

Refrigeration Insulation Specification for Supermarkets

1.1 Quality Assurance

- 1.1.1 Insulation shall be a flexible, closed-cell elastomeric pipe insulation: AP Armaflex, AC Accoflex. Adhesive shall be Armaflex 520, 520 Black or 520 BLV Adhesive. The insulation must conform to ASTM C 534 Grade 1, Type I.
- 1.1.2 Insulation materials shall have a closed cell structure to prevent moisture from wicking which makes it an efficient insulation.
- 1.1.3 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.
- 1.1.4 Insulation materials shall have a flame-spread index of less than 25 and a smoke-developed index of less than 50 as tested in accordance with ASTM E 84 and CAN ULC S102 which is a requirement of the Canadian building code. In addition, the products, when tested, shall not melt or drip flaming particles, and the flame shall not be progressive.
- 1.1.5 Insulation materials shall have a maximum thermal conductivity of 0.27 Btu-in./h-ft²-°F at a 75°F mean temperature as tested in accordance with ASTM C 177 or ASTM C 518.
- 1.1.6 Insulation materials shall have a maximum water vapor transmission of 0.08 perm-inches when tested in accordance with ASTM E 96, Procedure A.

1.2 Application

CAUTION - The following thickness specifications have been based upon Armacell NORMAL Design Conditions of 85°F and 70% RH. Deviations from these design conditions may change the Armaflex thickness requirements. (Contact Armacell for assistance with thickness recommendations under alternate design conditions.)

- 1.2.1 All liquid and suction lines shall be insulated continuously from a point 6" inside the display case to the suction service valve at the compressor.
- 1.2.2 All low temperature lines (+10°F and below) shall be insulated with a minimum of 3/4" wall thickness.
- 1.2.3 All medium and high temperature lines (above +10°F) shall be insulated with a minimum of 1/2" wall thickness.
- 1.2.4 Heat reclaim lines shall be insulated from the condensing unit to the heat reclaim units with 3/4" thickness. This may only be necessary where these lines are in outdoor ambients or passing through non-conditioned spaces.
- 1.2.5 The piping design must allow for adequate spacing of insulation thickness and cross ventilation around the insulation. Do not crowd the insulation.

1.3 Installation

- 1.3.1 All refrigerant copper lines must be free of extraneous chemicals such as corrosive cleaners or building materials' dust prior to the installation of the insulation. The insulation must be clean and dry prior to installation.

1.3.2 Refrigerant pipe shall be sealed while slipping on insulation to prevent foreign matter from entering the tube.

1.3.3 Insulation is to be slid onto pipe; longitudinal slitting of the insulation is not allowed except on mitered sections. Insulation shall be pushed onto pipe, not pulled.

1.3.4 Insulation shall be mitered, preadhered and longitudinally slit inside throat to fit over all P-traps, tees and 90° elbows.

1.3.5 All butt joints and mitered seams shall be adhered with full coverage of adhesive on both surfaces. Insulation shall not be stretched when adhering.

1.3.6 Insulation must be installed in an adequately ventilated area. It may be necessary to increase insulation thickness if adequate ventilation is not present, Do not crowd the insulation, allow for adequate air movement.

1.3.7 At the beginning, at every 12 to 18 feet, and at the ends of piping runs, the insulation shall be adhered directly to the copper using a 2" strip of adhesive. Insulation should not be adhered to the pipe at the extreme low points in any piping run.

1.3.8 Saddles shall be installed under all insulated lines at unistrut clamps, clevis hangers, or locations where insulation may be compressed.

1.3.8.1 Armafix IPH or NPH insulation pipe hangers can be installed at the compression locations and the seams shall be sealed with Armaflex 520, 520 Black or 520 BLV contact adhesive. To minimize the movement of Armafix, it is recommended that a pair of non-skid pads be adhered to the clamps. In addition, to prevent loosening of the clamps, use of an anti-vibratory fastener, such as a nylon-locking nut, is also recommended.

1.3.8.2 Wood dowels or blocks, of a thickness equal to the insulation, can be inserted and must be completely sealed into the insulation at the saddle locations. All seams shall be sealed with Armaflex 520, 520 Black or 520 BLV contact adhesive.

1.3.8.3 Hangers clamped directly to the pipe shall be insulated over the hanger; insulation shall be fully adhered to the hanger. In addition, hangers with double rods shall be insulated between the rods. All seams of the insulation shall be sealed with adhesive.

1.3.9 All insulation exposed to sunlight or installed outdoors shall be protected with two coats of WB Armaflex Finish or weather resistant coating.



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