1.01 INSULATION THICKNESS AND TYPES

A. All supply ductwork in non-conditioned spaces shall be insulated as follows:

1. Exposed Ductwork: 1.5-inches rigid fiberglass board, 3.0 pounds per cubic foot density, to a minimum R-value of 5, complete with a factory applied reinforced aluminum foil vapor barrier, suitably anchored and sealed at all points.

2. Concealed Ductwork: 1.5-inches fiberglass blanket, 0.75 pounds per cubic foot density, to a minimum R-value of 5, complete with a factory applied vapor barrier, suitably anchored and sealed at all points.

B. The use of acoustic lining shall be minimized. Sound traps are the preferred method of sound attenuation. Lining in medium and high velocity ducts shall have perforated metal cover (i.e., double wall construction). Exposed lining is acceptable downstream of VAV boxes only. If used, acoustic lining shall be installed to the latest SMACNA standards. It shall be rated to prevent fiber erosion at air velocities up to 4,000 FPM and shall have a minimum density of 1.5 pounds per cubic foot. The liner must be installed with sheet metal nosing at the leading edge. Exposed edges-including butt joints - shall be sealed with mastic.

C. Outside Air Intakes and Exterior Ducts: 2-inch thick rigid, fiberglass board, 6.0 pounds per cubic foot density, to a minimum R-value of 8, complete with insulation faced and anchored as described for exposed ductwork.

D. Dedicated outside air system supply ductwork installed in non-conditioned spaces shall be insulated as mentioned above, even if the design temperature difference between the operating temperature and duct plenum is within 15°F. This will allow future operation at lower system discharge air temperatures, if needed, to provide additional zone humidity control.

E. The use of flexible elastomeric insulation on ductwork is permitted as an acceptable alternative to fiberglass. Insulation shall be adhered to 100% of the duct surface area.
PART 2: PRODUCTS

2.01 PREFERRED MANUFACTURERS

A. Fiberglass Insulation:
   1. Johns Manville
   2. Knauf

B. Flexible Elastomeric:
   1. Armacell LLC