

7 INSTALLATION OF THE KOOLDUCT SYSTEM

7.1 KoolDuct duct segments shall only be installed in accordance with the Koolduct System Design Guide.

JOINTING

7.2 The jointing of KoolDuct segments shall be accomplished using the jointing procedure outlined in the KoolDuct System Design Guide.

7.3 Connection to standard ductwork system components such as fans, dampers etc. shall be accommodated by the selection of the appropriate aluminium flange as outlined in the KoolDuct System Design Guide.

7.4 Flexible connections shall be made between the ductwork and any item which is subject to vibration or movement.

SUPPORT

7.5 It shall be the responsibility of the contractor to ensure that the ductwork system is properly and adequately supported. A number of support systems are available and are outlined in the KoolDuct System Design Guide. It shall be the responsibility of the contractor to ensure that the chosen method is compatible with the KoolDuct System.

7.6 All metal support members, in contact with the ductwork, shall be separated by a soft gasket material.

7.7 Supports on straight runs of ductwork shall be positioned at centres not exceeding 3 metres. Additionally, ductwork shall be supported at changes of direction, at branch duct connections, Tee fittings etc.

7.8 All duct accessories such as dampers shall be independently supported.

EXTERNAL DUCTWORK

7.9 All externally mounted KoolDuct shall be provided with a protective weatherproof finish.

7.10 This finish shall be either:

- a) aluzink sheet (0.7mm) which is introduced during the fabrication of the ducting; or
- b) the KoolDuct System is to be overcoated with two full applications of Kingspan Childers KP55 mastic, with open weave glass cloth King-glass No 10 between coats. It shall be applied in accordance with the manufacturers instructions and is to cover all exposed ductwork including the flanged connections.

For further information on the KoolDuct System please telephone the Kingspan Technical Services Department on **01457 861611** (UK) or **042 9795000** (Ireland)

The values given against these properties are typical. They are not meant to imply specification limits and should not be used for this purpose without reference to Kingspan Industrial Insulation.

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THE KOOLDUCT SYSTEM SPECIFICATION

KoolDuct® No Worries



The KoolDuct System Specification

1 GENERAL

1.1 The contractor shall include for the manufacture, supply, delivery and installation of materials necessary for the ductwork systems described in this specification.

1.2 The manufacture and installation of the KoolDuct System shall be carried out by a contractor who is registered with Kingspan Industrial Insulation Ltd, having successfully completed a specialist training course. The contractor shall make himself fully acquainted with all the site conditions and programme of works and shall execute his works within such confines and programme. A list of approved contractors can be obtained from Kingspan Industrial Insulation.

1.3 The materials used in the manufacture of the KoolDuct System, shall be inherently proof against rotting, mould and fungal growth and attack by vermin, be non-hygroscopic and in all respects be suitable for continuous use throughout the range of operating temperatures and within the environment indicated.

1.4 Any work not of acceptable standard shall be removed and replaced at no cost to the contract.

1.5 All materials and finishes shall be installed in accordance with the manufacturers recommendations.

1.6 No insulation material containing CFCs shall be accepted.

2 STANDARD REFERENCES

The materials, tests, methods of installation etc, shall conform with the following:

2.1 BRITISH STANDARDS

BS 476: Part 6: 1989 (Method of test for fire propagation for products).

BS 476: Part 7: 1997 (Method of test to determine the classification of the surface spread of flame of products).

BS 5111: Part 1: 1974 (Laboratory methods of test for determination of smoke generation characteristics of cellular plastics and cellular rubber materials).

BS 6401: 1983 (Method for measurement, in the laboratory, of the specific optical density of smoke generated by materials).

2.2 OTHER STANDARDS

NES 713 (Smoke toxicity).

HVAC DW 144 (Specification for sheet metal ductwork and duct air leakage).

2.3 BUILDING REGULATIONS/STANDARDS

England & Wales:
The Building Regulations 1991.
Approved Document B. 2000 Edition.
Appendix A 12(b).

Scotland: The Building Standards (Scotland) Regulations 1990 as amended.
Technical Standards Part E. 1997 Edition.
Table 2 to (E6.1)a.

Northern Ireland: The Building Regulations (Northern Ireland) 1994.
Technical Booklet E. Paragraph 2.4.

Irish Republic: The Building Regulations 1997.
Technical Guidance Document B. Appendix A.
Paragraphs A9 and A10.

3 FIRE RATINGS

3.1 The insulation boards used in the manufacture of the KoolDuct System shall achieve the following:

Test	Result
BS 476: Part 6: 1989	of low contribution to fire growth with fire propagation indices not exceeding $i=12$ and $s=6$
BS 476: Part 7: 1997	of very low surface spread of flame (Class 1)

3.2 Systems which meet the required combined standards as detailed above are defined as Class 'O' to the Building Regulations/Standards.

3.3 All insulation materials shall not produce large volumes of smoke or toxic fumes when involved in a fire and shall have a smoke obscuration factor not exceeding 5% when tested to BS 5111: Part 1: 1974.

3.4 The insulation boards used in the manufacture of the KoolDuct System shall achieve the following standards when tested to BS 6401: 1983.

Criterion	Result
Average Specific Optical Density (non-flaming mode)	8
Average Specific Optical Density (flaming mode)	5

3.5 When tested to NES 713, the toxicity index of the insulation boards used in the manufacture of the KoolDuct System shall not exceed 6.9.

3.6 Insulation materials and facings installed on ductwork and equipment, external to buildings shall be rated as Class 1 when tested to BS 476: Part 7: 1987.

4 SCOPE OF WORKS

Unless otherwise indicated, the KoolDuct System can be installed in the following applications:

- warm air ventilation distribution ductwork;
- air conditioning distribution ductwork;
- fresh air intake ducts to plant; and
- returning air to a plantroom.

Where the ductwork is exposed on a roof or other external locations an additional weatherproof finish is required.

5 MATERIALS

5.1 KoolDuct panels shall be manufactured of CFC-free closed cell phenolic insulation of total thickness 22mm +/-2mm, thermo-bonded on both sides to a 28 micron aluminium foil facing reinforced with a 5mm glass tissue mesh.

5.2 The thermal conductivity of the phenolic insulation panel shall be no greater than 0.018 W/mK at 10°C mean temperature.

5.3 The density of the phenolic insulation panel's core shall not be less than 55kg/m³ with a minimum compressive strength of 200kN/m².

5.4 The panels shall be KoolDuct phenolic insulation, as manufactured by Kingspan Industrial Insulation Ltd.

5.5 All other components required for the manufacture of duct segments including the contact adhesive, reinforced aluminium tape, silicone sealant, self adhesive gasket, aluminium reinforcement and flanges are to be original, factory approved as supplied by Kingspan Industrial Insulation.

6 MANUFACTURE OF THE KOOLDUCT SYSTEM

FABRICATION OF THE KOOLDUCT SYSTEM

6.1 All KoolDuct duct segments shall be fabricated according to approved methods as detailed in the KoolDuct System Design Guide.

6.2 Rectangular duct segments shall be fabricated either on site or in the workshop utilising the "V" groove method of manufacture.

6.3 External seams where two separate panels have been joined must be taped to achieve a permanent bond and wrinkle free appearance.

6.4 Internal seams must be fully sealed with an unbroken layer of silicone sealant.

6.5 Each duct segment must be flanged with aluminium profile and silicone sealant should be applied to the internal corners of the flange in order to seal the phenolic insulation panel and ensure minimum leakage.

6.6 Duct reinforcement, if necessary, should be applied to protect against side deformation from both positive and negative pressure.

6.7 The design of ductwork fittings shall be in conformance with DW 144.

6.8 Access doors shall be provided where shown on the drawings and at all dampers. These may be as part of the KoolDuct System or a commercially available, preinsulated access door, may be incorporated. This access door must be insulated to the same standard as the KoolDuct System and the integrity of the vapour barrier must be maintained.

HANDLING OF DUCT SEGMENTS

6.9 Care shall be exercised in the handling and transportation of duct segments in order to in order to prevent damage to the outer surface.

6.10 All duct segments shall be stored under cover and protected from the weather. In cases where the duct segments are to be stored for prolonged periods, the open ends of the ducts shall be sealed with polythene sheet or other suitable materials to prevent the ingress of foreign matter.