

# ***Armacell Master Duct Lining Specification***

## ***AP Armaflex Sheet/Rolls AP Armaflex SA Sheet/Rolls AP Coilflex AP Spiralflex***

*Fiber-Free and Dust-Free Insulation  
Non-Wicking  
Resists Mold and Mildew*

### **Part 1 - General**

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#### **1.1 Scope of Work:**

A. Provide piping, ductwork and equipment insulation as specified below.

#### **1.2 Definitions:**

- A. Cold Piping/Surfaces: Pipes or surfaces where the normal operating temperature is 60°F or lower.
- B. Third Party Supervision Testing: Verification testing by a nationally recognized independent testing organization that will conduct sampling of the product through to simulated end use testing.
- C. Thermal Conductivity: The amount of heat in BTU's transferred in one hour through one square foot of homogeneous material one inch in thickness when there is a temperature difference of 1°F.
- D. Compression Fit Method: To allow for expansion and contraction of sheet and roll insulation, leave a 1/2" wide uncoated border at the butt-edge seams on the surface to be insulated and the insulation surface. Overlap the insulation 1/4" at the butt-edge and compress the edges into place. Apply adhesive to the butt-edges of the insulation.

#### **1.3 Quality Assurance:**

- A. Material shall be delivered in nonbroken, factory furnished packaging and stored in a clean, dry indoor space that provides protection against the weather.
- B. Insulation shall be applied by qualified personnel skilled in this trade.
- C. Progressive testing of the systems to be insulated shall have been completed, inspected and approved by the owners' representative before the insulation is applied.
- D. Insulation shall not be applied until all surfaces are clean; dry, and free of dirt, dust, grease, frost, moisture, and other extraneous elements.
- E. Work shall be performed at the temperatures recommended by the product manufacturer.

## Part 2 - Products

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### 2.1 Elastomeric Insulation:

#### AP Armaflex Self Adhering Sheet and Rolls

Approved for new and retrofit duct lining applications. Patented Thermal Duct Lining Insulation

#### AP Armaflex Sheet and Rolls

Approved for new and retrofit duct lining applications. Full coverage of Armaflex 520 or Low VOC Spray Adhesive required. Allow 48 hours for full cure prior to operating system.

#### AP Armaflex FS Sheet and Rolls

Approved for new and retrofit duct lining applications. Full coverage of Armaflex 520 or Low VOC Spray Adhesive required. Allow 48 hours for full cure prior to operating system.

#### AP Coilflex

Approved for new duct lining installations on automatic coil line production. Can be used with water based adhesives.

#### AP Spiralflex

Approved for new duct lining installations in spiral or round ducts. Adhesive and tape are applied to the lateral seam only.

### 2.1.1 Acceptable Manufacturers

These specifications are based on products and data of Armacell and designate the type and quality of work intended under this section. Products of other manufacturers proposed as equivalent must be submitted for written approval by the specifying engineer ten days prior to the bid date. Supporting technical data, samples, published specifications and the like must be submitted for comparison. The contractor should warrant that proposed substitutions, if accepted, will provide performance equal to the materials specified herein.

Insulation material shall be a flexible, closed-cell or conformable, elastomeric insulation in sheet form: AP Armaflex, AP Armaflex SA, AP Coilflex or AP Spiralflex. These products meets the requirements as defined in ASTM C 534, Grade 1 Type II, "Specification for preformed elastomeric cellular thermal insulation in sheet and tubular form".

- A. AP Armaflex and AP Armaflex SA insulation materials shall have a closed cell structure to prevent moisture from wicking and effectively retard heat gain to make it an efficient insulation. AP Coilflex has a conformable cell structure allowing it to be bent on a coil line brake for tight fit in the corners.
- B. Insulation materials shall be manufactured without the use of CFC's, HFC's or HCFC's. It is also formaldehyde-free, low VOCs, fiber free, dust free and resists mold and mildew.
- C. The insulation material shall conform to meet the requirements as defined in ASTM C 1534, Standard "Specification for Flexible Polymeric Foam Sheet Insulation Used as a Thermal and Sound Adsorbing Liner for Duct Systems".
- D. Materials 2" thickness and below, shall have a flame spread index of less than 25 and a smoke developed index of less than 50 when tested in accordance with ASTM E 84, latest revision. In addition, the product, when tested, shall not melt or drip flaming particles, the flame shall not be progressive and all materials shall pass simulated end-use fire tests.
- E. AP Armaflex and AP Armaflex SA materials shall have a maximum thermal conductivity of 0.25 Btu-in/h-ft<sup>2</sup> - °F at a 75°F mean temperature when tested in accordance with ASTM C 177 or ASTM C 518, latest revisions.
- F. AP Armaflex and AP Armaflex SA materials shall have a maximum water vapor transmission of 0.05 perm-inches when tested in accordance with ASTM E 96, Procedure A, latest revision.

- G. AP Armaflex FS materials shall have a maximum thermal conductivity of 0.28 Btu-in/h-ft<sup>2</sup> - °F at a 75°F mean temperature when tested in accordance with ASTM C 177 or ASTM C 518, latest revisions.
- H. AP Armaflex FS materials shall have a maximum water vapor transmission of 0.08 perm-inches when tested in accordance with ASTM E 96, Procedure A, latest revision.
- I. Materials shall have a maximum water absorption rate of 0.2% (%by volume), when tested in accordance with ASTM C 209.
- J. The material shall be manufactured under an independent third party supervision testing program covering the properties for fire performance, thermal conductivity and water vapor transmission.
- K. Materials must be approved for air plenums.
- L. Materials must meet NFPA 90A, NFPA 908 and UL 181 Class 1 specification.
- M. Materials must meet ASTM C 411. Materials to perform up to 250°F.
- N. Pertinent Duct Lining Specification Compliance.
- O. ASTM C 1071 - Erosion Resistance.
- P. ASTM G 21 - Fungi Resistance.
- Q. ASTM C 1338 - Fungi Resistance.
- R. ASTM G 22 - Bacterial Resistance.
- S. ASTM C 665 - Non Corrosiveness and no objectionable odors.
- T. NRC rating 0.40 - Test Method ASTM C 423 with ASTM E 795 Type A Mounting. All product except AP Coilflex
- U. NRC rating on the AP Coilflex is 0.60 - Test Method ASTM C 423 with ASTM E 795 Type A Mounting.
- V. Dust free and fiber free. Non particulating.

## **Part 3 - Installation**

### **3.1 AP Armaflex & AP Armaflex FS Sheet and Rolls**

- A. Armaflex Sheet Insulation shall be adhered directly to clean, oil-free surfaces with a full cover age of Armaflex 520, 520 Black or Low VOC Spray Adhesive. Apply 520, 520 Black and Spray Adhesive to both the Armaflex surface and sheet metal.
- B. Ambient temperature for applications is between 40 degrees F and 100 degrees F.
- C. The skin side (smooth side) shall be exposed to the air stream.
- D. Butt-edge seams shall be adhered using Armaflex 520, or 520 Black Adhesive by the compression fit method to allow for expansion/contraction. Leave a 1/2" wide uncoated border at the butt edge seams on the duct surface and the insulation surface. Overlap the insulation 1/4" at the butt-edges and compress the edges into place. Apply Armaflex 520 or 520 Black. Allow 48 hours for full cure prior to operating system.
- E. Length of duct should allow for reaching in to apply 100% pressure to all interior surfaces.
- F. Refer to Armacell's Installation Booklet for additional installation information.

### **3.2 Self Adhering (SA) Armaflex Sheet and Rolls**

- A. SA Armaflex sheet shall be applied directly to a clean, dry, oil-free surface.
- B. Ambient temperature for application must be between 40°F and 100°F.
- C. The skin side (smooth side) shall be exposed to the air stream.

D. Install all sheet butt joints with a compression fit. Overlap the insulation 1/4" at the butt-edges and compress the edges into place. Leave 1/2" wide release liner border at the butt edge.

E. Refer to Armacell's Installation Booklet for additional installation information.

### **3.3 Air Velocities above 4,000 FPM (20.3 m/second)**

Metal nosing should be applied to every leading edge.

### **3.4 AP Coilflex should be applied using an automatic coil line and water based adhesive**

### **3.5 AP Spiralflex should be applied to the inside of round duct according to the installation guide written specifically for the AP Spiralflex**

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