Plumbing Pipe Insulation Specification
Part 1 – General

1.01 Scope of Work:
   A. Provide piping insulation as specified below. The purpose of the thermal pipe insulation is for condensation control, energy and water savings, noise reduction and freeze protection.

1.02 Definitions:
   A. Domestic Piping: Pipes where the normal operating temperature is between 40 °F and 180 °F.
   B. Thermal Conductivity: The amount of heat in BTUs transferred in one hour through one square foot of homogeneous material one-inch in thickness when there is a temperature difference of 1°F.
   C. Compression Fit Method: To allow for expansion and contraction of the insulation, the insulation must be installed in compression of at least 2 percent of overall length.

1.03 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

2.01 Polyolefin/Polyethylene -- Elastomeric Insulation:

2.01.1 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.

A. Insulation material shall be a flexible, closed-cell


2. Flexible elastomeric in tubular foam. AC/Accoflex, AP/Armaflex, AP/Armaflex SS. This product meets the requirements as defined in ASTM C 534, Grade 1, Type I, “Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form”

B. Materials 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.

C. Materials shall have a maximum thermal conductivity of 0.27 Btu-in./h-ft²-°F at a 75°F mean temperature when tested in accordance with ASTM C 177 or ASTM C 518, latest revisions.

D. 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.

2.02 Adhesives and Finishes

A. Adhesive shall be the insulation manufacturer's recommended contact adhesive: Armaflex 520, Armaflex 520 BLV.

B. Insulation finish shall be the insulation manufacturer's recommended finish: WB Armaflex Finish.

C. Accessories such as adhesives, mastics and cements shall have the same properties as listed above and shall not detract from any of the system ratings as specified above.
Part 3 – Installation

3.01 Piping:

A. Install pipe insulation by slitting tubular sections and applying onto piping or tubing. Alternately, whenever possible, slide unslit sections over the open ends of piping or tubing. All seams and butt joints shall be adhered and sealed using Armaflex 520 or 520 BLV Adhesive. A thin coat of adhesive must be applied to both surfaces, allowed to tack and join both surfaces with firm pressure. When using AP/Armaflex SS, TUBOLIT SS, SSA 2000 only the butt joints shall be adhered using Armaflex 520 or 520 BLV Adhesive.

B. The insulation must be installed in compression to allow for expansion and contraction. Install an additional 1.5 inches of insulation for every six feet of installed pipe or an additional 2 percent of measured pipe length.

C. Insulation shall be pushed onto the pipe, never pulled. Stretching of insulation may result in open seams and joints.

D. Tape the ends of the copper tubing before slipping the Armaflex or TUBOLIT pipe insulation over the new pipes to prevent dust from entering the pipe.

E. All edges shall be clean cut. Rough or jagged edges of the insulation shall not be permitted. Proper tools such as sharp knives must be used.

F. On heat traced systems, the tracer shall not exceed the allowable temperature limit of the insulation material. Insulation ID may need to be oversized to accommodate heat trace tape.

G. Seams shall be staggered when applying multiple layers of insulation.

3.02 Outdoors Exposed Piping:

A. All outdoor exposed piping shall be painted with two coats of WB Armaflex Finish. Prior to applying the Finish, the insulation shall be wiped clean with denatured alcohol. The Finish shall not be tinted. To insure good adhesion, the temperature should be above 50 °F during application and drying.

B. All outdoor exposed piping shall have the seams located on the lower half of the pipe.

C. As an alternative to WB Armaflex Finish, metal or aluminum jacketing may be used and should be applied according to the manufacturer’s recommendations.

3.03 Insulation Thickness Recommendations

A. The insulation thickness recommendations are based on heat loss calculations, consult local energy code requirements for minimum insulation thickness.

<table>
<thead>
<tr>
<th>Piping System</th>
<th>Up to 2”</th>
<th>Over 2” to 4”</th>
<th>Over 4” to 6”</th>
<th>Over 6”</th>
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</thead>
<tbody>
<tr>
<td>Plumbing:</td>
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<tr>
<td>Cold Water</td>
<td>1/2”</td>
<td>1/2”</td>
<td>1/2”</td>
<td>3/4”</td>
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<tr>
<td>Hot Water</td>
<td>1/2”</td>
<td>1/2”</td>
<td>3/4”</td>
<td>3/4”</td>
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</tbody>
</table>

Hydronic Systems (Use AP/Armaflex or AC/Accoflex only)

| Heating Hot Water       | 3/4”     | 3/4”          | 1”            | 1”      |
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