



## *Industrial Fiberglass Specialties, Inc.*

521 Kiser Street

Dayton, Ohio 45404-1641

Telephone = (937) 222-9000 - Fax = (937) 222-9020

### **Series 11800 Contact Molded Furan Composite Pipe, Duct, and Fittings**

**For corrosive, fire retardant, low smoke, high temperature, and solvent resistant industrial piping and fume duct service.**

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#### **Uses and Applications:**

Chemical process piping  
Fire retardant applications  
Acid Drains  
Elevated temperature chemical applications  
Floor collection drains  
Process plant piping  
Applications requiring solvent resistance  
Low smoke generation for ducting and stacks  
Excellent physical properties to 400° F.  
Piping for handling combinations of solvents, acids & bases  
An alternative to costly alloys and specialty metals.  
Outstanding flame spread resistance  
Industrial service for corrosive liquids

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#### **Description:**

Contact molded fiberglass reinforced furan composite pipe and duct. NBS PS-15-69 classification.

#### **Composition:**

Nominal 10 veil reinforced corrosion barrier, followed by a nominal 90 mil corrosion liner reinforced with fiberglass chopped strands, followed by a combination structural and corrosion resistant laminate reinforced with fiberglass woven roving and/or fiberglass chopped strand reinforcement.

A premium grade heat cured high performance and high temperature furan resin is used throughout all laminates. The exterior of all laminates is factory post coated with a UV resistant polymer coating.

Operating upset temperatures up to 400° F.

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#### **Pipe & Duct Sizes:**

137+ different diameters, ranging from a tiny 3/8" diameter up to a mammoth 144" 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.

#### **Pipe & Duct Lengths:**

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

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

1" thru 1-1/2" diameter pipe is built in 10 ft. lengths.

2" thru 24" diameter pipe is available in 20 ft. lengths.

8" thru 144" diameter pipe is available in 40 ft. lengths.

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**Performance:**

Good corrosion resistance over a wide temperature range. Temperatures from sub-zero to 400°F.

**Advantages:**

Working pressures from NBS-PS-15-69 duct to 150 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.

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 Specialties, or the resin manufacturer, for specific project recommendations.

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**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 84" 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 84" diameter

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

Mechanical Couplings, including Victaulic and Taylor-Kerr.

Repair (maintenance) couplings.

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**Physical  
Properties:  
Mechanical  
Properties:**

See Table 1 for typical physical properties of Series 11800 contact molded FRP composite pipe and duct. These are conservative properties that can be used for the design of contact molded 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.

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**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).

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**Supported Span Installations:**

Again, we can design and build pipe to provide you the lowest cost for supported span installed pipe. Since we are not limited to just a few pipe wall thicknesses and filament winding angles - 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.

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**Fittings:**

Elbows, standard are 22-1/2<sup>o</sup>, 30<sup>o</sup>, 45<sup>o</sup>, and 90<sup>o</sup>. 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<sup>o</sup> U-Bends.

Floor drains

Expansion joints

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 for sizes, dimensions and tolerances. Fittings are available from 2" diameter through 84" 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 11800 Contact Molded FRP Furan Pipe & Duct**

Corrosion Barrier..... 10 mil veil reinforced  
Corrosion Liner..... 86 mil Fiberglass chopped strand mat  
Resin (barrier/Liner)..... High temperature furan resin  
Structural Wall..... Alternating glass mat & woven roving  
Resin (Structural Wall)..... High temperature furan resin

**Laminate Elastic and Strength Properties**

**Per ASTM D3299 (32 to 40% glass content)**

Flexural Strength ..... 22,000 psi  
Flexural Modulus ..... 1,110,000 psi  
Tensile Strength ..... 14,700 psi  
Tensile Modulus ..... 1,300,000 psi  
Tensile Elongation ..... 1.0%  
Compressive Strength ..... 17,200 psi

**Thermal, Fire, and Smoke Properties**

**For Typical Contact Molded Laminates**

Thermal Conductivity - 1.6 BTU/hr./sq. ft./deg. F/in. thick.  
Coefficient of Thermal Expansion .... 0.0000116/in/in/deg. C  
Flame Spread Value (ASTM E-84) ..... 22 to 70  
Smoke Generation Value (ASTM E-84) ..... 35 to 120  
Maximum Short Term Upset Temperature ..... 400 deg. F.

**Typical Clear Casting Properties**

Tensile Elongation (at break) ..... 1.0%  
Barcol Hardness ..... 40+  
Heat Distortion Temperature (HDT) ..... Above 340 deg. F  
Specific Gravity ..... 1.28  
Volumetric Shrinkage ..... 5.8%  
Average Dielectric Constant (ASTM D150) ..... 5.35  
Electrical Dissipation Factor (ASTM D150) ..... 0.025