

SECTION 23 07 00
HVAC INSULATION
Design Standard

PART 1 GENERAL:

1.1 PURPOSE

The heating, ventilating, and air-conditioning insulation is an essential element of the mechanical systems. This design standard has the purpose of creating a consistent application of insulation requirements throughout the San Mateo County Community College District therefore achieving a standard of quality for maintenance, energy efficiency, and reliability throughout all renovation and new building projects.

PART 2 PRODUCTS

Design and specify work to include materials and installation of insulation, jackets and accessories for a complete and operable system.

2.1 GENERAL:

- A. Adhere to the requirements of the California Energy Code – Title 24, latest edition.
- B. Insulation shall be applied on clean, dry surfaces and only after tests and approvals required by the specifications have been completed.
- C. All pipe insulation on piping operating below ambient temperature shall be continuous through wall and ceiling openings and sleeves.
- D. Insulation on all cold surfaces must be applied with a continuous, unbroken vapor seal. Hangers, supports, anchors, etc, which are secured directly to cold surfaces shall be adequately insulated and vapor sealed to prevent condensation.
- E. Specified adhesives, mastics, and coatings shall be applied at the manufacturer's recommended minimum coverage per gallon.
- F. Edges of vapor barrier insulation at valve stems, instrument wells, unions, and other raw edges shall be sealed adequately to prevent moisture from penetrating the insulation.

2.2 FIRE HAZARD RATINGS

- A. All insulation shall have composite (insulation jacket and adhesive used to adhere the jacket to the insulation) Fire and Smoke Hazard ratings as tested under procedure ASTM E 84, NFPA 225, and UL 723.

2.3 INSULATION PROTECTION SHIELDS:

- A. To prevent crushing of insulation, insulation protection shields shall be installed at all pipe hangers and supports. Shields shall span an arc of 180°. Provide full size diameter hangers and shields (18 gauge minimum) for piping. Provide 18-inch long, non-compressible insulation section at insulation shields for lines 2 inches and larger.

2.4 INSULATION JACKETING

- A. Provide aluminum jacketing for all piping located aboveground, outdoors.

2.5 DUCTWORK

- A. In general, duct system shall be insulated with fiberglass blanket. Insulation on all cold surfaces shall be provided with a vapor barrier jacket.
- B. Ductwork requiring sound attenuation and ductwork exposed to the weather may utilize duct lining with mold, humidity, and erosion resistant surfaces compliant to UL 181. The air stream surface shall contain an EPA registered antimicrobial agent in order to reduce the potential of microbial growth that may affect this product.

2.6 PIPING:

- A. In general, piping systems shall be insulated with fiberglass piping insulation with an all-purpose jacket. Fittings, flanges, and valves shall be insulated with fiberglass inserts and premolded polyvinyl or PVC jackets.
- B. Refrigerant piping systems shall be insulated with elastomeric pipe insulation.
- C. Calcium silicate or high-temperature fiberglass shall be used in high temperature applications.
- D. Special insulation protection shall be considered for areas subject to abuse and moisture, such as outside areas, washdown areas, public areas, and classrooms.
- E. Removable insulated jackets shall be provided on all valves.

2.7 EQUIPMENT

At a minimum, the following equipment shall be provided with insulation:

- A. Air eliminators
- B. Boilers
- C. Chilled water pump bodies
- D. Hot water storage tanks
- E. Heat exchangers
- F. Cold surfaces of chillers
- G. Flue pipe
- H. Engine exhaust

2.8 APPROVED MANUFACTURERS:

- A. Armacell LLC Armaflex
- B. Certainteed
- C. Johns Manville
- D. Knauf
- E. Owens-Corning Brady

PART 3 EXECUTION

3.1 SUBSTITUTES ALLOWED?

Yes, if performance and quality equivalency can be evidenced.

3.2 ASSOCIATED DESIGN STANDARDS AND CONSTRUCTION SPECIFICATIONS:

Division 23 Design Standards and Construction Specifications

END OF SECTION