



Industrial Fiberglass Specialties, Inc.

521 Kiser Street

Dayton, Ohio 45404-1641

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

Series 5900-G FRP Conductive & Fire Retardant Pipe, Duct, and Fittings

For corrosive industrial service where good corrosion resistance, fire retardant & conductive properties are important.

Uses and applications:

Chemical plant process piping
Fire retardant corrosion resistant fume duct
Plant duct for explosive and hazardous environments
Organic chemicals
Acid drains
Corrosive and abrasive slurries
Waste water and sewage systems
Chlorine and chlorinated water
Water treatment piping
Hazardous waste piping
Piping & duct systems for combinations of solvents, acids, & bases.
An alternative to costly alloys and specialty metals
Industrial service for severely corrosive liquids

Description: Composition:

Filament-wound fiberglass reinforced methacrylate modified epoxy composite pipe. ASTM D-2996 Classification Type I, Grade 2, Class E. Nominal 10 to 20 mil carbon graphite veil reinforced corrosion barrier, followed by a nominal 40 mil corrosion liner reinforced with fiberglass chopped strand reinforcements, followed by a fiberglass filament wound structural overwrap.

A premium grade fire retardant vinylester resin (Derakane 510-C, Dion 9300, or equal), pigmented dark grey for UV inhibition, is used in the corrosion barrier/liner. To provide excellent impact strength and toughness, the same fire retardant vinylester resin, pigmented dark grey for UV inhibition, is used for the filament wound structural overwrap. Antimony trioxide is added to all resin, to achieve an ASTM E-84 flame spread rating of 25, or less.

For controlling internal static charge buildup, the vinylester resin used for the corrosion barrier/liner shall also include a special conductive carbon graphite additive. The resulting internal laminate shall provide a maximum surface resistance of 1,000 ohms, or less, when tested at two points 12" apart, or less.

Operating temperatures up to 225° F.

Pipe & Duct Sizes:

137+ different diameters, ranging from a teeny 3/8" dia. up to a mammoth 200" dia. 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:

137+ different diameters, ranging from a teeny 3/8" dia. up to a mammoth 200" dia. 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.

1/2" dia. pipe and smaller is built in 5 ft. lengths.

3/4" & 7/8" dia. pipe is built in 7 ft. lengths.

1" through 1-1/2" dia. pipe is built in 10 ft. lengths.

2" through 6" dia. pipe is available in 20 ft. lengths.

8" dia through 120" dia. pipe is available in 20 & 40 ft. lengths.

Joining systems:

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.

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

Recommended for a wide range of corrosion applications. Consult with Industrial Fiberglass Specialties, 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" dia. Other thread configurations available upon special order.

Flanges, all sizes through 84" dia. Including the superior filament wound socket flanges for sizes through 1/2" dia. through 36" dia. 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" dia.

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

Mechanical Couplings, including Victaulic and Taylor-Kerr.

Expansion Joints, including triple O-Ring style for fly ash lines.

Speed-Seal O-Ring true unions.

Repair (maintenance) couplings.

Physical Properties:**Mechanical Properties:**

See Table 1 for typical physical properties of Series 5900-G FW FRP Pipe. These are conservative properties that can be used for the design of FW pipe for pressure, vacuum, supported span and burial conditions. Contact Industrial Fiberglass Specialties, Inc. for recommendations on the appropriate design formulas to be used for FRP composite pipe.

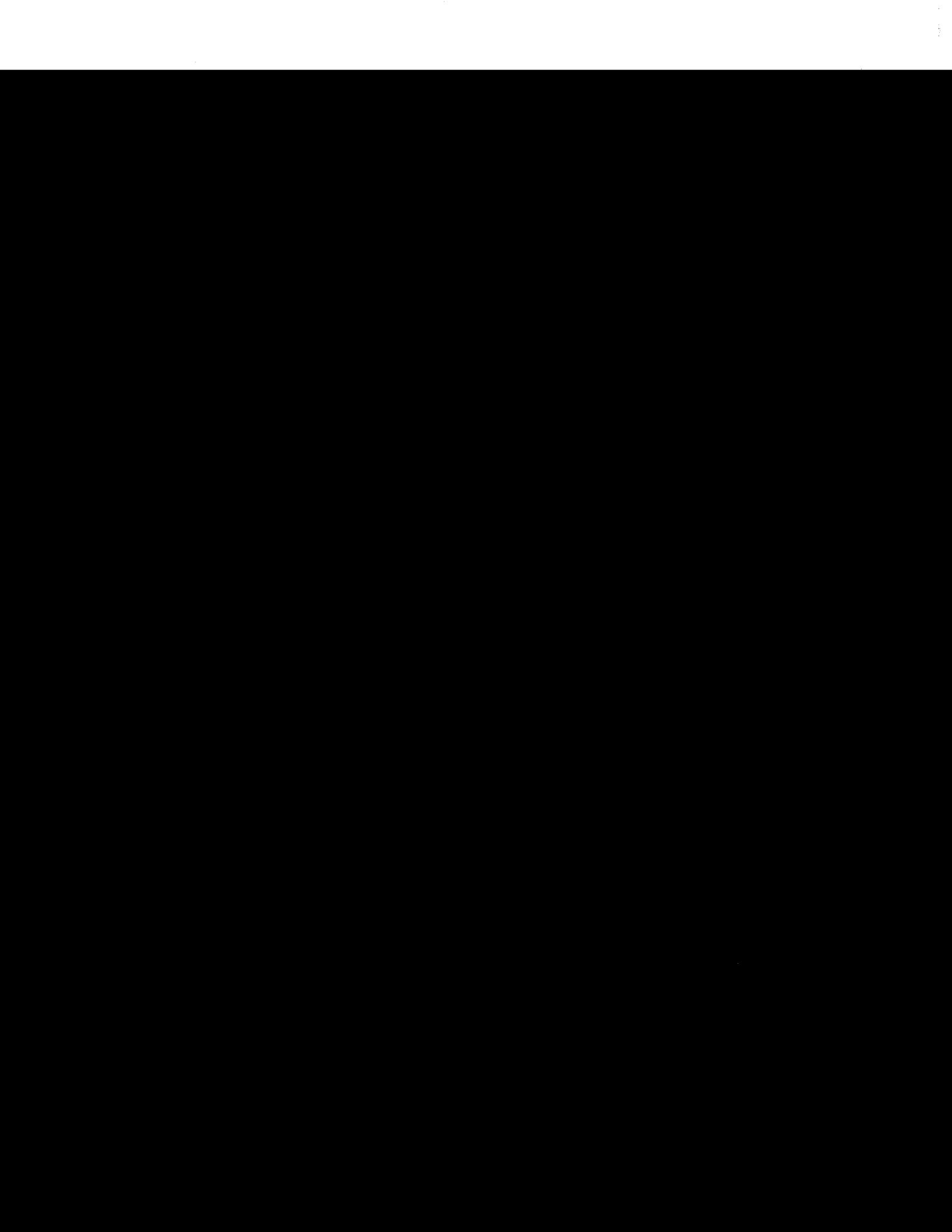


Table 1

Industrial Fiberglass Specialties, Inc.

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Properties of Series 5900-G Filament Wound FRP Composite Pipe & Duct

Corrosion Barrier..... 10 mil Carbon Graphite Veil Reinforced
Corrosion Liner..... 40 mil Fiberglass Chopped Strand Mat
Resin (Barrier/Liner).. Premium Grade Fire Retardant Vinylester
Additive to Resin in Barrier/Liner.. Conductive Carbon Graphite
Structural Wall..... Fiberglass Filament Wound Overwrap
Resin (FW Overwrap).... Premium Grade Fire Retardant Vinylester

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.