

## **SafeDuck Closed Cell Duct Insulation Guide Specification**

This section specifies SafeDuck Closed Cell Duct Insulation, a closed-cell, flexible, light weight, low density, foam insulation with excellent thermal and sound insulating properties. Closed Cell Duct Insulation is shown through comprehensive testing to resist microbial growth in the air stream.

Contact SafeDuck Closed Cell Duct Insulation at (561) 707 4307

Other Sources: [info@mysafeduck.com](mailto:info@mysafeduck.com); [www.mysafeduck.com](http://www.mysafeduck.com).

### **SECTION 233353 – METAL DUCT LINERS**

#### **PART 1 - GENERAL**

##### **1.1 SECTION INCLUDES**

- A. Duct liner and duct wrap insulation for metal HVAC ducts of the following type:
  - 1. Pre-formed thermoplastic polymer blend closed-cell duct insulation.

##### **1.2 REFERENCES**

Specifier: If retaining this optional article, edit to reflect standards cited in the completed section.

- A. ASTM International (ASTM): [www.astm.org](http://www.astm.org):
  - 1. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
  - 2. ASTM C411 - Standard Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation.
  - 3. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
  - 4. ASTM C916 - Standard Specification for Adhesives for Duct Thermal Insulation.
  - 5. ASTM C1338 - Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings.
  - 6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- B. National Fire Protection Association (NFPA): [www.nfpa.org](http://www.nfpa.org):
  - 1. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems.
  - 2. NFPA 90B - Standard for the Installation of Warm Air Heating and Air-Conditioning Systems.

- C. North America Insulation Manufacturers Association (NAIMA):  
[www.insulationinstitute.org](http://www.insulationinstitute.org):

1. NAIMA AH124 – Fibrous Glass Duct Liner Standard.

- D. Sheet Metal & Air Conditioning Contractors' National Association (SMACNA):  
[www.smacna.org](http://www.smacna.org):

1. HVAC Duct Construction Standards – Metal and Flexible.

### 1.3 SUBMITTALS

- A. Product Data.

- B. Sustainable Design Submittals:

1. Product Data: For adhesives, indicating VOC content.
2. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.
3. Laboratory Test Reports: For insulation, indicating compliance with requirements for low-emitting materials.

### 1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect duct liners during shipping, handling, and storage to prevent deterioration or other damage.

1. Store in accordance with Manufacturer's written instructions.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- A. Basis of Design Manufacturer: [info@mysafeduck.com](mailto:info@mysafeduck.com); [www.mysafeduck.com](http://www.mysafeduck.com).

### 2.2 DUCT LINER AND DUCT WRAP

- A. Preformed Thermoplastic Polymer Blend Insulation: Flexible, closed-cell thermoplastic polymer blend insulation in sheet form tested for compliance with performance requirements of ASTM C1071 with respect to the following characteristics: corrosiveness, water-vapor absorption and transmission, fungi resistance, erosion resistance, odor emission, bacteria resistance, and with the following characteristics:

Specifier: Densities of up to 5 PCF are available on request; material is available up to 1.50 inch thickness.

1. Density: 26 +/- 10% kg/m<sup>3</sup>.
2. Thickness: 1.0 inch.
3. Operating Temperature, ASTM C411: 200 deg. F Maximum
4. Maximum Air Velocity, ASTM C1071/UL 181: Planning 5,000 fpm.
5. Thermal Conductivity, ASTM C177: 0.18 Btu-in/h-sq.ft (R 4.4) at 1.0 inches thick at 75 deg. F.

6. Combustion Characteristics, ASTM E84: Maximum flame-spread index of 10 and smoke-developed index of 30.
7. Sound Absorption, ASTM C423, Mounting A: Min 0.49 sound absorption coefficient at 500 Hz at 1.25 PCF and 1.0 inches thick.
8. Fungi Resistance, ASTM C1338: Meets requirements.

B. Insulation Liner: FSK aluminum foil.

C. Duct Liner Application Adhesive: Duct liner manufacturer's recommended UL-classified water-based adhesive complying with NFPA 90A and NFPA 90B and with ASTM C916; VOC less than 25 g/L.

## 2.3 FABRICATION

A. Comply with NFPA 90A/NFPA 90B, ASTM C916, and NAIMA AH124 and application requirements in Part 3.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine duct material to verify compliance with manufacturer's written installation instructions.

B. Verify compatibility of substrates with liner adhesive.

### 3.2 INSTALLATION OF DUCT LINER

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 7-11, "Flexible Duct Liner Installation."

B. Adhere single layer of indicated thickness of duct liner with at least 90 percent adhesive coverage at liner contact surface area, completely covering duct.

C. Butt transverse joints without gaps, and coat joints with adhesive.

D. Utilize metal nosing on exposed leading edges of duct liner and where upstream edges face velocity in excess of 4,000 fpm.

E. Fold and compress duct liner in corners of rectangular ducts or cut and fit to ensure butted-edge overlapping.

### 3.3 INSTALLATION OF DUCT WRAP

A. Apply two layers of duct wrap to achieve minimum R-8 thermal resistance.

B. Adhere each layer of indicated thickness of duct wrap with at least 90 percent adhesive coverage at wrap contact surface area, completely covering duct. Stagger seams at a minimum of 12 inches. Locate transverse seams at underside of ductwork. Seal seams with duct wrap adhesive.

C. Apply two coats of duct wrap coating on exterior duct wrap in accordance with coating manufacturer's written instructions.

### 3.4 CLEANING

- A. After installation and prior to substantial completion blow out duct system to remove cutting scraps and foreign material remaining in duct.

END OF SECTION