

## Why Insulate Air Ducts?

Heating, ventilating and air conditioning systems in schools and related facilities, as well as other institutional and commercial buildings, commonly use fiber glass insulation to meet mechanical code requirements, reduce energy usage and improve the indoor environment.

Air distribution duct systems are unique in the fact that there is a wide choice of duct insulation options. These highly specialized, engineered insulations provide a range of differing benefits. Selecting the best insulation package for the HVAC system in the initial construction phase is very important: The complexity and physical size of air distribution ducting within the building envelope makes it very difficult and expensive to upgrade air ducts after the building is occupied.

## Available Duct Insulation Choices

There are four primary duct insulation products specifically designed to provide acoustical and/or thermal properties for air duct systems. They include:

- **External duct wrap or mechanical board insulation for rectangular or round metal ducts.** These duct insulations are applied to and supported by rectangular or round metal air ducts. They serve as a vapor retarder and thermal insulation, and the high-density mechanical boards also provide a slight reduction of break-out and vibration-related noise from the metal air ducts.

External insulations allow the ducts to meet mechanical code requirements, help protect against condensation and reduce energy consumption. These insulations provide thermal performance but offer little acoustical benefit. Johns Manville products and their related product information pages are:

- Microlite® XG™ Formaldehyde-free™ Duct Wrap AHS-331
- 814 Spin-Glas® Mechanical Board CI-9

- **Internal duct liner insulation for rectangular or round metal air ducts.** Duct lining materials are applied to the interior duct surfaces using adhesive and mechanical fasteners during the duct fabrication process. They provide high thermal (R-value) performance per thickness of insulation. Duct liner products also serve as a very effective passive noise-reduction system and can virtually eliminate air rush, crosstalk and fan-generated noise from the duct system.

Internal duct insulations offer the thermal benefits of exterior duct insulations, meet all mechanical code requirements and incorporate excellent acoustical absorption characteristics as a benefit. Because duct liners are passive sound-reduction media, there are no hidden energy or maintenance costs. Duct liner is available in medium-density flexible (Type I) form, as well as a higher-density rigid form (Type II). Johns Manville products and their related product information pages are:

- Permacote® Linacoustic® HP Duct Liner AHS-197
- Linacoustic® RC Duct Liner AHS-329
- Permacote® Linacoustic® R-300 Plenum Liner Board AHS-156
- Spiracoustic Plus™ Round Duct Liner System AHS-300

# Fact Sheet

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- **Fiber glass duct board systems in place of rectangular metal ducts.** These rigid, high-density fiber glass board products are manufactured to serve as a complete replacement for sealed, insulated metal air duct. Duct board combines structural integrity and thermal/acoustical insulation into a single, very effective duct material.

Duct board products meet the toughest energy code requirements for thermal performance and match or exceed the acoustical performance of internal duct liners. Because they eliminate the metal duct, there is no vibration or regenerated noise. Standard installation techniques for fiber glass ducts result in very low leakage, equal to SMACNA Class 6 or better, with no additional labor or material costs. Johns Manville duct board products include:

- SuperDuct® RC High Performance Air Duct Board AHS-200
- Mat-Faced Micro-Aire® Duct Board AHS-334
- EnviroAire™ Formaldehyde-free™ Duct Board AHS-349

- **Flexible round air ducts.** Available in a wide variety of diameters and lengths, flexible air ducts are frequently used as connectors in institutional and commercial HVAC systems. Flex duct provides good thermal performance and incorporates an internal air barrier and external vapor retarder jacket. Acoustical absorption varies by flex product; typical values (measured by Noise Reduction Coefficient, or NRC) are only 20 to 30% of values demonstrated by duct liner or fiber glass duct systems.

Johns Manville does not manufacture or distribute flexible duct products, but we are a major OEM supplier of fiber glass insulation under the product name Flex-Glas® PC. Flexible duct made with this Formaldehyde-free™ product is easily recognized by the naturally white color of the insulation core.

For a copy of these product information pages or for additional information regarding Johns Manville's complete line of Air Handling Systems, visit us online at [specJM.com](http://specJM.com).



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