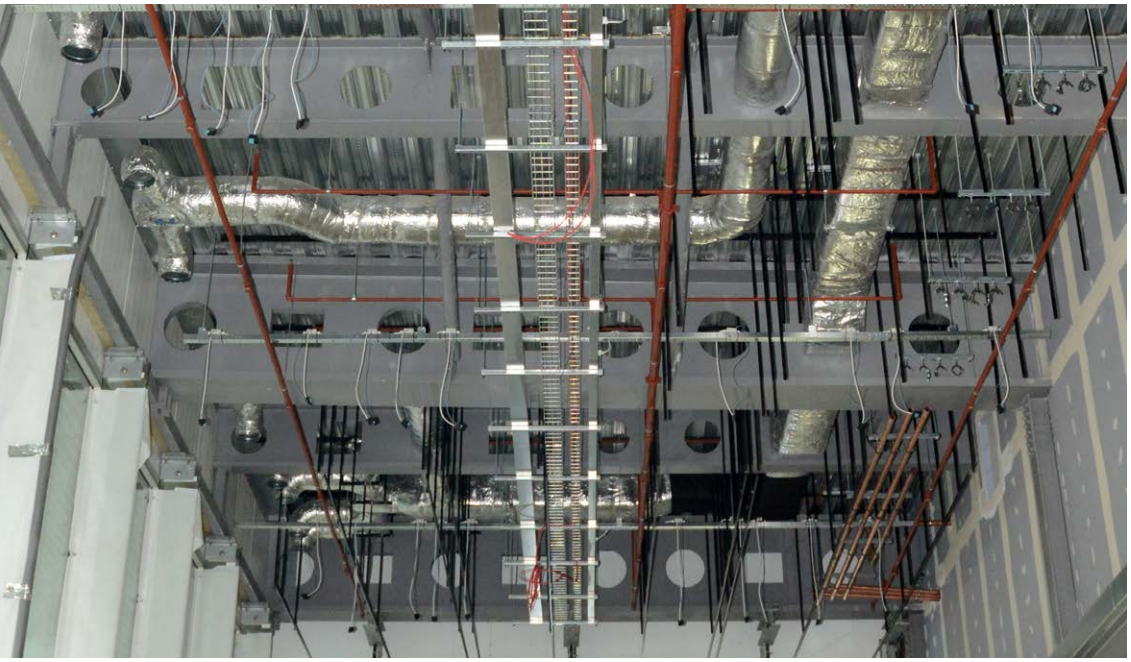

FIREPRO®

FIREPRO® FIRE DUCT SYSTEMS

Single-layer fire protection for rectangular, circular and oval ducts.

Fire Duct Systems

Three products are available in the Fire Duct Systems range:

- Fire Duct Slab – for rectangular ducts
- Fire Duct Section – for circular ducts between 60mm and 356mm diameter
- Fire Duct PSM – for circular ducts between 406mm and 1250mm diameter

All three Fire Duct products are supplied faced on one side with reinforced aluminium foil.

Fire Duct Slab is a high density insulation slab faced with reinforced aluminium foil.

Fire Duct Section is a high density pre-formed pipe section faced with reinforced aluminium foil.

Fire Duct PSM is a high density slab with factory machined grooves to facilitate installation around a circular duct, faced with reinforced aluminium foil.

- Tested to BS 476–24
- ½, 1, 1½ and 2hour fire protection for stability, integrity and insulation
- Choice of fixing options

Rectangular and circular, single layer fire protection for steel ductwork.

As part of the comprehensive ROCKWOOL FIREPRO® range of fire protection products, Fire Duct Systems provide fire protection for circular and rectangular steel ductwork.

For more information visit rockwool.com/uk

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FIREPRO® FIRE DUCT SYSTEMS

APPLICATIONS

Welded pin fixing method

Copper pins, 3mm diameter, are stud-welded to the outside of the duct. The pins are located at maximum 450mm centres along the duct, maximum 267mm across the bottom of the duct and maximum 400mm centres across the height of the duct. Pins are required on all four sides of vertical ducts but may be omitted from the top surface of horizontal ducts, see Figures 6 and 7 on page 10.

The pins must be at least 10mm longer than the thickness of the insulation and the insulation is retained by steel washers, minimum 30mm diameter.

The joints between insulation slabs are all butt joints with the slabs applied to the top and bottom of the duct fitted between those applied to the sides. Transverse joints are covered by strips of ROCKWOOL Fire Duct Slab, 100mm wide with the same thickness as the insulation used on the duct. These are fixed in place using a combination of ROCKWOOL FIREPRO Glue and pigtail screws at maximum 250mm centres. All joints are glued using ROCKWOOL FIREPRO Glue.

The inner face of the slabs is cut away to accommodate the cross joints in the steel duct and the hangers and drop rods where these are inside the insulation. A minimal amount of material is removed to accommodate this.

Mitre-joint fixing method

The use of mitre-joints at slab corners allows installation in situations where welding may not be practical.

All joints bonded with ROCKWOOL FIREPRO® Glue. Longitudinal corner joints secured using ROCKWOOL FirePro Glue and nails. The nails should be sufficiently long to hold the joint while the adhesive cures.

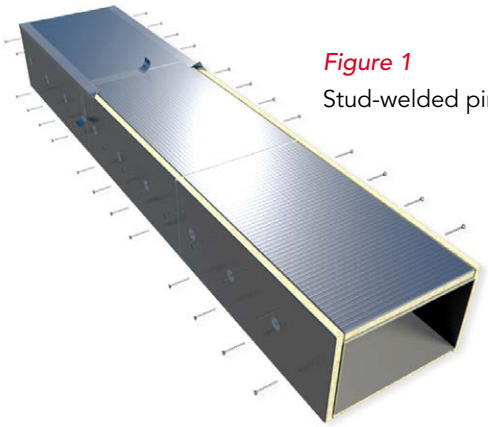

Figure 1
Stud-welded pins, pigtail screws

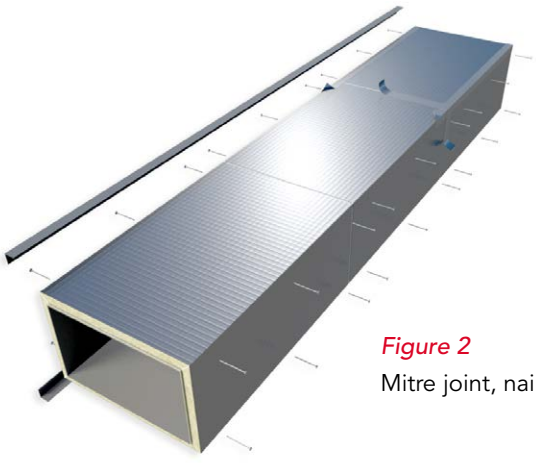

Figure 2
Mitre joint, nails and glue

FIREPRO® FIRE DUCT SYSTEMS

System options – circular ducts

Fire Duct Section

Circular steel ducts of between 60mm and 356mm diameter may be protected using Fire Duct Section. Fire Duct Section must be glued with ROCKWOOL FIREPRO® Glue at the joints and in the grooves. Steel bands or wires must be fitted circumferentially to the system at 300mm nominal centres to hold all joints and grooves tightly closed while the glue cures.

Where required, cover strips and bearer protection pieces are to be cut from Fire Duct Section (or Fire Duct PSM) of the appropriate diameter. The foil covering is to be removed from the area of Fire Duct Section immediately beneath the cover strips prior to gluing into position and securing with steel nails or pins.

All joints are to be securely taped with 75mm wide plain soft aluminium foil self-adhesive tape (Bostik Idenden T303 or similar) to maintain a continuous vapour barrier.

The hanger system is shown in Figures 1 and 2, with the angle bearer formed into a circular shape to suit the diameter of the duct or the Fire Duct Section (depending on whether the hanger is located inside or outside the protection).

Fire Duct Section is used to protect the drop rods as described on page 8. General installation principles are as otherwise described in this Product Data Sheet for Fire Duct Slab.

Fire Duct PSM

Circular steel ducts of with a diameter between 406mm and 1250mm may also be protected using Fire Duct PSM.

Fire Duct PSM must be glued at the joints and in the grooves with ROCKWOOL FIREPRO® Glue. Steel bands or wires must be fitted circumferentially to the system at 300mm nominal centres to hold all joints and grooves tightly closed while the glue cures.

General duct, hanger and installation details are as described for Fire Duct Section.

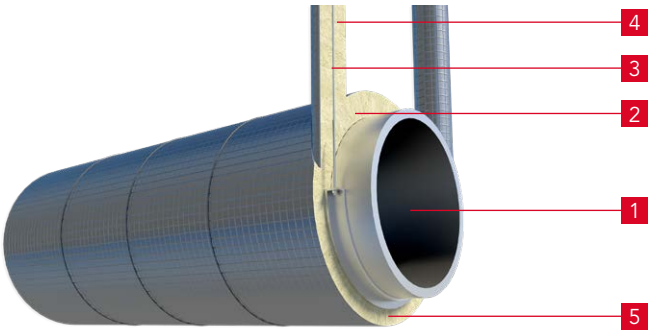

Figure 1

Fire Duct Section applied to circular duct

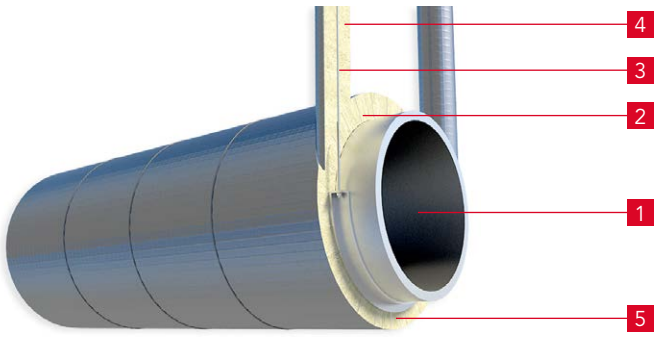

Figure 2

Fire Duct PSM applied to circular duct

Notes to Figures 1 and 2

1. Circular steel
2. Fire Duct Section/Fire Duct PSM
3. M10 steel drop rods at 1500mm maximum centres
4. Fire Duct Slab/Section – protection to hanger system
5. Minimum 30x30x3mm steel angle bearer

FIREPRO® FIRE DUCT SYSTEMS

PERFORMANCE

Fire

Fire Duct Slab & Fire Duct PSM
Non-combustibility: Euroclass A1 to BS EN 13501-1

Fire Duct Section
Non-combustibility: Euroclass $A2_L$-s1,d0 to BS EN 13501-1

Fire Duct System test data
The Fire Duct products have been tested in accordance with BS 476 – 24, 'Fire tests on building materials and structures – Methods for determination of the fire resistance of ventilation ducts'.
Fire Duct products can be used to provide fire protection to horizontal, vertical, rectangular, circular, ventilation and smoke extract steel ductwork fully in accordance with BS 476 – 24, ducts 'Type A' and 'Type B', "Fire outside duct" and "Fire inside duct".
The ½, 1, 1½, and 2 hour periods of fire resistance stated in this manual are for stability, integrity and insulation in equal measure. For example, the 60 minutes duct constructions shown are certified for 60 minutes stability, 60 minutes integrity and 60 minutes insulation.

'Kitchen extract' ducts
These are subject to separate BS 476–24 requirements and are additionally covered for ½ and 1 hour protection periods.

STANDARDS & APPROVAL

Certificate
Fire Duct Systems are third party approved by the Loss Prevention Council Certification board (LPCB) for performance and quality and are listed in the "Red Book" - certificate no. 022f. Certificates can be accessed online at **rockwool.com/uk** or **redbooklive.com**
This product has been authorised for use in LUL surface and sub-surface premises when installed in accordance with this datasheet - please refer to the LUL Approved Product Register website **www.LU-apr.co.uk** for specific details.

Duct type	Fire resistance (minutes)	Required insulation thickness (mm)		Drop rod protection thickness (mm)		Max duct size (mm)	
		Vertical duct	Horizontal duct	Fire duct section*	Fire duct slab	Vertical duct	Horizontal duct
HVAC and smoke outlet	30	25	25	17x30	30	1000x1000	1000x1000
	60	30	40	17x40	40	1000x1000	1500x1500
	90	50	70	17x50	50	1500x1500	1200x1200
	120	70	90	17x60	60	1500x1500	1000x1000
Kitchen extract	30	50	50	17x30	30	1000x1000	1000x1000
	60	90	90	17x40	40	1000x1000	1500x1500

**OD x wall thickness*

FIREPRO® FIRE DUCT SYSTEMS

PRODUCT INFORMATION

Dimensions

Fire Duct Slab
Size: 1800x1200mm
Thicknesses: 40, 50, 70 and 90mm*
Facing: reinforced aluminium foil

Fire Duct Section
Diameters: 60 to 356mm
Thicknesses: 30, 40 and 90mm*
Facing: reinforced aluminium foil

Fire Duct PSM
(Made of Fire Duct Slab with factory machined grooves to suit specific duct diameters)
Diameters: 406mm to 1250mm*
Thicknesses: 40 and 90mm*
Facing: reinforced aluminium foil

Fire Duct Section for use on hangers
Nominal OD from 17mm
Thicknesses: from 30mm*
Facing: reinforced aluminium foil

INSTALLATION

Hangers, bearers and flanges

Fire Duct products are approved to provide fire protection to steel ductwork, wholly constructed using steel fixings in accordance.

Fire Duct Slab, Fire Duct Section or Fire Duct PSM may be installed either outside or inside the hanger system.

Bearers will require additional protection only when positioned outside the Fire Duct layer.

Drop rods will normally be protected with Fire Duct Section or with Fire Duct Slab blocks (see Figure 5).

Protection of hangers outside Fire Duct System

Hangers outside the Fire Duct System are protected by cutting a rebate into a block of Fire Duct Slab, Fire Duct PSM or Fire Duct Section.

The rebate should be no larger than necessary to accommodate the bearer. The block should be glued and pinned in position (see Figure 3, Option A) or secured using pigtail screws.

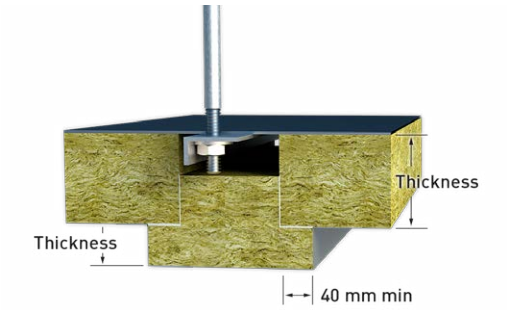

Figure 3
Protection using 'T' section

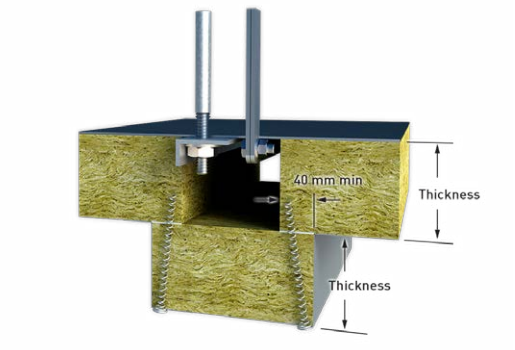

Figure 4
Protection using block cover strip

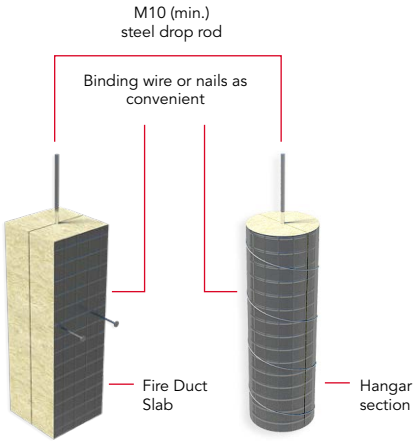

Figure 5
Isometric view of drop rod protection options

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FIREPRO® FIRE DUCT SYSTEMS

ROCKWOOL FIREPRO® GLUE

ROCKWOOL FIREPRO® Glue has a pH value of between 10 and 11. It is provided in 17 kg drums and should always be stirred before use.

Where required, 1–1.5mm of glue should be applied to each Fire Duct joint. The glue is generally applied by spatula or trowel.

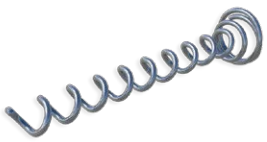
Where present, any foil facing must be removed from surfaces prior to the application of FIREPRO® Glue. Take care to remove any FIREPRO® Glue from all aluminum foil surfaces with a damp cloth.

Nails (for use only with mitre-joint 'glued' systems)

The nail length is to be 2 x board thickness (see Figure 8 for positions).

Pigtail Screws

Pigtail screws are to be used at all corner joints where FIREPRO® Glue is not used, and to secure cross joint cover Illustrator screws are to be positioned at 250mm maximum centres, and the screw length is to be 2 x slab thickness. For horizontal ducts, pigtail screws must be inserted horizontally.



Optional edge protection

Light gauge metal angles may be glued in position to provide optional edge protection. The metal angles must be de-greased. Small pins may be required to hold the angle to the underside of the duct.

Vapour barrier

Where a vapour barrier is required, all exposed Fire Duct edges and penetrations through the foil must be sealed using aluminium foil tape.

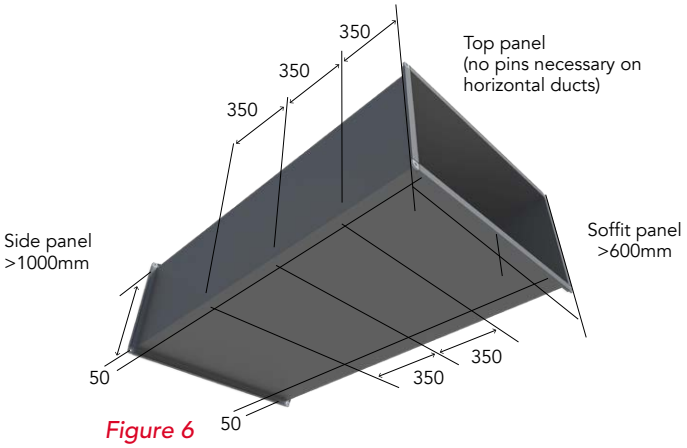


Figure 6

Steel pin arrangement where side panel does not exceed 1000mm and soffit panel does not exceed 600mm

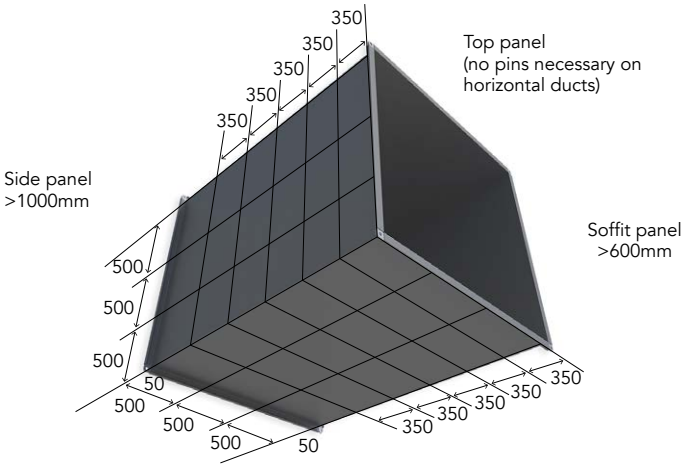


Figure 7

Steel pin arrangement where side panel is greater than 1000mm or soffit panel is greater than 600mm

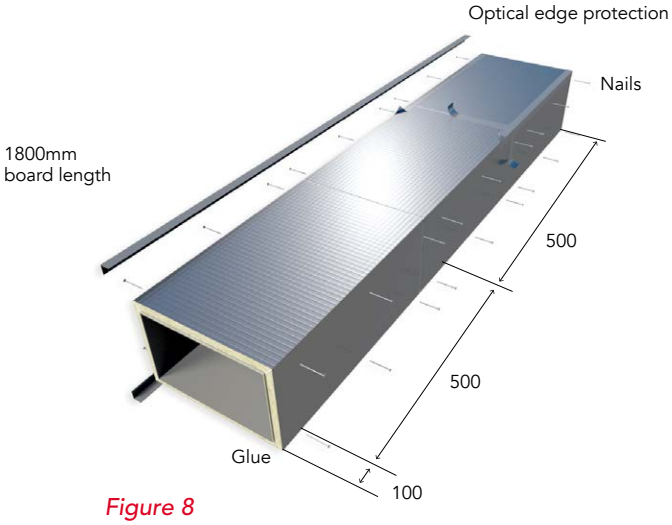


Figure 8

Rectangular ducts – 45° mitre joint system, showing installation sequence

Wall penetrations, elbows, 2 and 3-sided applications

Wall and floor penetrations

Support to duct sides is required at all penetrations for stability purposes. This support can be provided by:

- A 30 x 30 x 2mm mild steel angle frame fixed to the duct at the penetration mid-point. Steel rivets should be used at 300mm maximum centres (Figure 8),
- Locating the duct joint at the penetration mid-point.

In all cases, low density ROCKWOOL stone wool, typically RWA45, is packed tightly into the void between the Fire Duct product and the wall opening.

120mm wide blocks of Fire Duct are glued (or secured with pigtail screws) to the duct insulation and to the wall on both sides of the penetration.

All Fire Duct to wall joints are glued. Aluminium foil is located in Fire Duct joints at wall penetrations (as shown).

Proprietary penetration seals

Where proprietary penetration seals are used, compatibility with the separating element, duct construction and Fire Duct System must be demonstrated by independent test or assessment.

Elbows (rectangular ducts)

Small elbows may simply be boxed or 'squared off'. Larger elbows may need to be protected by cutting fan shaped pieces, generally in accordance with the illustration (Figure 9).

2 and 3-sided applications (rectangular ducts)

The use of Fire Duct products incorpo- rating welded pins is recommended for 2 and 3-sided applications.

The method illustrated (Figure 8) for three-sided applications, may also be used for two-sided applications where the duct is securely braced in the corner of a room against non-combustible surfaces.

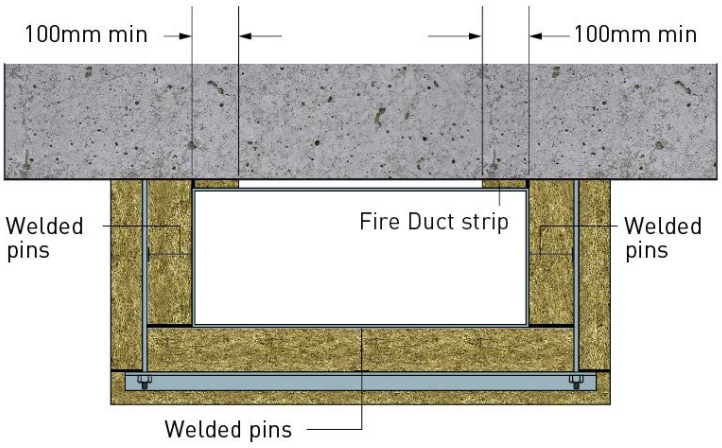


Figure 9

Three sided protection for rectangular ducts, using welded pin fixing method

FIREPRO® FIRE DUCT SYSTEMS

Handling

The Fire Duct range of products is light, easy to handle and simple to fix. The products can be cut and shaped using knives, saws, etc.

Ancillaries

Welded steel pins

Welded steel pins are copper and 3mm in diameter. The insulation should be retained with steel washers that have a minimum diameter of 30mm.

Details of alternative mechanically fixed pins are available from ROCKWOOL on request.

Criteria for ductwork prior to insulation

The duct comprises sections fabricated from steel (galvanised, alu-zinc coated, black or stainless), minimum thickness 0.8mm. The duct sections, maximum length 1385mm, incorporate either integral flanges, as tested in LPC report TE 7290A, or welded-on flanges, as tested in MPA NRW test report no. 230 0310 7 86-1. In the case of the former, the joints are fixed together using side-on flanges; in the later case, M8 bolts. The are sealed using either silcone mastic or ceramic fibre tape.

Longitudinal seams in the duct are either Pittsburgh lock seam or grooved corner seam.

The maximum size of the duct is 3000mm wide by 1500mm high and the aspect ratio of the longer side relative to the shorter does not exceed 4:1.

FIREPRO® FIRE DUCT SYSTEMS

SPECIFICATION CLAUSES

Typical specification clauses for rectangular ducts to be read in conjunction with system options on pages 4 and 5.

Welded pin fixing method
1. All ductwork is to be insulated with .....*mm ROCKWOOL Fire Duct Slab, having a factory applied reinforced aluminium foil to one face and complying with Building Regulations.
2. The Fire Duct Slab is to be fixed to the duct using 3mm diameter welded steel pins and 85mm steel washers in accordance with the ROCKWOOL Product Data Sheet 'Fire Duct systems'.
3. The foil facing is to be removed from any surfaces to which FIREPRO® Glue is to be applied.
4. All corner joints are to be fixed with pigtail screws at 250mm maximum centres. Screw length is to be 2 x slab thickness.
5. All cross joints are to be filled with FIREPRO® Glue and held tightly closed.
6. Drop rods and bearers are to be at 1500mm maximum centres and to be M10 steel rod and 30 x 30 x 3mm steel angle respectively.
7. Drop rods and exposed bearers are to be insulated with .....*mm Fire Duct Slab or .....† x .....*mm Fire Duct Section, as appropriate. Rebates or cover pieces are to be used at duct flange and bearer locations according to site conditions and subject to ROCKWOOL approval.
8. Where a vapour barrier is required, all exposed Fire Duct edges and penetrations through the foil should be sealed using soft self-adhesive aluminium foil tape (Idenden type T303, or similar and approved).

Alternative longitudinal joints
As per 'welded pin' method above, but replace clause 5 with the below, and remove clause 3:
5. All joints are to be filled with ROCKWOOL FIREPRO® Glue and held tightly closed. Use nails at 500mm centres at corner joints to aid this process.

Alternative cross joints
As per 'welded pin' method above, but replace clause 5 with the below, and remove clause 3:
All cross joints are to be covered with centrally positioned 100mm wide strips of Fire Duct Slab of the same thickness as the insulation. The cover strips are to be fixed along both edges using pigtail screws at 250mm max. centres.

* Insert Fire Duct Slab insulation thickness required.

† Insert appropriate overall diameter.

FIREPRO® FIRE DUCT SYSTEMS

Mitre-joint fixing method	
1.	All ductwork is to be insulated with .....*mm Fire Duct Slab, having a factory applied reinforced aluminium foil to one face and complying with Building Regulations requirements.
2.	The Fire Duct joints at ductwork corners are to be 45° mitred. Square butt joints to be used elsewhere.
3.	The foil facing is to be removed from any surfaces to which FIREPRO® Glue is to be applied.
4.	All joints are to be filled with FIREPRO® Glue and held tightly closed.
5.	All mitred joints are to be held tightly closed with nails (length = 160mm) until the glue has fully cured. 2 nails juxtaposed at 90° are to be located at 3 points per 1200mm length of mitred joint and at 5 points per 2000mm length.
6.	Drop rods and bearers are to be at 1500mm maximum centres and to be M10 steel rod and 30 x 30 x 3mm steel angle respectively.
7.	All drop rods and exposed bearers are to be insulated with .....*mm Fire Duct Slab or .....† x .....*mm Fire Duct Section, as appropriate. Rebates or cover pieces are to be used at duct flange and bearer locations according to site conditions and subject to ROCKWOOL approval.
8.	Where a vapour barrier is required, all exposed Fire Duct edges and penetrations through the foil should be sealed using soft self- adhesive aluminium foil tape.

ROCKWOOL Fire Duct Systems are associated with the following NBS clauses:

U90 General ventilation - domestic
490 Site applied insulation to ductwork

Y30 Mechanical thermal insulation
340 Mineral fibre slabs insulation

FIREPRO® FIRE DUCT SYSTEMS

DISCLAIMERS

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Information contained in this data sheet is up-to-date as at the date of issue. As ROCKWOOL Limited cannot control or anticipate the conditions under which this product may be used, each user should review the information in specific context of the planned use. To the maximum extent permitted by law, ROCKWOOL Limited will not be responsible for damages of any nature resulting from the use or reliance upon the information contained in this data sheet. No express or implied warranties are given other than those implied by law.

SUPPORTING INFORMATION

For further information relating to any aspect of the FIREPRO range, please refer to the applicable ROCKWOOL standard details at **www.rockwool.com/uk** or contact the ROCKWOOL technical solution team on 01656 868490 or **technical.solutions@rockwool.com**.

SUSTAINABILITY

As an environmentally conscious company, ROCKWOOL promotes the sustainable production and use of insulation and is committed to a continuous process of environmental improvement.

All ROCKWOOL products provide outstanding thermal protection as well as four added benefits:

Fire resistance

Acoustic comfort

Sustainable materials

Durability

HEALTH & SAFETY

The safety of ROCKWOOL stone wool is confirmed by current UK and Republic of Ireland health & safety regulations and EU directive 97/69/EC:ROCKWOOL fibres are not classified as a possible human carcinogen.

A Material Safety Data Sheet is available and can be downloaded from **www.rockwool.com/uk** to assist in the preparation of risk assessments, as required by the Control of Substances Hazardous to Health Regulations (COSHH).

ENVIRONMENT

Made from a renewable and plentiful naturally occuring resource, ROCKWOOL insulation saves fuel costs and energy in use and relies on trapped air for its thermal properties.

ROCKWOOL insulation does not contain (and has never contained) gases that have ozone depletion potential (ODP) or global warming potential (GWP).

ROCKWOOL is approximately 97% recyclable. For waste ROCKWOOL material that may be generated during installation or at end of life, we are happy to discuss the individual requirements of contractors and users considering returning these materials to our factory for recycling.