



**TICA**

# **TECHNICAL BULLETIN No. 6**

## Fire Resisting Ductwork Insulation



## INTRODUCTION

Fire resisting ductwork is a safety critical product necessary for kitchen extract and fire compartmentalisation applications. It should only be designed, selected, and installed by specialists who can evidence their competence.

Specialist insulation systems are often incorporated into fire resistant ductwork systems and the insulation of fire resisting ductwork represents a trade junction in a fire safety critical area.

The roles and responsibilities of the thermal contractor in this particular trade junction are often misunderstood – both by the thermal insulation specialists and by the companies appointing them.

TICA are working constructively with ADCAS, ASFP, and BESA to standardise routes to competence in this crucial area. In the meantime, TICA have produced this Technical Bulletin to give our members the most up to date information and to highlight important considerations that will need to be factored in at project level.

## Fire Resistance and reaction to fire

Fire Resistance and Reaction to Fire are two different measures.

Reaction to fire refers to how a material behaves when it is exposed to fire (e.g. the extent to which a product is combustible and its contribution to the growth of a fire).

Duct insulation products should be tested to the Euroclass reaction to fire standard as per European standard EN 13501-1 with a fire classification of A1, A2, B, C, D, E or F, a smoke opacity classification of s1, s2 or s3 and a flaming droplet classification of d0, d1 or d2. BS 5422:2023 states that “in buildings other than dwellings, the complete assembly of materials as placed on market (whether faced or unfaced) shall be Class B-s3, d2 (European class) or better”.

Resistance to fire refers to a material’s ability to endure the effects of a fire, (including high temperatures and flames, among other fire-related aspects). The Euroclass resistance to fire standard is BS EN 13501-3 (general ventilation) or 4 (smoke control). Fire resistant duct systems should be tested to BS EN 1366-1 for ventilation ducts and BS EN 1366-8 or 9 for smoke control ducts.

Integrity (E) is the ability of the system to withstand fire exposure on the exposed side (within the furnace/compartment on fire) without the transmission of fire to the unexposed side (outside the furnace/adjacent compartment) as a result of the passage of flames or hot gases.

Insulation (I) is the ability of the system to withstand fire exposure on the exposed side without the transmission of fire to the unexposed side as a result of the significant transfer of heat from the exposed side to the unexposed side. *Note: the ductwork outside the compartment on fire will have very high temperatures within as it draws the heat and smoke from the fire.*

Both Integrity (E) and Insulation (I) are measured in minutes (for example EI 120 would indicate a fire resistance of 120 min. Integrity (E) and 120 min. Insulation (I)).

There is an additional test for Kitchen Extract ductwork to observe the effects of internal combustible lining (grease) inside ductwork. This is referred to as T3 measurement and is generally half the time period of the classified performance for insulation. (i.e. EI120 would normally have a EI60 for the T3 measurement).

## **Fire Resisting Ductwork Systems**

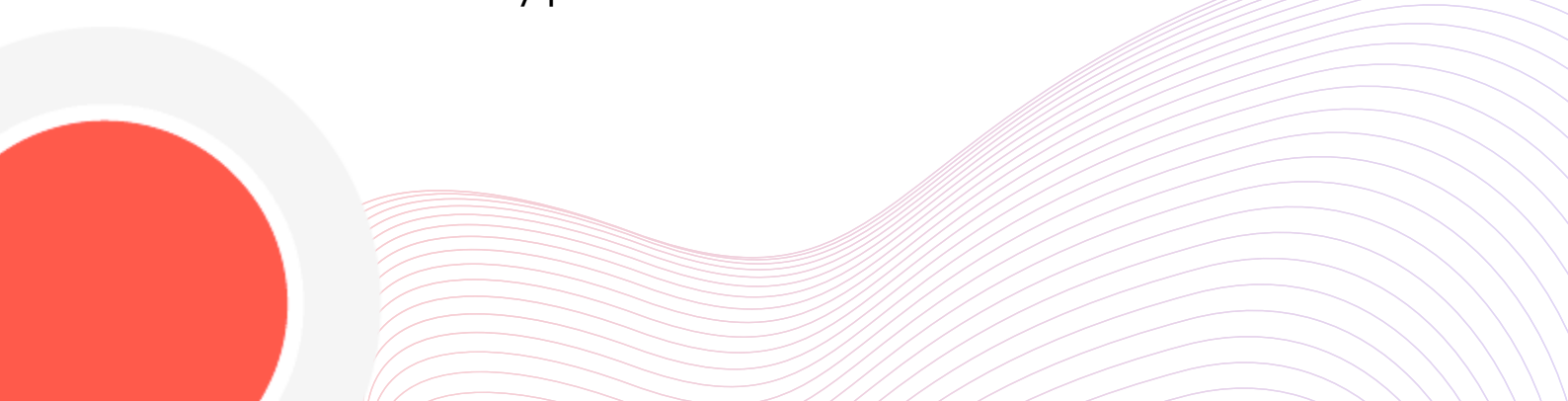
There are two types of fire resisting ductwork systems generally available in the UK market:

- Metal duct systems – some with coatings and some without.
- Boarded systems/insulated blanket systems

Fire resisting ductwork systems must provide for integrity (E). Where integrity (E) and insulation (I) is required, then this is achieved by incorporating a suitable insulation system. Please note that some boarded systems may not need additional layers of insulation if the base material is sufficiently thick enough.

There are several Fire resisting duct systems available in the UK market. Each system provider has a unique system solution and their products will be specifically tested and certified with a specific insulation product.

Complete tested system is a combination of the manufactured fire resisting duct system, the specialist insulation product and association ancillary products.



## **Fire Resisting Ductwork Insulation Systems**

There are several fire resisting ductwork insulation systems currently available in the UK market. Every fire resisting ductwork system will be tested with a specific insulation system and insulation systems cannot be swapped for non-tested variants.

Fire resisting ductwork Insulation products are tested with specific ancillary products (e.g. tapes) and specific products that have been specified for use with a tested duct insulation system. These should not be swapped to alternative non-tested products.

The same insulation product may be specified by multiple fire resisting ductwork system manufacturers but could have different installation requirements (e.g spacing of pins). The fire resisting ductwork system specification may be different to the insulation manufacturers' guidance and direct guidance from the fire resisting ductwork provider is paramount.

Penetration seal details are also likely to be unique to each fire resisting ductwork provider.

The insulation thickness may vary due to specific fire resistance requirements. This is the responsibility of the system designer to determine.

### **Routes to market**

Fire resisting ductwork systems are either installed directly by the manufacturer or by an approved ductwork installer or licenced provider. Some systems are sold to licensees who work with approved contractors.

The system provider is responsible for issuing certification of the installation and must provide instructions to ensure that the installation is as per their specific requirements. This will typically involve an on-site induction process.

The installation of fire resisting ductwork insulation is either carried out by the fire resisting ductwork specialist, or sub-contracted to their approved thermal insulation contractor. In most cases, thermal insulation is recognised as a specialist trade with specialist tools, and the appointment of an appropriate thermal insulation specialist prioritised. In many cases the thermal insulation specialist already appointed for the standard insulation package may be approached to also install the fire resisting ductwork insulation system.

The additional element of fire protection contractors and/or specialist fire resisting ductwork installers/manufacturers means that the route from specification to final installation may be more convoluted than the standard thermal insulation package. This could put greater strain on the “golden thread”, particularly if compliance and competence is not factored in at every stage.

It should also be noted that the fire resisting ductwork insulation market is served by specialist distributors, employing fire resisting ductwork specialists. Specialist contractors should ensure that they are buying from suitably competent organisations and individuals when purchasing fire resisting ductwork insulation and accessories.



## **Compliance and Competence**

There is a growing recognition that specialist contractors are at risk of becoming an “unintentional designer” when they swap a specified product for another product that they consider comparable. This is particularly poignant in the case of safety critical systems such as fire resisting ductwork, where very detailed specifications are the rule.

Thermal Insulation specialists are uniquely positioned to evidence skill related competence for the installation of thermal insulation on fire resisting duct applications. However, thermal insulation specialists will also need to evidence additional competence specific to the fire resisting ductwork system they are working on.

Those awarding insulation packages for fire resisting ductwork systems should consider the following indicators of competence:

### **Organisational Competence**

- Trade Association Membership (TICA for Thermal Insulation Specialists)
- Common Assessment Standard certification

### **Individual Competence**

- TICA CSCS Thermal Insulation Skills Card
- Additional evidence of installation competence/manufacturer training for fire-resistant duct insulation installations

## **Fire Wall/Floor Penetrations**

Fire wall/floor penetrations are a trade junction, and the details of the penetration must be clearly specified and understood for each project. The contractor installing the seal needs to demonstrate competence and a knowledge of responsibility regarding the fire seal performance. Please contact the ASFP for further information:

[ASFP Training - Association for Specialist Fire Protection](#)





# APPENDICES

## Appendix 1: Further Reading

DW 145 Guide to Good Practice for the Installation of Fire and Smoke Dampers

ASFP Technical Guidance TGD20

ASFP Blue Book

BS EN 1366-1: Fire resistance tests for service installations. Ventilation ducts

BS EN1366-8: Fire resistance tests for service installations. Smoke extraction ducts

## Appendix 2: Directory of common fire-resistant ductwork products

Non Coated Fire Rated Ductwork, Flameshield Fireduct (flameshieldproducts.co.uk)

FM Ductwork Systems - Firemac

CASWELL FIRESAFE® - Fire Resisting Ductwork | Caswell FRD Passive Fire Protection Specialist | Fire Protection Ltd.

Thor Duct® is a complete fire ductwork system.

## Appendix 3: Directory of fire-resistant duct insulation products

Isover U-Protect: Fire Protection Ductwork | Isover UK

Rockwool Firepro: FirePro® DuctRock - Fire Protection of rectangular & square steel ductwork (rockwool.com)

Rockwool Fire Duct Slab.(Insulation for use within third-party tested fire resisting ductwork systems such as Flameshield Fireduct or CASWELL FIRESAFE®)

Rockwool FPL Slab.(Insulation for use on Fire Protection Ltd specifications only)

Knauf Fire-Tek: KNAUF INSULATION FIRE-TEK® DUCTPROTECT 30 R SYSTEM (knaufinsulation-ts.com)

Please note that the manufacturer directories included in the appendices are for information purposes only. The lists may not be exhaustive, and they are not an endorsement of product performance.



## How can TICA help?

TICA will be incorporating Fire Resisting Ductwork insulation awareness in our future apprenticeship programs.

The difficulty is that the schemes necessary to evidence competence in some trade junction areas are not yet developed.

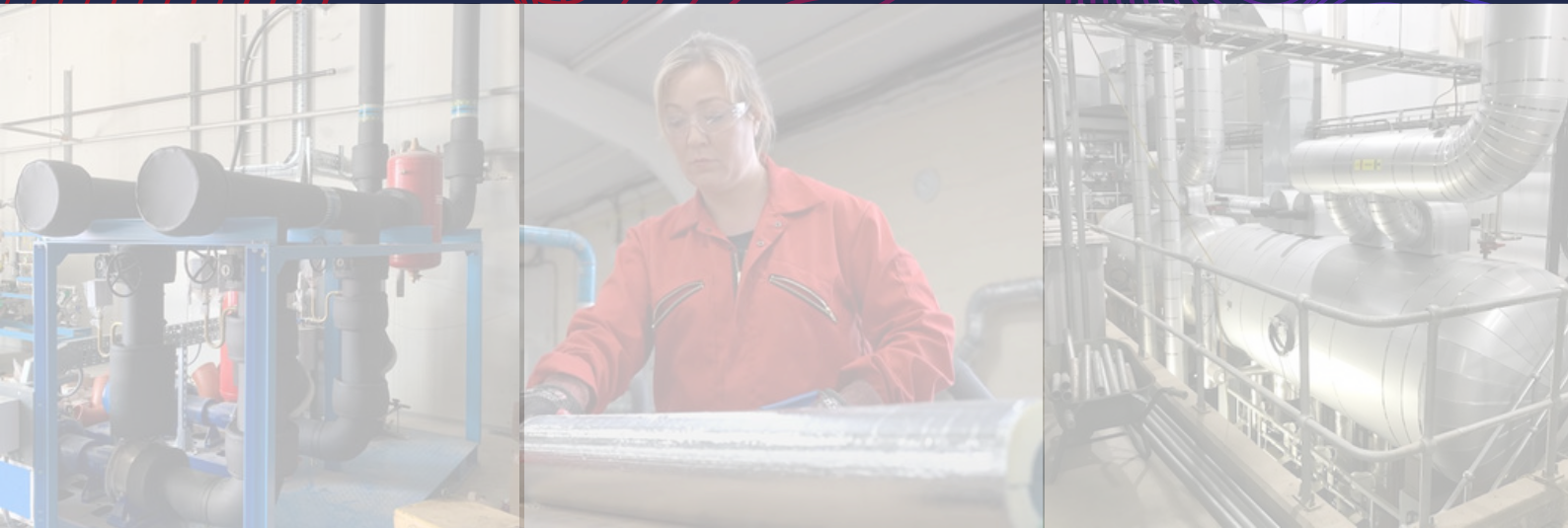
TICA will also be engaging with other trade associations who have an interest in ensuring competence to identify routes to competence in these areas. Other trade associations working towards greater competence in this market include:

[ADCAS - The Association of Ductwork Contractors and Allied Services](#)

[Association for Specialist Fire Protection \(asfp.org.uk\)](#)

[Building Engineering Services Association | Home Page | BESA \(thebesa.com\)](#)





# TICA



Please email Chris Ridge, Technical Policy Manager at [cridge@tica.uk.com](mailto:cridge@tica.uk.com) if you require any further information.

