



**Perry
Fiberglass
Products, Inc.**

UNDERGROUND DUCTWORK COMPONENTS



**LEADERS IN
FIBERGLASS
REINFORCED
PLASTIC
DUCT
PRODUCTS**

PERRY FIBERGLASS



Perry Fiberglass Products, Inc. is a leading manufacturer of high quality fiberglass reinforced plastic (FRP) products for heating and ventilation systems and industrial exhaust. Whether the application is in commercial HVAC or industrial construction, 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.

UNDERGROUND DUCT FROM PERRY FIBERGLASS

Perry 20S Low Smoke™ Class 1 duct has been approved for direct burial. Typical supply, return and exhaust systems include but are not limited to:

- Schools
- Pools
- Churches
- Hospitals
- Libraries
- Botanical Gardens
- High Rise Offices
- Zoos
- Auditoriums
- Banks
- Super Markets
- Parking Garages
- Restaurants
- Diesel/Auto Exhaust
- Residences

WHY CHOOSE PERRY FIBERGLASS FRP FOR YOUR DUCT NEEDS

Perry Fiberglass FRP duct products offer numerous advantages over traditional duct materials such as galvanized, stainless steel and PVC coated metals. 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 two chemically inert materials — glass and resin. The finished product can be relied upon for longer term service than galvanized stainless steel or PVC coated metals for all underground applications.

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. Perry Fiberglass FRP duct is lighter than steel while offering superior acoustical 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 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.

EFFICIENCY

A duct system from Perry Fiberglass can be sealed to achieve a watertight system. This assures that the air reaches its outlet efficiently and without contamination.

EASE OF USE

Perry Fiberglass FRP duct can be placed directly onto a pea gravel bed in a graded trench, then backfilled with pea gravel without concrete encasement. The FRP duct is impervious to minerals or salts present in the soil. Our simple joining methods provide easy installation without special tools or experience. Installation is quick and easy when compared to other materials.

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

Engineering assistance is available to write a specification for individual projects.

DUCTWORK

SINGLE WALL (PERRY 20S LOW SMOKE™) AND PRE-INSULATED DOUBLE WALL (PERRY 20S-IR7)

- Ductwork, including fittings, shall be constructed of filament wound fiberglass reinforced plastic, as manufactured by Perry Fiberglass Products, Inc. The resin shall be Perry 20S Low Smoke™.
- The duct and fittings, as a finished composite, shall meet the Flame and Smoke requirements of a Class 1 duct per UL 181 and UMC 10-1. Liners and/or coatings are not acceptable. Performance shall have been 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.
- Wall thickness shall comply with SMACNA and 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 thickness shall be determined by substituting the long side for the round diameter.
- Underground supply and/or return air plenums shall be made of the same material as the duct.
- Perry 20S-IR7 pre-insulated double wall duct shall have 1" of insulation, with a k factor of 0.14 and an R value of 7.

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

Additionally, the resin shall conform to or be less than the values of the New York State Fire-Gas Toxicity Data.

INSTALLATION AND JOINING

Generally, for underslab installation, the duct shall be installed in a graded trench with good drainage and on a 4" bed of pea gravel, with sand or pea gravel used as a backfill. The duct shall be joined by an internal galvanized sheet metal sleeve held in place by sheet metal screws and then sealed with a UL listed duct sealer. A wrap of Perry's 6" wide polyethylene-backed pressure sensitive tape shall be placed over the joint, as well as the screw heads.

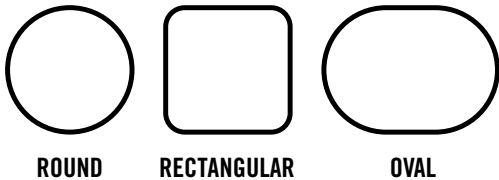
When installation is to be made where water infiltration is a threat, the duct shall be manufactured with a resin rich veil on the OD. The field joints will be made using the wet lay-up method.

Manufacturer's installation instructions to be followed. See separate sheets for wet lay-up method instructions. The system is to be leak tested prior to backfilling.



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.

FIGURE 1
Typical Duct Shapes from Perry Fiberglass
[Custom shapes available upon request.]



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 HVAC 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:

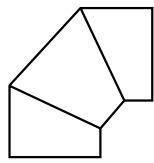
Elbows	Dampers
Tees	Register Boxes
Laterals	Square to Rounds
Y's	Crosses
Reducers	Flanges

COLORS

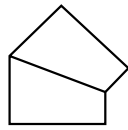
A wide range of colors is available for overhead exposed applications. Please refer to the supplemental color chart for complete details.

CONFIGURATIONS

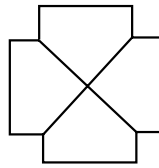
FIGURE 2
Typical Duct Fittings from Perry Fiberglass
[Custom fittings available upon request.]



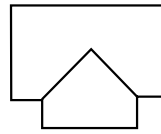
90° Elbow



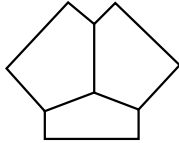
45° Elbow



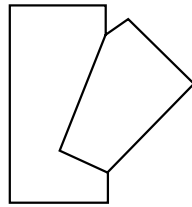
Cross



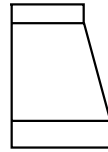
90° Tee



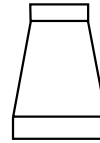
Y



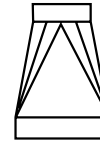
Lateral



Eccentric Reducer



Concentric Reducer



Square to Round

SPECIFICATIONS

Perry Fiberglass FRP duct is manufactured from high 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.

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 placed directly into a pea gravel backfilled trench without concrete encasement or tie downs in most cases.

Perry Fiberglass FRP duct can be cut with a saw or abrasive wheel without requiring specialized or expensive equipment. Joining methods are also easy and economical, resulting in significant savings in time and materials.

For specific installation and joining instructions, our customer service department will be glad to provide detailed instructions on a per order basis.

INSTALLATION

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

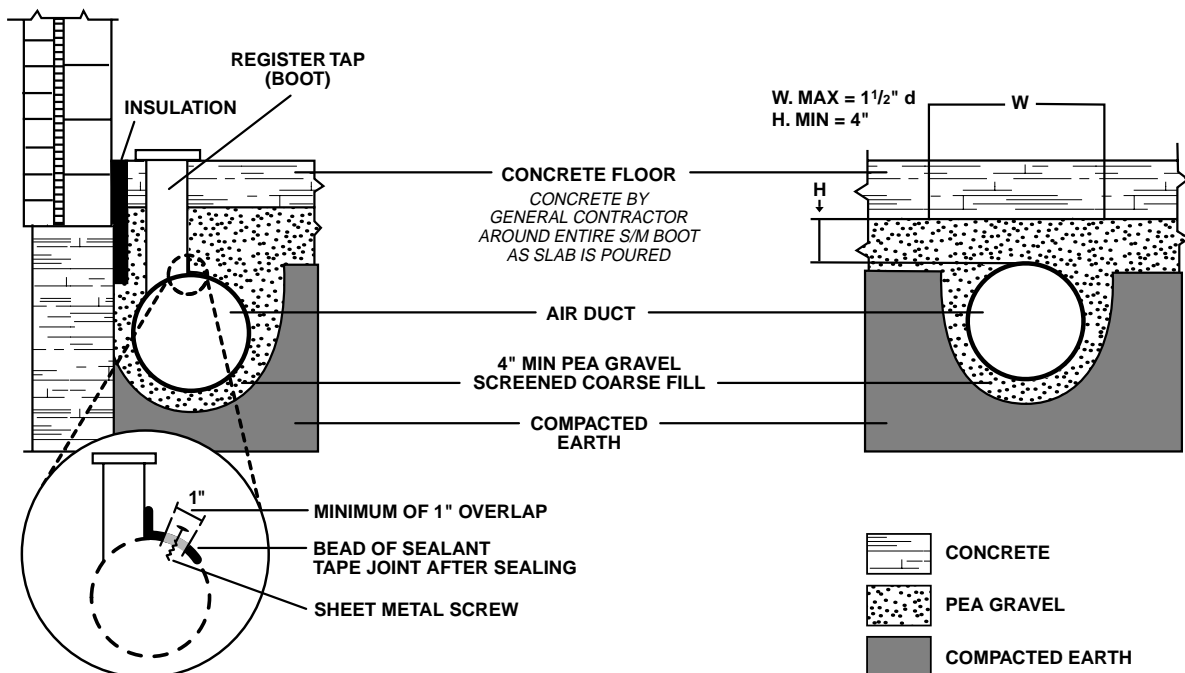
UNDERSLAB INSTALLATION (SEE FIGURE 3)

Generally, for underslab installation, the duct is simply laid on a 4" bed of pea gravel in a graded trench with good drainage. Encasement in concrete is not necessary. With sheet metal register boots in place and sealed, and then covered with sand or pea gravel, the floor slab may be poured with no delay. Register Boots and Transitions may also be specified with FRP construction.

When installation is to be made where water infiltration is a threat, the duct can be manufactured with a resin rich veil on the OD. In this instance, the field joints would be made using the wet lay-up method. Please refer to installation instructions for your specific application for complete details.

Note: Leak test the system before backfilling.

FIGURE 3
Basic Underground Installation Method for Perry Fiberglass FRP duct
[Complete instructions available upon request.]





JOINING

Depending on the end-use, Perry Fiberglass FRP duct can be joined using either “dry” or “wet lay-up” techniques.

DRY METHOD (SEE FIGURE 4)

Where applicable, a “dry” joint is easily achieved between duct lengths and/or duct and fittings. An internal galvanized coupling is sheet metal screwed and sealed into place. An extruded bead of non-hardening waterproof UL listed mastic (sealant) is applied to seal the joint. Finally, a wrap of Perry 6” wide polyethylene-backed pressure sensitive tape over the butted joint and screw heads provides a substantially tight system.

WET LAY-UP METHOD (SEE FIGURE 5)

For a more integrated joint, a “wet lay-up” bond is used where water infiltration is possible. This requires joining duct and/or fittings with resin and fiberglass matting to match the thickness of the duct being joined. This provides a strong watertight joint.

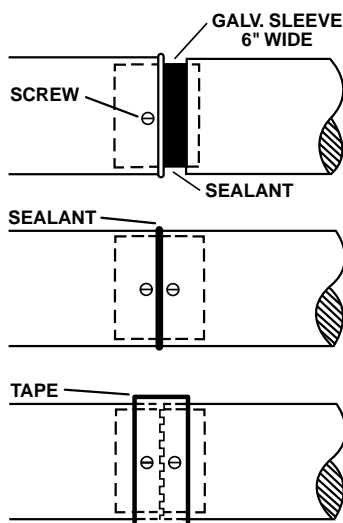
Note: Leak test the system before backfilling.

FIGURE 4

Dry Joining Method

[Complete instructions available upon request.]

* See Field Installation Guide for Details



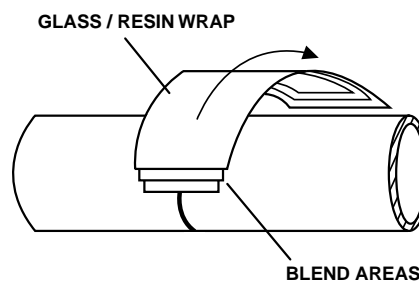
Dry Method

FIGURE 5

Wet Lay-Up Joining Method

[Complete instructions available upon request.]

* See Field Installation Guide for Details



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

Wet Lay-Up Method





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