

Knauf Data Sheet

AH-DS-9 10-06

# The Knauf KoolDuct<sup>®</sup> System

# The Knauf KoolDuct® System

## High Performance Pre-Insulated Ductwork

### Description

The Knauf KoolDuct® System is a pre-insulated, high performance air duct system for industrial and high-end commercial applications. The system uses a CFC-free phenolic foam board faced on both sides with reinforced foil. Patented, specially engineered, aluminum flanges are designed to connect the duct sections to assure a strong, tight closure. The Knauf KoolDuct System offers significant advantages over sheet metal ductwork. Weight, space, installation time, installed costs, air leakage and energy performance are just a few of these benefits. It is a complete system which includes:

- Complete line of components and accessories for the fabrication and installation of ductwork systems
- Professional hand tools and automatic machinery to facilitate the fabrication of ductwork on a small, medium and large scale
- Custom training program
- Cost estimation software.

### Application

The Knauf KoolDuct System is used in commercial, residential and industrial applications. The ducting is versatile and can be installed internally or externally, and concealed above a false ceiling or visibly mounted. It is easily modified and repaired and can be fabricated on-site with non-powered tools.

### Features and Benefits

- The Knauf KoolDuct System offers a significant installed cost savings over other alternative insulated sheet metal systems, depending on the size of the ductwork and complexity of the project.

- The Knauf KoolDuct System offers many advantages over traditional sheet metal systems, resolving design issues such as weight, space, installation time and energy performance.
- All authorized contractors attend a specialized training program to ensure that uniform quality standards are maintained.
- All ductwork fabrication materials are supplied by Knauf Insulation, ensuring the highest quality and consistency in your ductwork project.
- The Knauf KoolDuct System is ideal for jobs where a non-fibrous solution is desired. The air stream in the sealed duct flows only on aluminum, making it ideally suited for high specification applications.
- The patented jointing system combined with the fully sealed duct seams produce a system that is virtually airtight and leak-free.
- Knauf KoolDuct Systems yield significant savings in reduced heating and cooling loads due to the superior insulating properties of the phenolic panel and minimal air leakage of the jointing system.
- Knauf KoolDuct Systems can be installed flush to the slab, saving valuable space above a suspended ceiling.
- The aluminum grip flanges of the jointing system enables quick connection to components such as fire dampers, VCDs, attenuators and conventional sheet metal ductwork.

### Specification Compliance

#### In U.S. and Canada:

- UL (C-UL) 181, Class 1 system
- SMACNA leakage, Class 6
- DW144, Class B leakage
- NFPA 255

### Technical Data

#### Surface Burning Characteristics

- UL (C-UL) Classified.
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84.

#### Thermal Resistance

- R-6.7 at 7/8" (1.2 R.S.I. @ 22 mm)
- R-8.5 at 1 3/32" (1.5 R.S.I. @ 28 mm)

#### Thermal Conductivity (both panels)

- 0.13 BTU in/hr<sup>2</sup>F @ 75°F  
(0.018 W/mC @ 10°C)

#### Service Temperature

- 158°F (70°C)

#### Maximum Air Velocity

- 5000 fpm (25m/s)

#### Internal Static Pressure

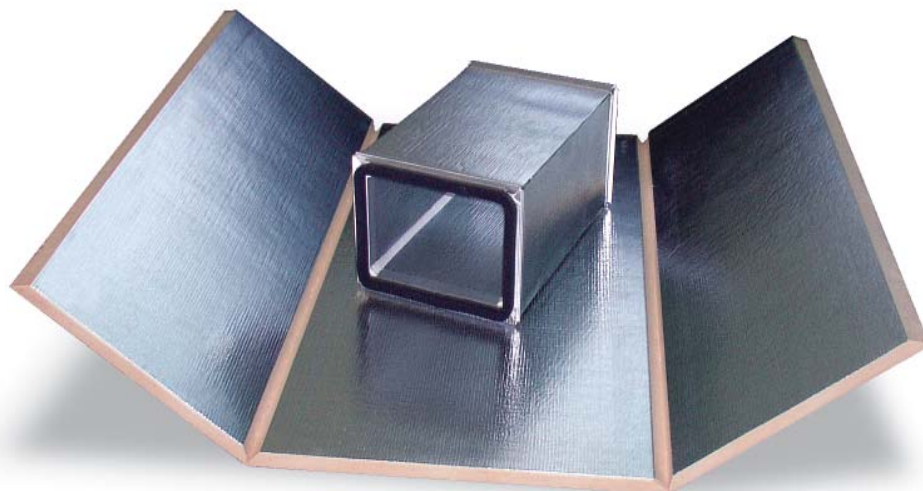
- 4" w.g. (1000 Pa) Positive  
(UL rating: 15" w.g. positive,  
4.5" w.g. negative)

#### Sound Attenuation

- Weighted SRI: 17dB

#### Microbial Growth

- UL 181 tested.
- Does not promote or support the growth of mold, fungi or bacteria.



### Acoustical Data Insertion Loss (DB/10LF) (ASTM E 477)

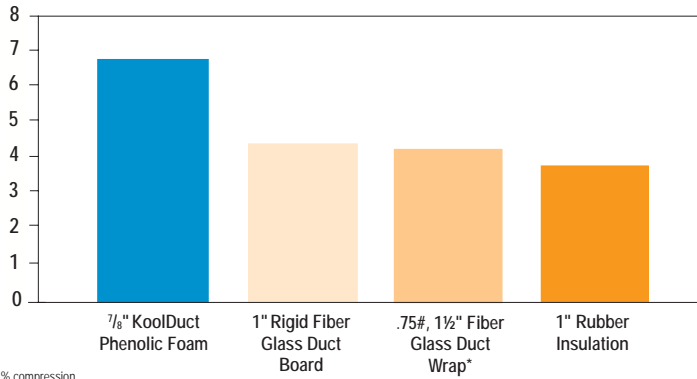
			1/3 Octave Band Center Frequency (Cycles/Sec.)							
			63	125	250	500	1000	2000	4000	8000
7/8"	(22 mm)	12 x 12	1	-1	13	4	4	2	1	4
7/8"	(22 mm)	12 x 24	3	3	8	4	3	2	1	3

### Forms Available

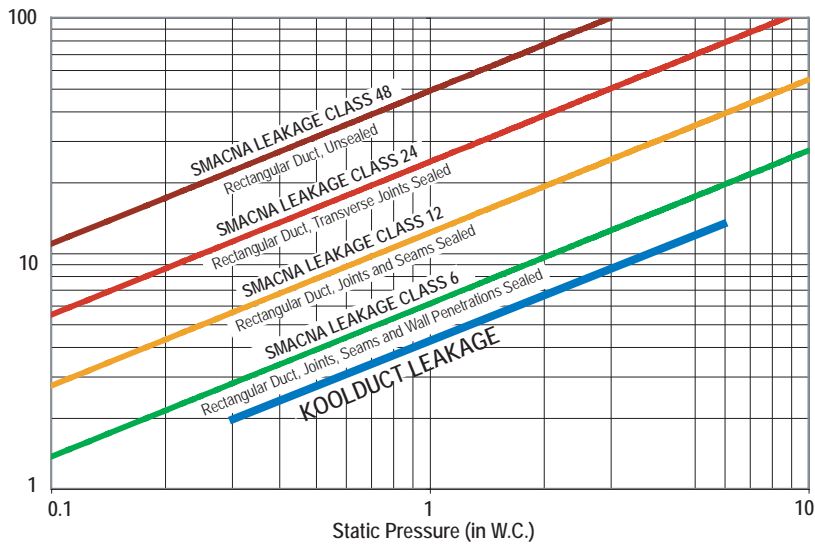
#### Closed Cell Phenolic Panels

Thickness	7/8" (22 mm)	1 3/32" (28 mm)
R-Value	R-6.7	R-8.5
Facing	Scrim Reinforced Aluminum, Both Sides	
Density	3.5 pcf (60 Kg/m <sup>3</sup> )	3.5 pcf (60 Kg/m <sup>3</sup> )
Dimensions	15 3/4" x 47 1/4"	

### Insulation Comparison



### KoolDuct Tested Air Leakage



## Application and Specification Guidelines

The information listed below is not intended to serve as a design or fabrication manual. For specific details on fabrication, handling and installation, refer to the latest edition of the "Knauf KoolDuct System Design Guide."

### General

All foam-based pre-insulated ductwork specified is supplied by Knauf Insulation, manufactured and installed by authorized contractors of the KoolDuct System and in complete accordance with the "Knauf KoolDuct System Design Guide."

Knauf Insulation will support this specification with any technical information as required and can be contacted by phone at (800) 825-4434, ext. 8215.

### Ductwork Materials

Knauf KoolDuct panels are fabricated of CFC-free phenolic foam thermobonded on both sides to a 25 micron aluminum foil facing reinforced with a 5 mm glass tissue mesh. The panel's thermal conductivity will be no greater than 0.13 BTU in/hr<sup>2</sup>F at 75°F (0.018 W/mC at 24°C), and the density of the phenolic foam will not be less than 3.5 pcf (55 kg/m<sup>3</sup>) with a minimum compressive strength of 28 psi (190 kN/m<sup>2</sup>). The panel is supplied in dimensions of 154¾" x 47¼" (3.93 m x 1.2 m).

All other components required for the fabrication of duct segments including contact adhesive, aluminum tape, silicone sealant, self adhesive gasket, aluminum reinforcement and flanges are to be original, factory approved as supplied by Knauf Insulation. The materials and system comply with the specific testing to the UL 181 Standard for air ducts.

### Authorized Contractors

The contractor responsible for the fabrication and installation of the Knauf KoolDuct System will be authorized by Knauf Insulation and will have successfully completed Knauf's specialized training seminar.

## Fabrication of Knauf KoolDuct Ductwork

All Koolduct duct segments are fabricated according to approved methods as detailed in the "Knauf KoolDuct Design Guide." All duct sizes listed on the drawings or bill of quantities are assumed to be internal ductwork dimensions.

Rectangular duct segments are fabricated either on site or in the workshop utilizing the V-groove method of fabrication. External seams where two separate panels have been joined shall be taped utilizing a soft squeegee to achieve a permanent bond and wrinkle-free appearance. Internal seams are fully sealed with an unbroken layer of silicone.

Each duct segment will be flanged with engineered aluminum flange closures or Tiger connectors in accordance with the "Knauf KoolDuct Design Guide." Duct reinforcement, if necessary, will be applied to protect against side deformation from both positive and negative pressure. The "Knauf KoolDuct Design Guide" can be consulted to determine reinforcement requirements based on ductwork size and system pressure.

The design of ductwork fittings will be in conformance with "SMACNA HVAC Duct Construction Standards" latest edition.

### Handling of Duct Segments

Care must be exercised in the handling and transport of duct segments in order to prevent objectionable aesthetic damage to the outer surface.

Storage of duct segments shall be under cover and all material protected from the environment.

In all cases where the duct segments are stored for prolonged periods, the open ends of the ducts must be sealed with polyethylene sheet of other suitable materials to prevent the ingress of foreign matter.

### Installation of Knauf KoolDuct System

Duct segments should only be installed by authorized contractors of the Knauf KoolDuct System, in accordance with the "Knauf KoolDuct System Design Guide."

The jointing of Knauf KoolDuct segments is accomplished utilizing the jointing procedure outlined in the "Knauf Koolduct System Design Guide." Connection to standard ductwork system components such as fans, dampers and even GSM ducting will be accomplished by the appropriate selection of aluminum flange. Flexible connections can be made between the ductwork and any item which is subject to vibration or movement. It is the responsibility of the contractor to ensure that the ductwork method is properly and adequately supported and that the chosen method is compatible with the specific ductwork system. A number of support systems are outlined in the "Knauf KoolDuct System Design Guide."

Supports on straight runs of ductwork are positioned at centers not exceeding 13 feet (4000 mm) for ducts with sides up to 45" (1160 mm). Support center distances are reduced for straight sections fabricated with multiple short segments. Additionally, ductwork is supported at branch connections, tee fittings and at changes of direction as necessary. (Reference: "Knauf KoolDuct System Design.")

For larger ductwork sizes with sides greater than 45" (1160 mm), the support spacing should not exceed 8 feet (2400 mm), with additional supports for intermediate flanged connections, fittings, branch connections and changes of direction. It is recommended that all larger duct system supports be of the uni-strut of steel channel variety.

Additionally, ductwork should be supported at all duct accessories such as fire dampers, volume control dampers, mixing boxes, coils, humidifiers, etc. The load of such accessories to the ductwork will be neutralized by the accessory support.

For vertically oriented ductwork, support should be positioned to coincide with individual floor slabs, which should be no more than 13 feet (4000 mm) apart.

For more information call (800) 825-4434, ext. 8283

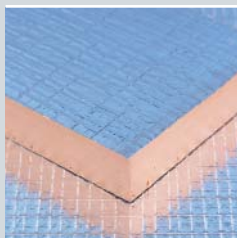
or visit us online at [www.KnaufInsulation.com](http://www.KnaufInsulation.com)



- The Knauf KoolDuct System has only 15% of the weight of insulated sheet metal ductwork, so transporting and installing is easy and fast.



- The fully sealed duct seams combined with our patented jointing system produces ductwork with minimal leakage, meeting SMACNA's Leakage Class 6.



- The Knauf Koolduct System is built with closed cell CFC-free phenolic foam-board, faced on both sides with reinforced aluminum foil.



- Low equivalent thickness of insulation combined with the elimination of insulator's working space above the duct saves 6"-8".



- Very competitive installed cost savings compared to insulated sheet metal.



### Facts at a glance

- A significant advantage over traditional insulated sheet metal systems regarding:
  - Weight
  - Space
  - Installation time
  - Energy performance
- Materials supplied by Knauf, ensuring the highest quality and consistency.
- Superior insulating properties and minimal air leakage.
- Ideal for jobs where a non-fibrous solution is desired.

# KNAUF INSULATION



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## Notes

The chemical and physical properties of the Knauf KoolDuct System represent typical average values determined in accordance with accepted test methods. The data is subject to normal manufacturing and testing variations. The data is supplied as a technical service and is subject to change without notice. References to numerical flame spread ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

Check with your Knauf sales representative to assure information is correct.



## LEED Eligible Product

Use of this product may help building projects meet green building standards as set by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System.