiberglass Specialties, Inc.
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Properties of Series 7100-20 FW FRP Composite Pipe, Duct, & Conduit

Inner Pipe Liner..... 20 mil veil reinforced
Resin (Liner)..... Premium grade vinyl polyester
Structural Wall..... Filament wound overwrap
Resin (FW Overwrap)..... Premium grade vinyl polyester

Elastic and Strength Properties of Glass Filament Reinforced Wall

Hoop Tensile: (Based on loading of pipe hydrostatically)

Ultimate (porosity)..... 20,000 psi
Yield..... 12,800 psi
Allowable..... 6,700 psi
Modulus of Elasticity..... 3,600,000 psi

Tensile: (Based on loading of pipe as a tension member)

Ultimate (rupture)..... 12,200 psi
Yield..... 5,000 psi
Allowable..... 3,300 psi
Modulus of Elasticity..... 1,800,000 psi

Flexural: (Based on loading of pipe as a beam)

Ultimate (rupture)..... 15,700 psi
Yield..... 6,100 psi
Allowable..... 4,000 psi
Modulus of Elasticity..... 1,700,000 psi

Torsion: (Based on loading of pipe as a shaft in torsion)

Ultimate (rupture)..... 16,200 psi
Allowable Shear..... 5,500 psi
Shear Modulus..... 750,000 psi

Compression: (Based on loading of pipe as a "short" column)

Ultimate (rupture)..... 11,200 psi
Yield..... 7,000 psi
Allowable..... 3,700 psi
Modulus of Elasticity..... 1,400,000 psi

Thermal Properties:

Coefficient of Thermal Expansion..... 0.0000085 in./in./deg. F
Thermal Conductivity..... 2.3 BTU/hr./sq. ft./deg. F/in. thick.