



**Perry
Fiberglass
Products, Inc.**



FRP AQUATIC DUCTWORK COMPONENTS



**LEADERS IN
FIBERGLASS
REINFORCED
PLASTIC
DUCT
PRODUCTS**

PERRY FIBERGLASS



Perry Fiberglass Products, Inc. is a leading manufacturer of high quality Class 1 (Flame and Smoke) fiberglass reinforced plastic (FRP) products for exhaust, ventilation and process related duct systems in aquatic environments. Unlike stainless steel and aluminum, Perry Fiberglass FRP duct is impervious to the high chlorine concentrations in aquatic settings. Whether the application is a natatorium, aquatic center, aquarium, marine lab or other aquatic environment, Perry Fiberglass offers a variety of quality products and superior service. We supply both single wall and pre-insulated double wall duct to meet every ventilation need.

Perry Fiberglass Products was established in 1984 and is headquartered in Avon Lake, Ohio, a suburb of Cleveland, Ohio.

AQUATIC DUCT FROM PERRY FIBERGLASS

Perry 20S Low Smoke™ Class 1 Flame and Smoke duct is used in a wide variety of aquatic settings. Typical applications include the following:

- Natatoriums
- Aquatic Centers
- Aquariums
- Marine Labs

WHY CHOOSE PERRY FIBERGLASS FRP FOR YOUR DUCT NEEDS

Perry Fiberglass FRP duct products offer numerous advantages over other duct materials such as galvanized, stainless steel, and PVC, especially in aquatic applications where corrosion is a concern. Below you'll find some of the many reasons we feel Perry Fiberglass FRP duct represents the best the industry has to offer:

MATERIAL INTEGRITY

Perry Fiberglass FRP duct is filament wound with glass and resins formulated for aquatic applications. The duct is manufactured to comply with recognized industry standards and can be customized to your exact specifications.

STRENGTH

Filament winding provides greater hoop strength, resulting in a much stronger duct than other methods of construction such as hand lay-up, and is far superior to metal products in many corrosive environments. Perry Fiberglass FRP duct is lighter than steel while offering superior corrosion qualities and equal air flow performance.

DURABILITY

Superior resistance to corrosion and leakage are hallmarks of Perry Fiberglass FRP duct. The same corrosion resistant qualities can be maintained on both the inside diameter (ID) and outside diameter (OD) allowing for a wide range of applications.

SAFETY

Perry Fiberglass FRP duct products meet the Flame and Smoke requirements of a Class 1 Flame and Smoke (25/50 respectively) duct per Underwriter's Laboratories (UL) 181 and Uniform Mechanical Code (UMC) 10-1 and are verified by an ASTM E-84 testing laboratory recognized by the following building code organizations under the Council of American Building Officials: ICBO; BOCA; SBCCI.

VERSATILITY

Perry Fiberglass FRP duct is available in long lengths — up to 50 feet. A complete complement of standard fittings and special shapes are manufactured. The light weight duct is exceptionally strong, making it easy for workers to handle on the jobsite. Factory manifolding, color options and custom wall thickness are all available to meet unique job requirements.

EFFICIENCY

A duct system from Perry Fiberglass can be sealed to achieve a liquid-tight system. This assures efficient movement of the exhaust air while removing any risk of contamination.

EASE OF USE

Perry Fiberglass FRP duct can be field installed using simple tools. The joining material is the same glass and resin combination as the duct. Perry Fiberglass can provide field training for the installing personnel. Optional flanged or bell and spigot joints can be provided upon request.

SUPERIORITY OF PRE-INSULATED DUCT

Perry 20S-IR7 pre-insulated double wall duct offers superior performance over field-applied insulation. Advantages include: assured uniformity of insulation; permanent protection of insulation by encasement on both ID and OD by a FRP shell; permanent vapor barrier to prevent moisture from condensing within the insulation; and superior thermal conductivity.

PRODUCTS

SAMPLE SPECIFICATION

The following is for Aquatic Overhead and Underground Ductwork.

AQUATIC OVERHEAD AND UNDERGROUND PERRY 20S LOW SMOKE CLASS 1 DUCT – FLAME AND SMOKE

DUCTWORK: single wall (20S) and pre-insulated double-wall (20S-IR7)

- Ductwork, including fittings, shall be constructed of filament wound fiberglass reinforced plastic, as manufactured by Perry Fiberglass Products, Inc. Manufactured per industry standards – SMACNA, ASTM and PS 15-69 minimums. Designed for min 10" WC pressure and 10" WC vacuum. A minimum designed structural safety factor of 5 shall be used.
- The resin shall be Perry 20S Low Smoke/Hetron FR992. Resin shall not contain fillers except as required for thixotropic control of fire retardance. The duct and fittings, as a finished composite shall meet the Flame and Smoke requirements (25 and 50 respectively) of a Class 1 duct per UL 181 and UMC 10-1, and ASTM E-84. **Linings and or coatings are not acceptable.** Performance shall have been verified by an independent laboratory testing to UMC 10-1 standards. The testing laboratory shall have ICBO and BOCA approval.

REQUIREMENTS OF A CLASS 1 DUCT PER UL 181 AND UMC 10-1

FLAME SPREAD: less than 25

SMOKE DEVELOPMENT: less than 50

FUEL CONTRIBUTED: less than 10

Wall thickness shall comply with PS 15-69 duct standards. The ductwork shall be furnished with the following minimum wall thickness 0.125" for ducts up to 20" in diameter, 0.187" for ducts 21" to 36" in diameter, and 0.25" for ducts 37" to 60" in diameter.

Rectangular Ductwork wall thickness shall be determined by substituting the long side for the round diameter.

The inner surface shall contain a 20 mil thick "C" veil saturated with Hetron FR992 resin, (approx. 90% by weight resin). This will be followed by a 100 mil corrosion barrier (2 layers of 1-1/2 oz. chopped mat) with Hetron FR992 resin. The structural layer shall be as required for design service and shall be filament wound using resin as detailed in paragraph 2. Duct exterior shall have a relatively smooth surface free of exposed fibers and shall contain an ultraviolet inhibiting agent. All resin and joint material is suitable for a 250°F service.

When specified, double wall pre-insulated (20S-IR7) duct shall be furnished where indicated on the bid drawings. Construction will comply with PS 15-69 standards and include 1" of insulation, with a K factor of 0.14 and an R value of 7.

INSTALLATION

Field joints shall be butt-type wet lay-up method. Flanged connections shall be provided where indicated on the contract drawings. Both of these joining methods are of the same material as the duct, thus forming a continuous FRP component system.

Manufacturer's installation instructions to be followed.

Overhead ductwork, when exposed, shall be manufactured incorporating a color selected by the Architect. Underground duct shall be manufactured as above and with an additional OD resin rich veil.

- ★ For assistance in resin selection for specific corrosive environments contact Perry Fiberglass Products, Inc.



Perry Fiberglass FRP duct products are as versatile and varied as the industries they serve. The wide range of configurations available ensures that we have duct products to meet your needs.

PRODUCT OFFERINGS

Perry Fiberglass offers two main categories of FRP duct products: single wall and pre-insulated double wall.

SINGLE WALL

Perry 20S Low Smoke™, our Class 1 rated single wall duct, meets 25/50 flame/smoke requirements of UL 181. Perry 20S Low Smoke™ is unique in the industry and has found wide acceptance for both industrial and commercial projects. It is especially desirable in corrosive environments where flame and smoke development is a concern.

PRE-INSULATED DOUBLE WALL

If thermal control is a concern, then Perry 20S-IR7 pre-insulated double wall duct solves the problem. When supplied with the standard 1" insulation thickness, our double wall duct has a k factor of 0.14 and an R value of 7. The same corrosion resistant qualities can be maintained on both the ID and OD. Also available in R-5, R-10, R-14 or as specified.

CONFIGURATION OPTIONS

SHAPE (SEE FIGURE 1)

Typical shapes for filament wound construction are round, rectangular and oval. Special shapes such as triangular are also available. Engineering assistance is available for designing projects requiring non-standard construction.

DIAMETER

Duct diameters are available from 2"–144". Rectangular sizes are available as required for your projects. The same range of sizes are available in Perry 20S-IR7 pre-insulated double wall duct.

WALL THICKNESS

Duct wall thickness ranges from 1/8" to 1" (increasing in increments of 1/16"). Other wall thicknesses are available for abnormal burial depths or other special loading requirements. Standard ductwork is furnished with the following minimum wall thickness as set forth in PS 15-69 and SMACNA:

Diameter	Wall Thickness
2" to 20"	.125 inches
21" to 36"	.187 inches
37" to 60"	.250 inches

LENGTHS

Standard length is 10'-0". Lengths up to 50 feet are available.

FITTINGS (SEE FIGURE 2)

Standard fittings include:

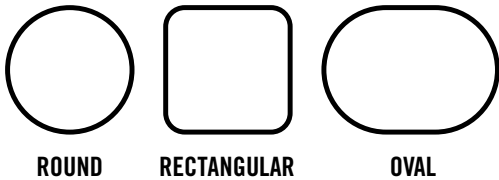
Elbows	Dampers	Blastgates
Tees	Register Boxes	Access Doors
Laterals	Square to Rounds	Stacks
Y's	Crosses	Caps
Reducers	Flanges	Hoods

COLORS

A wide range of colors is available for overhead exposed applications. Please refer to the supplemental color chart for complete details.

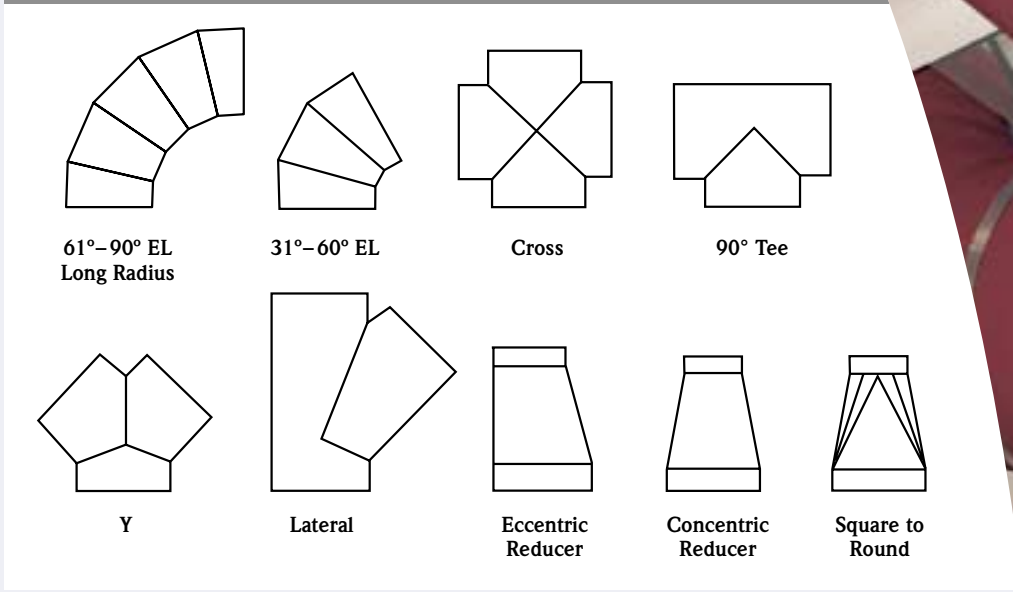
FIGURE 1

Typical Duct Shapes from Perry Fiberglass
[Custom shapes available upon request.]



CONFIGURATIONS

FIGURE 2
Typical Duct Fittings from Perry Fiberglass
[Custom fittings available upon request.]



SPECIFICATIONS

Perry Fiberglass FRP duct is manufactured from premium grade resins, filament wound over steel mandrels. This product meets the standards of UL 181, NFPA 90A and Uniform Mechanical Code (UMC) 10-1 for non-metallic ducts. Perry 20S Low Smoke™ duct is classified as a Class 1 air duct having a flame spread not over 25, and a smoke development rating not over 50. ASTM E84 (recognized by all as the most definitive of all fire test methods) tests were made by HPVA Laboratory and Testing Service, Reston, VA. HPVA is a recognized laboratory for the E84 fire rating test by the building code organizations under the Council of American Building Officials: Report No. Ner-TL329; ICBO; BOCA and SBCCI. Perry Fiberglass duct is fabricated to meet the requirements of National Bureau of Standards Voluntary Product Standard PS 15-69, SMACNA, ASTM D-2310 and ASTM D-2996 for establishing wall thickness, pressure capacity, and quality of fabrication.

This summary is provided as an overview of the strict standards that Perry Fiberglass meets with the production of all our products. Complete technical specifications are available upon request for all Perry Fiberglass products.

& SPECS



INSTALLATION & JOINING

Perry Fiberglass FRP duct is easy to configure and install. Our ducts can be installed overhead or directly buried into a pea gravel backfilled trench without concrete encasement.

Duct supports/hangers should be per recognized standards such as SMACNA or ASTM D-3952. In general, spacing is 8–12 feet dependent upon diameter and loading factors. Supports should be a minimum 120 degrees of diameter. Particular attention should be given to properly design supports and hangers to avoid point loading.

INSTALLATION & JOINING

Basic installation of Perry Fiberglass FRP duct is quick, easy, and economical.

FIELD WET LAY-UP JOINT INSTRUCTIONS (SEE FIGURES 3, 4, & 5)

This requires joining duct and/or fittings with resin and fiberglass mat. See separate Joining Procedures for complete details.

Wet field joints shall be a minimum four (4) inches in width and at least the same thickness as adjoining duct wall. Butted sections may be “tabbed/hot patched” to hold alignment until a complete joint can be made.

Note: Leak test the system before placing into service.

BELL AND SPIGOT CONNECTION (SEE FIGURES 3, 4, & 5)

This requires joining duct and/or fittings with resin and fiberglass mat and additionally filling the bell gap with putty. See separate Joining Procedures for complete details.

FLANGED CONNECTION

Flanges are furnished undrilled for field drilling to match equipment. Flanges are furnished factory mounted or as loose stub flanges. Flange connections should be gasketed per architect’s/engineer’s specification.



FIGURE 3

Preparation of Strapping

[Complete instructions available upon request.]

* Refer to manufacturer's joining procedures.

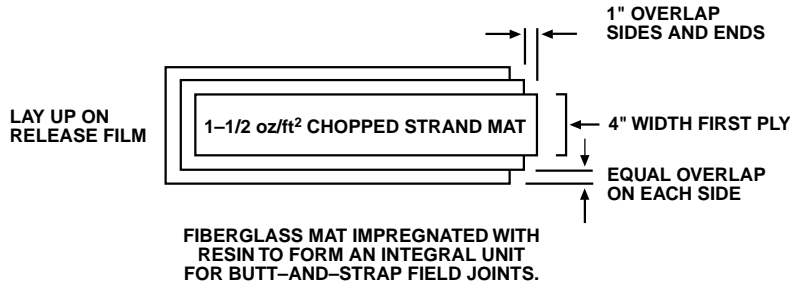
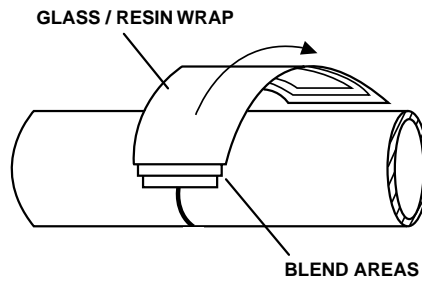


FIGURE 4

Application of Strapping

[Complete instructions available upon request.]

* Refer to manufacturer's joining procedures.



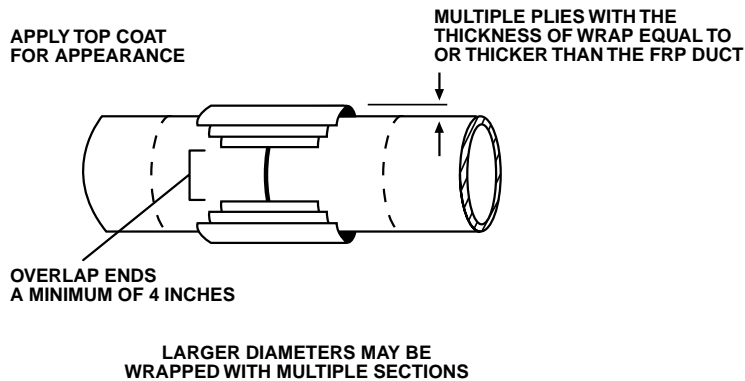
THICKNESS OF OVER WRAP SHOULD BE EQUAL TO OR GREATER THAN THE THICKNESS OF THE FRP DUCT.

FIGURE 5

Butt-and-Strap End-to-End Joint

[Complete instructions available upon request.]

* Refer to manufacturer's joining procedures.





Perry Fiberglass Products, Inc.
33660 Pin Oak Parkway
Avon Lake, Ohio 44012

Phone: 440-930-7701

Fax: 440-930-7717

On-line: www.PerryFiberglass.com

E-mail: FRP@PerryFiberglass.com