Fibreglass Ducting

For Handling Corrosive Gases

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ARMATEC

PRODUCT DESCRIPTION

A complete range of ducting, bends, tees, flanges, reducers, dampers and other accessories fabricated in 100% corrosion resistant fibreglass. A choice of resin systems, design and construction versatility aids construction of complex ducting networks to reliably and economically handle corrosive gases.

BENEFITS

- **Corrosion Resistant:** Fibreglass ducting is corrosion resistant inside and outside. With the correct choice of resin, a wide range of service conditions such as hydrogen sulphide, chlorine, salt, fluoride, acids and others can be handled.
- **Less Maintenance:** As the ducts do not corrode or rust they require very little ongoing maintenance.
- **UV Resistant:** An external UV resistant coating is applied to stop deterioration by UV radiation.
- **Economical:** Fibreglass ducting is generally lower cost than stainless steel.
- **Easy Installation:** The light weight of fibreglass makes installation easy. Standard installation procedures are followed for hangers and expansion joints. Fibreglass does not sag when handling warm gases.
- **Leak Free Joints:** Duct lengths are typically joined by the standard butt and strap method giving a leak free system. Small sizes are available with rubber ring joints.

USES

- Waste water treatment plants for odorous air.
- Pulp and paper plants for chlorine fumes etc.
- Fertiliser plants for fluoride and sulphur gases.
- Tanning, rendering, pharmaceutical, plants etc.
- Biofilter and wet scrubber ducting.
- Swimming pool air ventilation ducting.

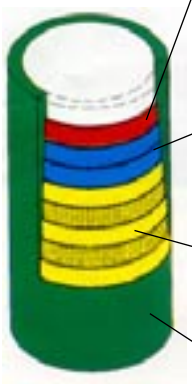
CONSTRUCTION STANDARDS

Fibreglass ducting is constructed by the contact moulded method for maximum chemical resistance. The exterior finish is a pigmented resin coat with off-white being the most popular colour. All ducting is fabricated to international fibreglass standard AS 2634-1983 for chemical plant equipment. ARMATEC is ISO 9001 accredited with BVQI as the supervising auditors, thus assuring clients of consistent high quality products. Full replacement warranties are provided.

FIBREGLASS TECHNOLOGY

Fibreglass materials and technology are sourced from around the world. Isophthalic polyester resins and vinyl ester resins are standard. Other specialist resins such as chlorinated polyesters and resins with varying grades of fire retardancy are used for specific applications.

Cross Section of Fibreglass Duct



Inner Surface. The interior surface 0.25mm - 0.5mm, is a smooth resin rich laminate reinforced with surface veil. Providing optimum corrosion-resistance and a minimal friction factor when combined with the best resin for the specific chemical conditions.

Next Interior Layer. Duct in all diameters is built with an additional chemical resistant liner at least 2.5mm in thickness in the form of chopped strand mat which critically limits chemical permeation.

Remaining Thickness. Subsequent reinforcing layers of woven roving and chopped strand mat are used to build the duct to the desired wall thickness.

Exterior Surface. The final layer provides protection against weathering, fumes, spillage and ultraviolet attack. This gives the duct a longer life and reduces maintenance expenses.

Fibreglass ducting at fertiliser works taking corrosive fluoride and fertiliser fumes to and from scrubbers.

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Typical Physical Properties of ARMATEC FRP Duct

General

Specific Gravity	1.5
Linear Coefficient of Thermal Expansion (ASTM D696) ..	27 x 10^{-6} (m/m -degC)
Thermal Conductivity	1.5 W/mK
Glass Content	30 -35 %
Barcol Hardness	35 to 45

Typical physical properties of 10mm thick laminate

	MPa	psi
Ultimate tensile strength(ASTM D638)	103	15,000
Flexural Strength (ASTM D790)	152	22,000
Flexural modulus of elasticity(ASTM D790)	6,895	1,000,000
Compressive strength (ASTM D695)	152	22,000

Specific physical properties are dependant on wall thickness, laminate construction and resin selection. Contact ARMATEC for detailed information and advice. Numbers given are typical properties, not to be construed as a specification.

Standard Sizes

Standard sizes available are from 100 mm in diameter to over 2400 mm in diameter. Standard duct lengths are 6 metres. All ducting and fittings are custom designed and fabricated for the particular application. Please contact ARMATEC with details of the requirements for your specific application.

Supply Details

Fibreglass ducting is designed and manufactured by ARMATEC. Standard price lists are available on request and quotations for spooled systems are prepared quickly on submission of details.

Fibreglass ducting handling air with hydrogen sulphide to horizontal crossflow scrubber at waste water treatment plant.

Resin Selection

Resin Selection is determined by the chemical environment. Standard resin systems include isophthalic, bisphenol, chlorinated polyester, and vinyl ester. Other special resins also available plus fire retardant options. A comparative chart of FRP and alternative materials shows recommendations against some common chemicals. For detailed information contact ARMATEC.

Materials	Carbon Steel 1020	Stainless 316	FRP Isophthalic	FRP Vinyl Ester
Sulphuric Acid Dilute	NR	R to 5%	R	R
Sulphuric Acid Concentrated	R	R	NR	NR
Hydrochloric Acid Dilute	NR	NR	R	R
Hydrochloric Acid Conc	NR	NR	NR	R
Hydrofluoric	NR	NR	NR	R
Phosphoric Acid Dilute	NR	R	R	R
Phosphoric Acid Conc	NR	R	NR	R
Sodium Hydroxide Dilute	R	R	NR	R
Sodium Hydroxide Conc	R	R	NR	R
Acid Chloride Salts	NR	NR	R	R
Bleach	NR	NR	NR	R
Wet Chlorine	NR	NR	NR	R
Nitric Acid	NR	NR	NR	R to 40%

KEY: R = Recommended NR = Not Recommended

Fibreglass ducting handling air with hydrogen sulphide to soil bed filter at waste water treatment plant.

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