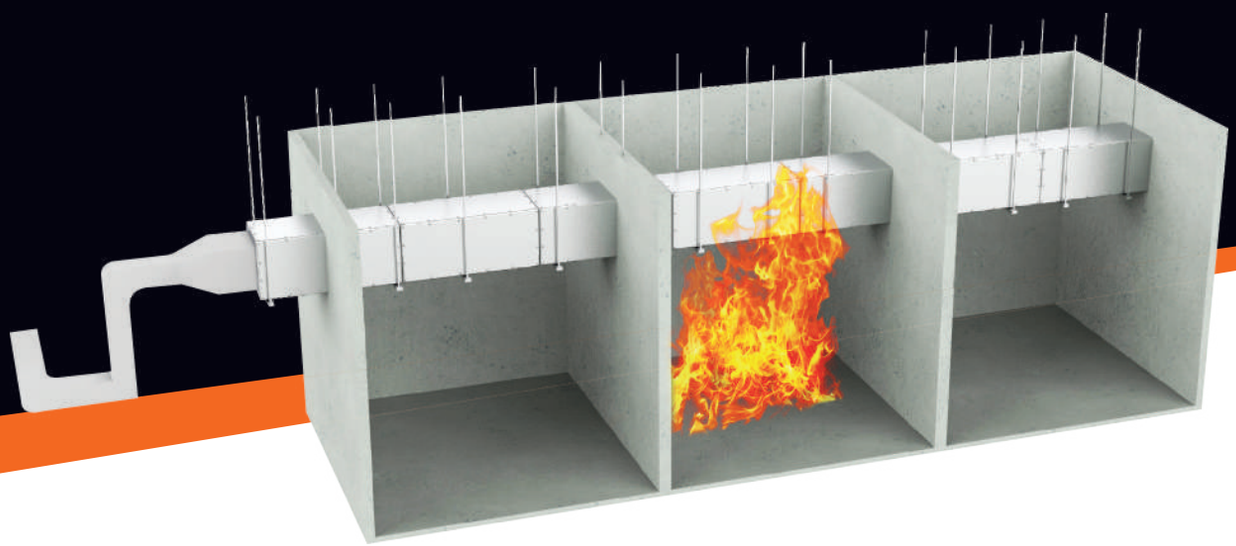
air master

FIRE RATED DUCTWORK



Applus SPC -117 APF-1493 Fire Safety Certification

Applus SPC -117 APF-1968 Fire Safety Certification

Applus SPC -117 APF-1969 Fire Safety Certification

air master

AMFRD - Air Master Fire Rated Ductwork is a complete system tested with insulation according to BS and EN standards

A Uniquely Designed, Non- Coated Metal Ductwork Tested with Insulation as a Complete System For Both Duct A & B For 2 Hours

"AIR MASTER" fire rated ductwork (AMFRD) is a passive fire protection system, tested according to BS476-24:1987, the international standards for method for the fire resistance tests of ventilation ducts. Duct types are tested and certified in internationally accredited **Applus+ Laboratories, Spain**. Manufactured by specialized engineering team using computerized state-of-the-art sheet metal duct manufacturing facilities.

Cautionary note to all ductwork designers, manufacturers, and installers

General purpose DW/144 or SMACNA ventilation / air conditioning ductwork cannot be utilized as, or converted in to, a fire resisting ductwork system unless the construction / materials of the whole system are proven by test or assessment in accordance with the requirements of BS 476 : Part 24, EN 1366: Part 1,8 & 9 and other acceptable standards.

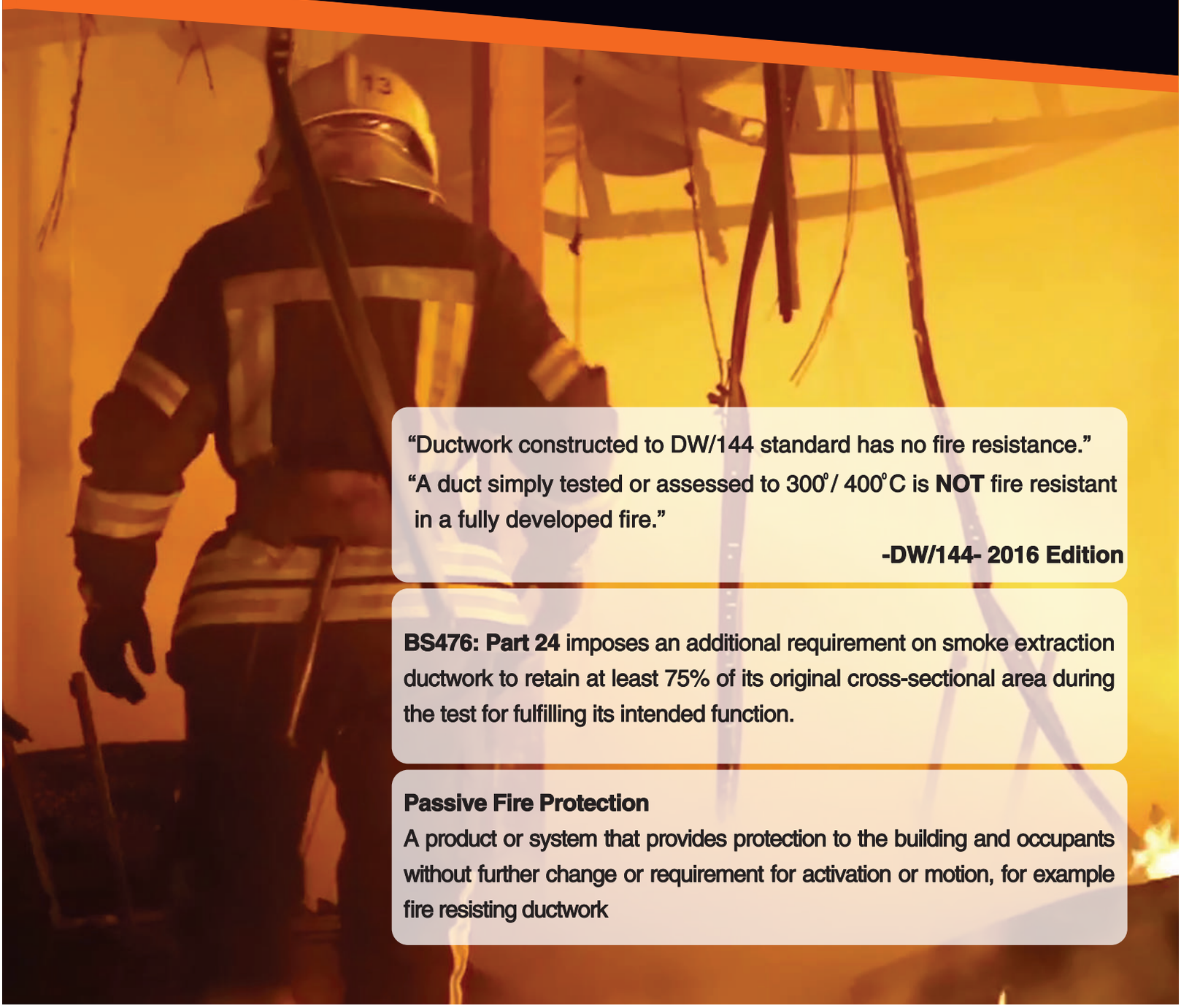
-As noted in the ASFP Blue Book

Why Fire Rated Duct With Insulation?

Extracting hot smoke from a fire affected area creates a potential **flashover** risk in compartments other than the fire compartment. Due to heat radiation, any adjacent combustible materials may ignite and propagate fire rapidly. For example, materials like paper, wood, PVC etc. has ignition temperature between 200°C to 400°C. An uninsulated fire duct carrying hot air at 400°C can potentially ignite such material if they are placed in proximity and lead to secondary fire known as **flashover**. As per international standards, insulation certainly help to prevent **flashover** and secondary fire propagations.

Fire-rated duct with insulation ensures that the surface temperature of duct will be limited to 140°C average and maximum 180°C above ambient during the fire conditions.

Fundamental Characteristics of Fire Rated Ductwork



"Ductwork constructed to DW/144 standard has no fire resistance."
"A duct simply tested or assessed to 300°/ 400°C is **NOT** fire resistant in a fully developed fire."

-DW/144- 2016 Edition

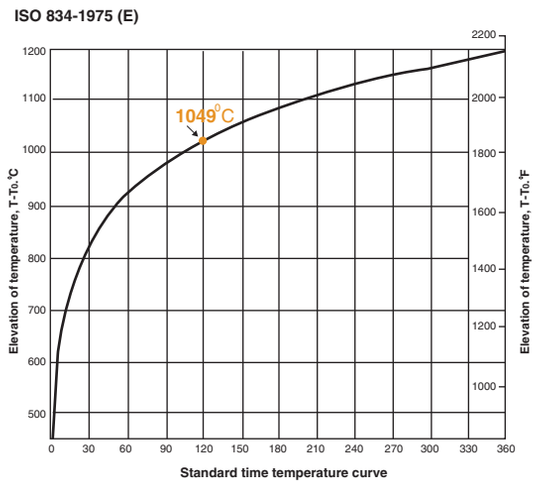
BS476: Part 24 imposes an additional requirement on smoke extraction ductwork to retain at least 75% of its original cross-sectional area during the test for fulfilling its intended function.

Passive Fire Protection
A product or system that provides protection to the building and occupants without further change or requirement for activation or motion, for example fire resisting ductwork

- In BS9999, the definition of fire resistance is the 'Ability of a component or construction of a building to meet for a stated period of time some or all of the appropriate criteria specified in the relevant part of the BS EN 1366 or the relevant BS476 test standard'.
- Fire resistant ductwork usually pass through walls or floors to any compartment, should have same ratings of wall or floor in terms of stability, integrity, and insulation criteria.
- The fire performance criteria for the penetrated wall or floor are maintained, such that fire in one compartment may not spread to other areas. Hence, the fire resisting ducts needs to be maintained without compromising the fire resistance of the wall or floor through which it penetrates.

Key Features of Air Master Fire Rated Ductwork (AMFRD)

Time – Temperature Curve



Un-insulated Duct

Insulated Duct

- Successful type testing done in compliance with BS476: Part 24, tested in horizontal as well as vertical orientation according to ISO 834 Time-Temperature heating curve (cellulosic curve)
- Product assessment and global certification of fire safety performance for ventilation, smoke extraction and kitchen extract ductwork systems done by Applus+ Laboratories, Spain
- Approved by UAE civil defense authorities and ROP, Oman
- Material : Galvanized Steel , Stainless Steel and Mild Steel
- Rectangular, circular and oval ductwork
- Horizontal and Vertical installations
- Ducts type A and B

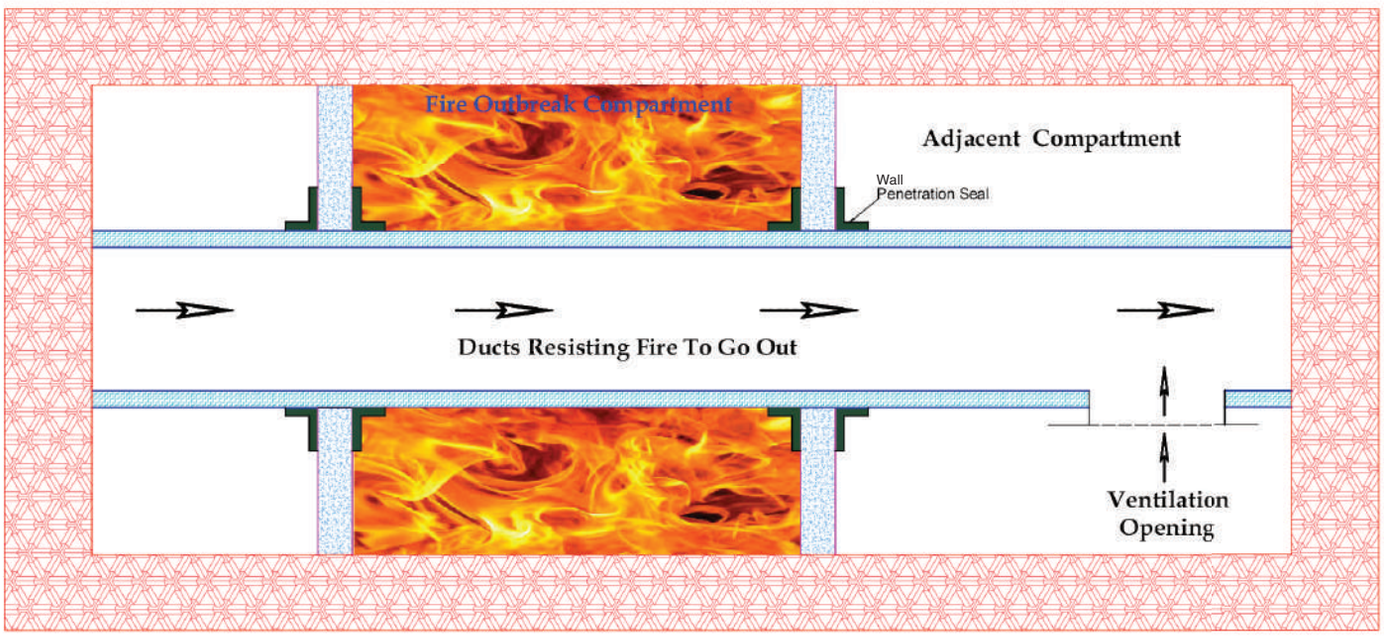
Fire Resistance Certified Performances:

Performance	Time (in minutes)
Stability	129
Integrity	129
Thermal Insulation	129
Additional Characteristics	**Time (in minutes)**
Smoke Extraction	120
Kitchen Extraction	60

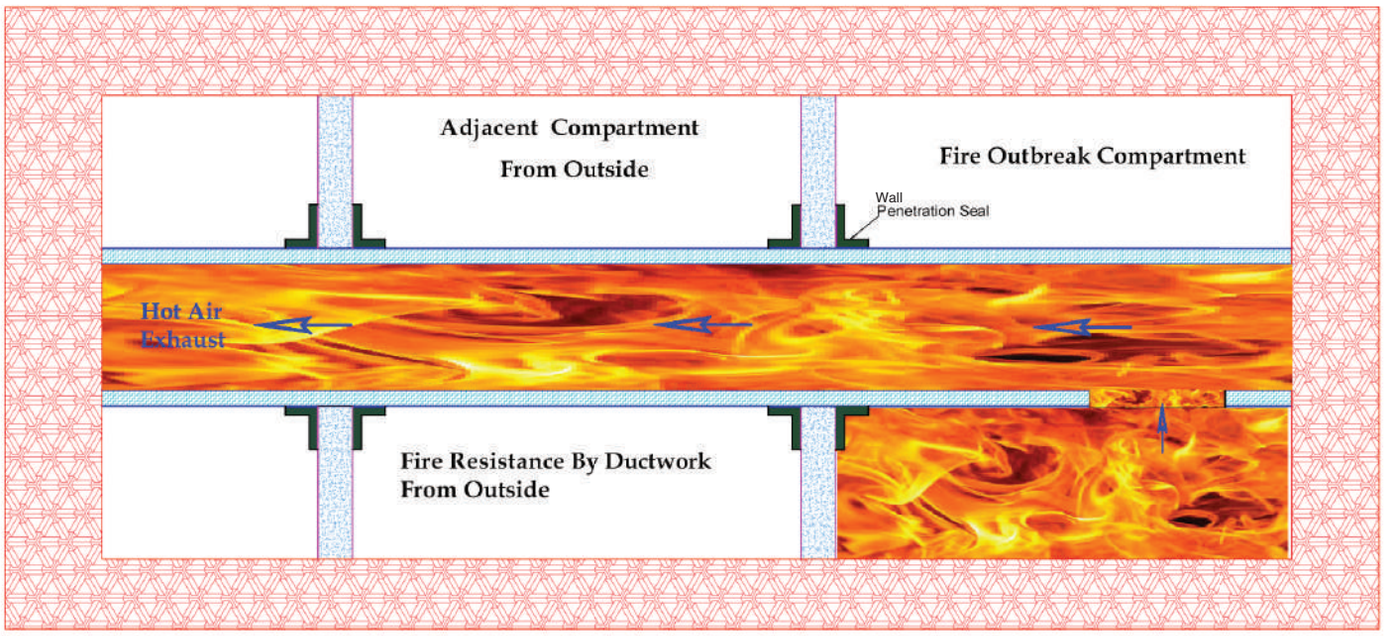
Certified Models:

Un-insulated System	AMFRD-01A AMFRD-01B	120 min.Ratings
Insulated System	AMFRD-3A AMFRD-3B	120 min.Ratings
Insulated System	AMFRD-3A-60 AMFRD-3B-60	60 min.Ratings

Fire Outside - Duct A



Fire Inside and Outside - Duct B



System Elements

Insulation

AMFRD comprises Morgan Advanced Materials **FireMaster**® insulation blankets, density 96 kg/m^3, a high temperature **Superwool**® insulation made from calcium-magnesium-silicate fibres designed to enhance bio-persistency and faced with glass fibre-reinforced aluminium scrim. This scrim provides additional handling strength as well as protection from tearing and moisture absorption. The thin and light weight blankets using profile wrap techniques easy to apply and clean to install around all geometries and orientations of pre-formed metal ducting.

Duct Support System

The supports are calculated, designed, and tested for stability requirements of the contract specifications using fire engineering guidelines within the permissible limits.

The support systems specified with air master fire resisting ductwork can bear the load of the ductwork under fire conditions. The support system consists of the hangers (drop rods) and bearers, the fixings, and brackets. Attention must be given to the spacing of the supports and the size of the support components in accordance with air master specifications and recommendations.

Duct Accessories

Access Door and Volume Control Damper tested successfully in both the Duct A and Duct B configuration.

Gasket & Sealant

Air Master specified, tested Fire Resistance Gaskets and Intumescent Sealants

Penetration Seal /Fire Stopping

It is a system used to maintain the fire resistance of a fire-separating element (wall/floor) at the position where ductwork pass through it.

Fire-Separating Element

A compartment wall, floor or construction that encloses a protected escape route and / or a place of special fire hazard. Fire compartmentation in buildings is generally provided by separating elements.

Compartmentation

A means of preventing the spread of fire within a building and providing adequate means of escape by containing it in the compartment of origin.

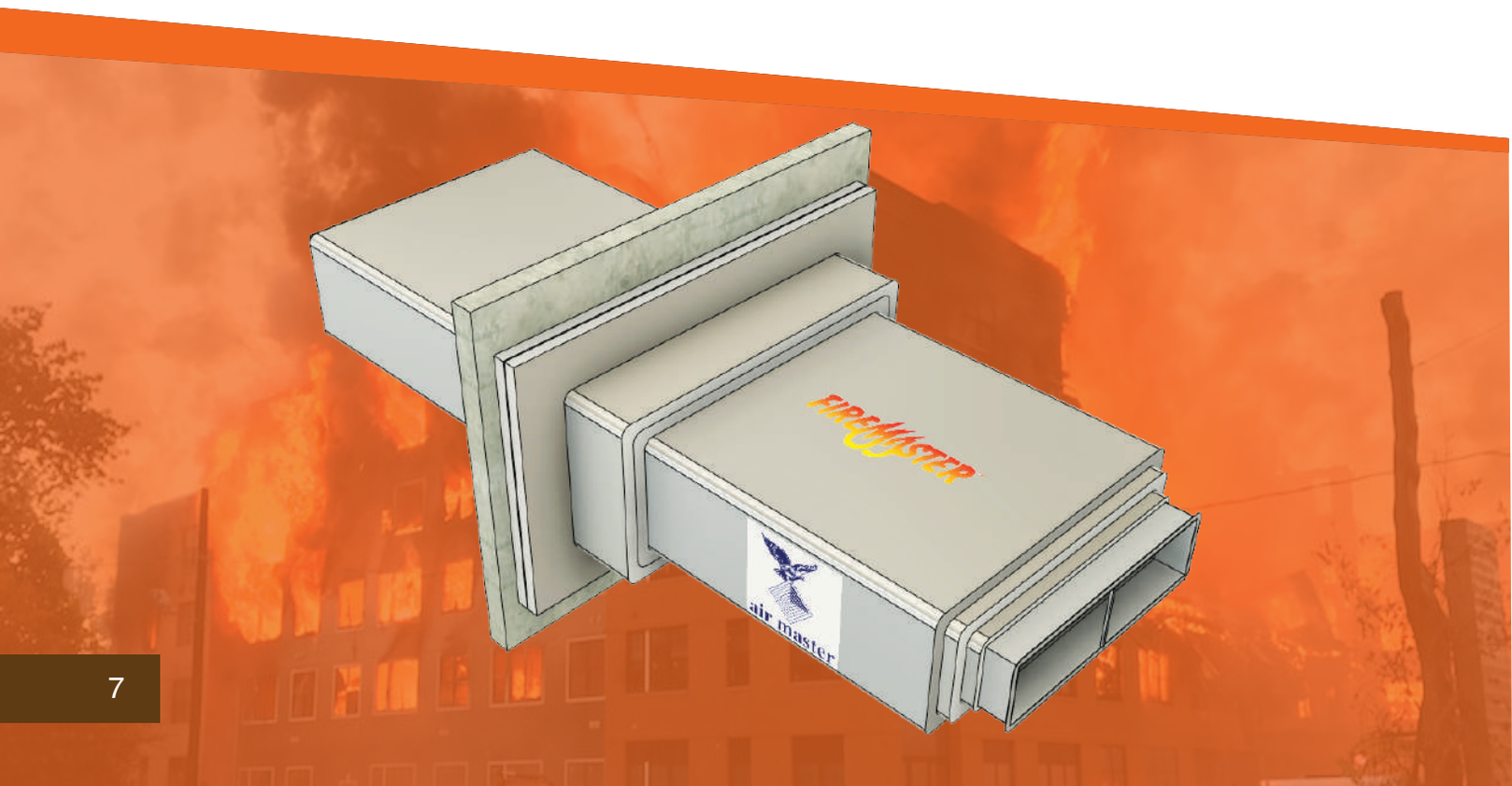
Supporting Construction

The wall or floor construction is used to support the penetration seal/fire stopping.

It is designed to protect people in and around the building, including fire and rescue personnel, from the effects of the spread of fire by containing it in the compartment of origin for a specified period in terms of minutes.

Penetration Seal / Fire Stopping is required to maintain the specified level of fire compartmentation where ductwork penetrates the compartment walls and floors. It needs to be strictly installed in accordance with manufacturers' recommendations and instructions. Consult Airmaster technical support team for complete installation guidelines and training

AMFRD is best suitable for stud wall, solid wall, and aerated concrete floors.



Product Applications

Mechanical Ventilation System

Extracting polluted air from a building and to supply fresh or conditioned air (make up air).

Smoke Extraction System

Smoke extraction system facilitates the escape of the building occupants and assists fire fighters in locating the source of the fire and extinguishing it.

Underground Car Park Smoke Extraction Systems

Underground car parks are required to have separate and independent smoke extraction systems because of the polluted nature of the extracted air.

******Fire dampers not recommended to be installed in smoke extraction ductwork serving car parks******

Dual Ventilation / Smoke Extraction Systems

It serve as a conventional ventilation system under normal conditions, but are converted to a smoke extraction system in the event of fire, thus providing an economical dual system.

Pressurisation System

Restricts penetration of smoke into certain critical areas of a building such as stairways, lobbies, and corridors, by maintaining the air within the critical areas at pressures higher or lower than those in adjacent areas.

Kitchen Extraction System

Kitchen extraction ductwork (Duct A) with insulation maintains the duct temperature below 180°C and prevents grease igniting and causing fire to spread throughout the building.

******DO NOT USE DAMPERS IN KITCHEN DUCT SYSTEM******

To ensure fire rated ductwork is specified correctly for a specific building project, several factors should be carefully considered and well defined in the specifications.

The specification should therefore:

1. Define the type/application of ductwork, such as - Smoke / Ventilation / Kitchen / Pressurisation
2. State the required fire classification to BS 476: Part 24 in minutes for:
    a. Stability: 120 minutes
    b. Integrity: 120 minutes
    c. Insulation:120 minutes
    d. Smoke Extraction:120 minutes
3. Define if the system is Duct Type A (fire outside) or Duct B (fire inside and outside) or requirement for both.
4. Define static pressure limits – Pressure Class (Low/Medium/High) / Velocity
5. It is recommended that the manufacturer/installer should have Quality Assurance System based upon the ISO 9001 series and certified for Factory Production Control (FPC) System by certifying bodies.

With reference to the above factors, the standard specification should be:

'The Smoke / Ventilation / Kitchen / Pressurisation ductwork should be constructed in accordance with the AIR MASTER Fire Resisting Ductwork to provide 120 minutes stability, 120 minutes integrity & 120 minutes insulation and 120 minutes smoke extraction when tested to the requirements of BS 476: Part 24 by UKAS, ENAC or equivalent approved laboratory. The ductwork should be capable of providing Duct A and/or Duct B fire containment and, under normal non-fire operating conditions, should conform to the Low / Medium / High pressure classification of the current HVCA, DW/144 or SMACNA Specification for Sheet Metal Ductwork.'

Accessories

Fire Rated Access Door

Fire Rated Volume Control Damper

Fire Damper – Curtain type
(UL Listed for 3 hrs)

Motorised Fire/Smoke Damper
(UL Listed for 1.5 hrs)
Class 1

Un-Insulated duct under test

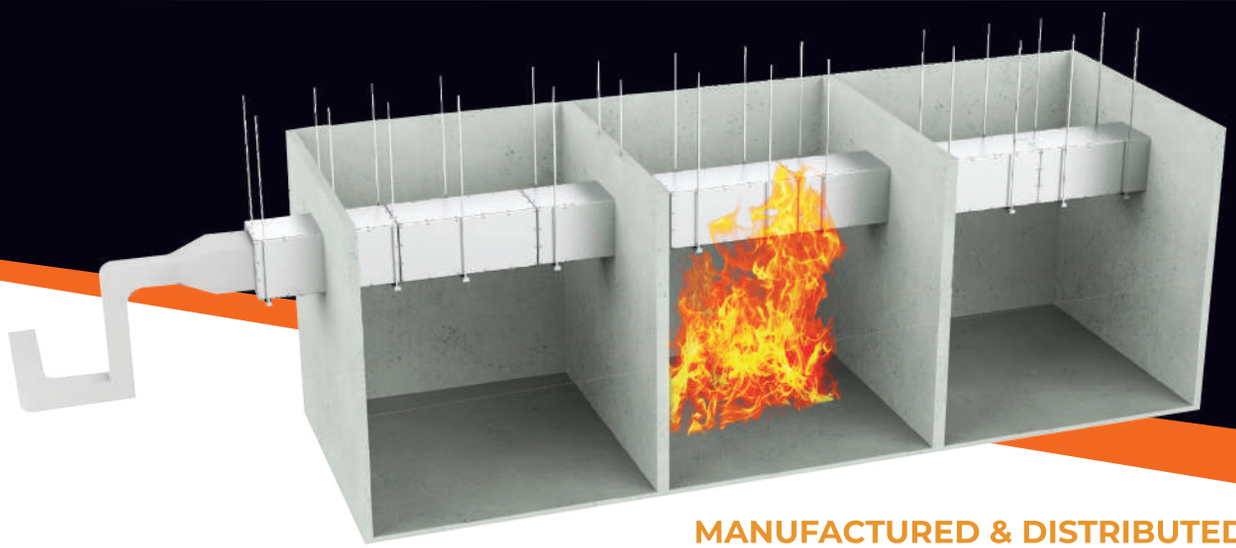
Insulated duct under test

Tested & Certified by

Applus laboratories
Spain

air master

FIRE RATED DUCTWORK



TÜV NORD
TÜV Middle East
ISO 9001

MANUFACTURED & DISTRIBUTED BY

Air Conflex Industry LLC
(a division of air master group)

P.O.BOX:86252
Al Hamra Industrial Zone
Ras Al Khaimah, UAE.

+971 7 2433717, +971 6 7436900

+971 58 2864331

sales.ducting@airmaster.ae / info@airmaster.ae
fireduct@airmaster.ae

www.airmasteremirates.com