

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 & 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.
- The 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 can be installed flush to the slab, saving valuable space within 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
- DW 144, Class B
- SMACNA leakage, Class 6
- 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 1/8" (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/hr²F @ 75°F (0.18 W/mC @ 10°C)

Service Temperature

- 176°F (80°C)

Maximum Air Velocity

- 5000 fpm (25 m/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

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

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 Knauf 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, ex. 8215 or e-mail joevincenti@KnaufUSA.com.

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 panels thermal conductivity will be no greater than 0.13 BTU in/ft²hF at 75°F (0.018W/mC at 24°C), and the density of the phenolic foam will not be less than 3.5 pcf (55kg/m³) with a minimum compressive strength of 28 psi (190kN/m²). The panel is supplied in dimensions of 154 3/4" x 47 1/4" (3.93 m x 1.2 m).

All other components required for the manufacture of duct segments including contact adhesive, aluminum tape, silicon 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 duct.

Certified 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 Knauf 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 silicon.

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 polythene sheet or other suitable materials to prevent the ingress of foreign matter.

Installation of Knauf KoolDuct Systems

Duct segments should only be installed by authorized contractors of the Knauf KoolDuct System, and 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 system 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' (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 Guide.")

Knauf KoolDuct® System

Submittal Date _____



For larger ductwork sizes with sides greater than 45" (1160 mm), the support spacing should not exceed 8' (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 or 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.

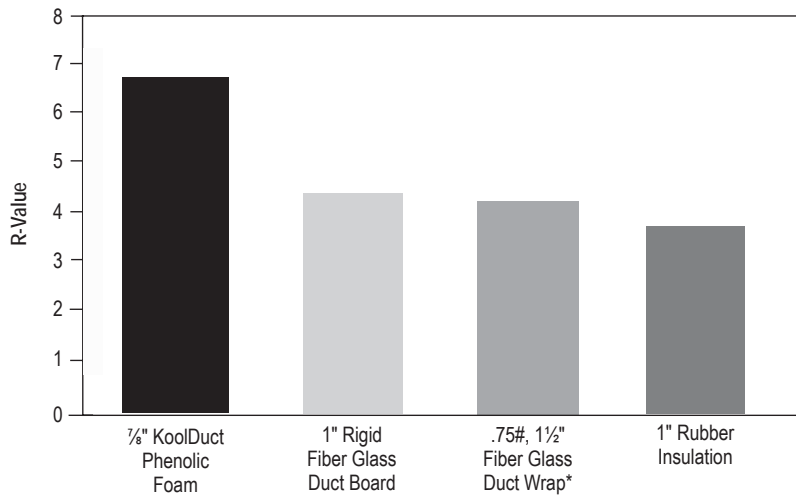
For vertically oriented ductwork, support should be positioned to coincide with individual floor slabs, which should be no more than 13' (4000 mm) apart.

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 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.

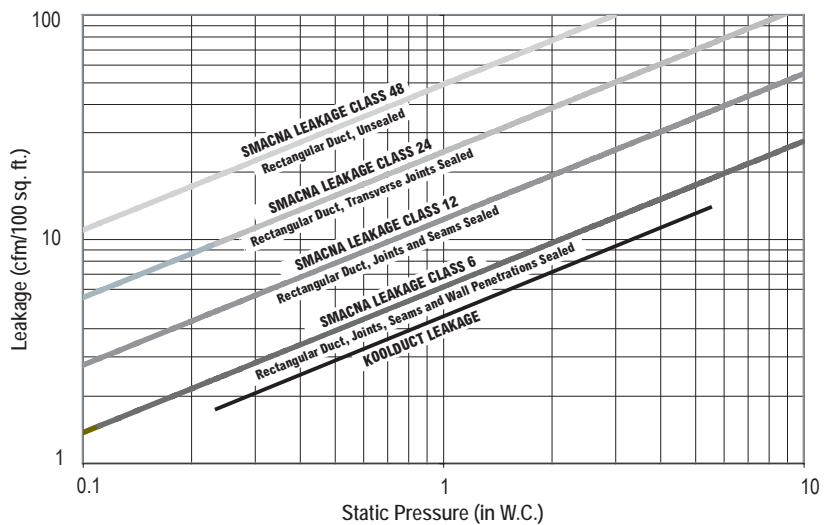
Check with your Knauf sales representative to ensure information is current.

Insulation Comparison



*Installed @ 25% compression.

KoolDuct Tested Air Leakage



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 (60Kg/m ³)	3.5 pcf (60Kg/m ³)
Dimensions	154 3/4" x 47 1/4" (3.93 m x 1.2 m)	

Sound Reduction Index Measurements

1/3 Octave Band Center Frequency (Hz)	Sound Reduction Index (dB)
100	8.0
125	10.2
160	11.1
200	7.9
250	11.6
315	12.8
400	12.6
500	12.6
630	15.1
800	15.1
1000	15.0
1250	16.2
1600	17.2
2000	19.2
2500	20.5
3150	20.7

