All fire resistant ductwork must be tested to BS476 part:24, or the appropriate National Standard by a recognised NAMAS/UKAS Accredited Laboratory.
The Fenland Fire Duct System is an augmented ductwork construction utilising the latest manufacturing techniques to which an intumescent coating is factory applied.

As the coating is spray applied, this allows the ductwork system to be manufactured in any cross sectional shape to suit the application, producing a flanged single skin Fire Rated Ductwork system giving Stability and Integrity of up to 4 hours. This provides wipe clean surfaces both internally and externally and can be delivered to site in manageable sections for ease of assembly.

Manufacturing in this manner gives total flexibility over the design of the system, and allows the externally applied insulation requirements to be fine-tuned to meet the varied requirements of each particular type of Fire rated ductwork system.

The Fenland Fire Duct System complies with the requirements of Method 3 of BS 5588 part 9:1989, and has been fully tested in accordance with BS 476 part 24: 1987 (ISO 6944: 1985).

The Fenland Fire Duct System has been assessed by the BRE Centre for Fire Resistance (formerly the Loss Prevention Council) as being suitable for use as, “a Fire Rated Ventilation Duct, a Smoke Extract/Outlet Duct or a Kitchen Extract Duct.”

**TYPE A DUCT**
(fire outside)

- **Adjacent Compartment**
- **Fire Outbreak Compartment**
- **Duct Resists Fire Penetration From Outside**
- **No Fire Penetration or Transfer**

**TYPE B DUCT**
(fire inside)

- **Adjacent Compartment**
- **Fire Outbreak Compartment**
- **Duct Resists Fire Penetration From Inside**

In accordance with BS 476 Part 24: 1987 the fire resistance of ventilation ductwork shall be expressed in minutes of duration of heating in accordance with the ISO 834 : 1985 (Cellulosic - Standard Time/Temperature Curve) until failure occurs to one or more of the following criteria – Stability / Integrity / Insulation

**Stability:** Stability failure shall be deemed to have occurred in duct A within the furnace and in ducts A and B outside the furnace when the duct no longer fulfils its intended function. (For smoke outlet ducts stability failure will also be deemed to have occurred when there is any restriction of the cross-sectional area of the duct to 75% or less of its original area)

**Integrity:** The presence and formation of any cracks, holes or other openings outside the furnace through which flames or hot gases can pass.

**Insulation:** Insulation failure shall be deemed to have occurred when the temperature rise above initial ambient on the unexposed surface of the duct outside the furnace exceeds either:

- 140 °C as an average value above ambient
- 180 °C as a maximum value above ambient

For a Kitchen extract duct (Type A) these temperature limits also apply to the inside surface of the duct within the furnace.

In addition to testing to BS476 Part 24, further independent furnace testing has been carried out in accordance with BS 7346 to simulate smoke extract temperatures of between 250 °C and 600 °C. The results allow us to tailor the insulation requirement for smoke extract systems where the gas/fume temperature is known.

In accordance with BS 476 Part 24 : 1987 the fire resistance of ventilation ductwork shall be expressed in minutes of duration of heating in accordance with the ISO 834 : 1985 (Cellulosic - Standard Time/Temperature Curve) until failure occurs to one or more of the following criteria – Stability / Integrity / Insulation

**Stability:** Stability failure shall be deemed to have occurred in duct A within the furnace and in ducts A and B outside the furnace when the duct no longer fulfils its intended function. (For smoke outlet ducts stability failure will also be deemed to have occurred when there is any restriction of the cross-sectional area of the duct to 75% or less of its original area)

**Integrity:** The presence and formation of any cracks, holes or other openings outside the furnace through which flames or hot gases can pass.

**Insulation:** Insulation failure shall be deemed to have occurred when the temperature rise above initial ambient on the unexposed surface of the duct outside the furnace exceeds either:

- 140 °C as an average value above ambient
- 180 °C as a maximum value above ambient

For a Kitchen extract duct (Type A) these temperature limits also apply to the inside surface of the duct within the furnace.

In addition to testing to BS476 Part 24, further independent furnace testing has been carried out in accordance with BS 7346 to simulate smoke extract temperatures of between 250 °C and 600 °C. The results allow us to tailor the insulation requirement for smoke extract systems where the gas/fume temperature is known.

**Cellulosic - Standard Time/Temperature Curve**

\[
T = 345 \log_{10} (8t+1) + 20
\]

- **T** = Average Furnace Temp (°C)
- **t** = Time in Minutes

In addition to testing to BS476 Part 24, further independent furnace testing has been carried out in accordance with BS 7346 to simulate smoke extract temperatures of between 250 °C and 600 °C. The results allow us to tailor the insulation requirement for smoke extract systems where the gas/fume temperature is known.
The Right System

In order that the Galloway Group can correctly tender the Fire Resistant ductwork system to meet your requirements there are various factors which require to be carefully considered and defined.

Any specification should therefore;
• Define the type of system ie (Smoke Extract / Kitchen Extract / Ventilation / Pressurisation).
• Determine whether the system is Duct type A (fire outside), or Duct type B (fire inside), or whether the requirement is for fire both inside and outside.
• Stipulate the required Fire Rating in minutes, in accordance with BS476 part 24 1987, for each of the following criteria
  Stability:
  Integrity:
  Insulation:

These criteria will be determined by the design of the structure, for which guidance can be sought from the following publications;
Scotland: The Building Standards (Scotland) Regulations, Technical Standards Parts D and E.
Northern Ireland: The Building Regulations (Northern Ireland), Technical Booklet E.

Dependent on the route and type of system, it may be possible to refine the Insulation requirement to prevent unnecessary over application. This is particularly true on smoke extract systems where a lesser thickness of insulation may be required to suit smoke temperatures, instead of full thickness insulation to suit fire temperatures.

It is the Design Teams’ responsibility to ensure that the correct system and criteria are selected to comply with the recommendations of the local regulatory authority.

Example Specification

The Smoke Extract ductwork should be constructed in accordance with the Fenland specification for Fire Resistant ductwork, to provide 120 Minutes Stability, 120 Minutes Integrity and 120 Minutes Insulation (or 120 Minutes fire Insulation to suit a smoke temperature of 300 °C) when tested to the requirements of BS476 part 24 : 1987 by a recognised NAMAS/UKAS Accredited laboratory.

The ductwork systems should be manufactured and installed in accordance with BS5588 part 9 : 1999, and be capable of providing type B fire containment. Under normal non-fire operating conditions the ductwork should conform to the class C pressure/leakage classification of the current HVCA DW/144 specification for sheet metal ductwork.

Right First Time

The Galloway Group is committed to providing a quality product, on time with zero snags. Quality Accreditation to ISO 9002 is one method of control, but this achievement can only be maintained by the commitment of our greatest strength, our trained workforce.

FIRAS

To further enhance our commitment and abilities the Galloway Group are pleased to have gained accreditation with FIRAS (an independent accreditation and training scheme run by Warrington Fire Research for the installers of passive fire protection products), and a number of our personnel have undertaken Operator, or Supervisor training.

FIRAS provides the Client with the assurance that the Fire Duct installation has been carried out by knowledgeable and competent Operators and Supervisors, and that the system will perform as anticipated.

The FIRAS scheme has been developed with the support of a number of trade associations, including the Heating and Ventilating Contractors Association, as a result of this FIRAS training courses reflect best industry practice coupled with Warrington Fire Research Certification technical expertise.

As a FIRAS trained and accredited company, upon completion of a project, The Galloway Group are authorised to issue a Nationally recognised FIRAS Certificate of Conformity. This document signifies the satisfactory completion of the project within FIRAS requirements, and to the specification.

Serving Your Needs Nationwide

Wherever the need for Fire Resistant Ductwork arises, the Galloway Group are on your doorstep. From our locations in Dundee, Dewsbury, Haverhill and Richmond, we have the facilities and personnel to serve your needs.

The Galloway Group have highly experienced Management teams, Supervisors and Operators who are all trained in the complexities of Fire Resistant Ductwork. Whether your need is for 1 linear metre, or 10,000 linear metres of Fire Resistant Ductwork. Whatever your requirements, The Galloway Group have the correct solution, if in doubt ASK.
Project Portfolio

AMC Cinemas
Astra Pharmaceuticals
Atlantic House - London
British Home Stores
Burger King
Centre for Life
City Inn Westminster
Colt Communications
Eastgate Shopping Centre
Edinburgh Royal Infirmary
Glasgow Royal Infirmary
Greenside Leisure Development
Greenside Office Development
Grosvenor Casinos
GSK House (Project Bridge)
Haimyres Hospital
Harry Ramsdens
Holmes Place Leisure
Kingsgate Shopping Centre
Morrison St Office Development
Nandos Restaurant
New Norfolk & Norwich Hospital
Newcastle Airport
Nokia Communications
Paddington Central
Paddington Residential
Peterborough Court
Princess Margaret Hospital
Project Saviour
Royal College of Nursing
Sandown Park
South Tees Acute Hospital
St Malachys School - Belfast
The Gate - Newcastle
The Lanes - Carlisle
The Lowry Centre
Warner Cinemas
Whitehall Square - Belfast
Woolgate Exchange