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Preparing Activity: LANTNAVFACENGCOM Based on UFGS-15080N

ITALIAN GUIDE SPECIFICATIONS

Use for ITALIAN projects only

SECTION 15080

MECHANICAL INSULATION

05/02

NOTE: This guide specification is issued by the
Atlantic Division, Naval Facilities Engineering
Command for regional use in Italy.

NOTE: This guide specification covers the
requirements for field-applied mechanical insulation
for mechanical systems including heating,
ventilation, and cooling (HVAC) equipment, ducts,
and piping which is located within, on, under, and
adjacent to buildings; and for plumbing systems.

NOTE: Comments and suggestion on this specification
are welcome and should be directed to the technical
proponent of the specification. A listing of the
technical proponents, including their organization
designation and telephone number, is on the Internet.

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer
choices or locations where text must be supplied by
the designer.

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the
extent referenced. The publications are referred to within the text by the
basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ITALIAN NATIONAL ASSOCIATION FOR UNIFICATION OF STANDARDS (UNI)

NOTE: A UNI Norm is a technical normative recognized as Italian Law, submitted by a private organization "Ente Nazionale Italiano di Unificazione" for Italy and is available only in the Italian language. It is the National Standard.

- UNI 6547 (1985) Mineral fibre boards for thermal and acoustical insulation - Determination of the flexibility index
- UNI 7819 (1988) Cellular plastics, rigid - Expanded polystyrene sheets for thermal insulation - Types, requirements and tests
- UNI 8811 (1987) Mineral fibres - Resin bounded blankets for thermal insulation - Acceptance criteria
- UNI 9299 (1988) Mineral fiber - Semirigid mineral fiber panel for thermal matters - Acceptance criteria
- UNI 10376 (1994) Thermal insulation for heating and cooling systems for buildings

ITALIAN/EUROPEAN HARMONIZATION STANDARDS (UNI EN)(UNI ENV)(CEI EN)
 (UNI EN ISO)(UNI ISO)

NOTE: A UNI EN, UNI ENV, CEI EN, UNI EN ISO or UNI ISO is a European Standard with a coincident Italian National Standard or International Standard. The two standards are identical, with most (but not all) EN's available in the English language and the UNI available only in the Italian language.

- UNI EN 485-3 (1993) Aluminum and aluminum alloys - Sheet, strip and plate - Part 3: Tolerances on shape and dimensions for hot-rolled products
- UNI EN 485-4 (1993) Aluminum and aluminum alloys - Sheet, strip and plate - Part 4: Tolerances on shape and dimensions for cold-rolled products

ITALIAN LAWS AND NORMS (D.M.)(LAW)(CIRC.)

NOTE: Italian laws and normatives are the legislative regulations and decrees issued by the Italian government in the form of laws, norms, decrees, circulars, and letters. These Laws and Decrees concur together with Norms and Standards in forming the governing directives for construction.

- | | |
|------------|---|
| Law 10 | (9 January 1991) Norms for the Implementation of the National Energy Plan Concerning the National Energy Saving and Development of Renewable Sources of Energy |
| D.P.R. 412 | (26 August 1993) Regulation regarding Norms for the Design, Installation, Use and Maintenance of Thermal Plants in Building for the Containment of Energy Consumption in accordance with Law 10 |

1.2 SYSTEM DESCRIPTION

Provide [new and modify existing] field-applied mechanical insulation for mechanical systems [and existing insulated mechanical systems affected by the Contractors operations]. Mechanical systems include heating, ventilating, and cooling equipment, ducts, and piping which is located within, on, under, and adjacent to buildings; and for plumbing systems. Obtain Contracting Officer's written approval of each system before applying field-applied insulation. Provide new asbestos-free insulation materials.

1.2.1 Packaging and Labeling

Each package or standard container of insulation, jackets, cements, adhesives, and coatings delivered to the Project site shall have the Manufacturer's stamp or label attached giving the name of the Manufacturer, brand, and description of material. Insulation packages and containers shall be asbestos-free.

1.2.2 Surface Burning Characteristics

All materials specified herein shall have a maximum flame spread of 25 and maximum smoke developed rating of 50 when tested in accordance with ASTM E 84.

1.3 SUBMITTALS

NOTE:

Submittals must be limited to those necessary for adequate quality control. The importance of an item in the project should be one of the primary factors in determining if a submittal for the item is required.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Recommended codes for Army projects are "RE" for Resident Engineer approval, "ED" for Engineering approval, and "AE" for Architect-Engineer approval. Codes following the "G" typically are not used for Navy projects.

Submittal items not designated with a "G" are considered as being for information only for Army projects and for Contractor Quality Control approval for Navy projects.

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-03 Product Data

- Piping insulation and jacket
- Duct insulation and jacket
- Equipment insulation and jacket
- Boiler stack insulation and jacket

1.4 IDENTIFICATION OF NEW ASBESTOS-FREE INSULATION

NOTE: Do not use for new buildings or existing buildings with no asbestos insulation.

Identify new asbestos-free insulation with "ASBESTOS-FREE" markings spaced at maximum of 6.0 mm intervals on the insulation jacket. Indicate the limits of new asbestos-free insulation with 51 mm wide orange bands with attached arrows pointing in the direction of the "ASBESTOS-FREE" markings.

PART 2 PRODUCTS

2.1 SOURCE MANUFACTURERS

2.1.1 Mechanical Insulation

The following manufacturers provide mechanical insulation products that generally comply with these specifications:

Armstrong World Industries, S.r.l
Via Venezia, 4
20060 Trezzano Rosa
Tel: 02/909652f r.a.
Fax: 02/90969375

ISOVER
BALZARETTI E MODIGLIANI
Via Romagnoli, 6
20146 Milano
Tel: 02/42431
Fax: 02/4120325

2.1 PIPING INSULATION AND JACKET

UNI 6547, UNI 8811, Law 10, and D.P.R. 412. Pipe insulation shall conform with the referenced publications and the specified temperature ranges and densities in kilograms per cubic meter (Kg/m³). Insulation for fittings, flanges, and valves shall be premolded, precut, or job-fabricated insulation of the same thickness and conductivity as used on adjacent piping. Unless otherwise specified, insulate all fittings, flanges and valves, except valve stems, hand wheels, and operators. Provide insulation with insulation manufacturer's standard reinforced fire retardant jackets, with or without integral vapor barrier as required by the service. Insulation jackets shall be factory cleanable, grease resistant, non-flaking and non-peeling suitable for field painting.

2.1.1 Fibrous Glass Preformed Insulation

Insulation shall have minimum density of 48 kilograms per cubic meter and shall be provided with a factory applied piping insulation jacket. Insulation shall comply with the following requirements:

Property	Value
Thermal conductivity coefficient at +/- 0 degrees C	0.032W/m degrees C
Temperature Range	7 degrees C to 135 degrees C
Moisture Absorption	Less than 0.2 percent by volume
Alkalinity	Less than 0.6 percent expressed as Na ₂ O
Corrosivity (with steel, copper,	Do not accelerate

Property	Value
aluminum)	
Shrinkage	None

2.1.2 Phenolic Foam Pipe Insulation

UNI 7819. Insulation shall be CFC free phenolic foam and shall be provided with a factory applied vapor barrier jacket. Provide with nominal density of 35.0 kg/ cubic meter, thermal conductivity of 0.019 W/mK at 24.0 degrees C, 0.34 ng/Pa.s.m water vapor permeability, and water absorption not exceeding 0.5 percent by volume. Insulation surface burning characteristics (ASTM E 84) for 50 mm thickness shall not exceed a flame spread of 25 and not exceed a smoke developed of 50. Insulation shall be suitable for cold service piping between minus 73 degrees C and 21 degrees C. Provide piping insulation jacket.

2.1.4 Flexible Cellular Preformed Pipe Insulation

UNI 10376. The minimum density limit of 72 kilograms per cubic meter may be waived if all other characteristics of the standard are met. Insulate with unicellular premolded pipe insulation. Piping insulation jacket is not required. Insulation shall conform to the following requirements:

Property	Value
Thermal conductivity coefficient at 32.2 degrees Celsius	0.040 W/(m degrees C)
Temperature range	from minus 28 degrees C to 104 degrees C
Moisture absorption	0.48/mq 24 h

2.1.5 Piping Insulation Jacket

Provide manufacturer's standard fire-retardant vapor barrier FSK jacket. FSK jacket shall be fabricated of a glass scrim reinforced laminate of aluminum foil and kraft paper bonded together with a fire retardant adhesive. Moisture vapor transmission shall not exceed 4.1×10^{-6} grams / (hr) (m²)(Pa). Provide factory prefabricated one-piece PVC insulation covers and mineral fiber insulation inserts of the same thickness as piping insulation for fittings, valves, and flanges.

2.1.6 Aluminum Jacket

UNI EN 485-3 and UNI EN 485-4, minimum thickness of 40 mm, with factory-applied polyethylene and kraft paper moisture barrier on inside surface. Provide smooth surface aluminum jackets for insulation outside diameters less than 200 mm. Provide corrugated surface aluminum jackets for insulation outside diameters 200 mm and larger. Provide stainless steel bands, minimum width of 15 mm. Provide factory prefabricated aluminum insulation covers for fittings, valves, and flanges.

[2.1.7 PVC Jacket

**NOTE: Use bracketed paragraph if ambient design wet
bulb temperature is below 22 degrees C for summer
design conditions.**

Provide PVC jacketing, pre-cut and curled, 20 mil thick, white UV-resistant, and flame/smoke rating of 25/50 in accordance with ASTM E 84. All joints and seams shall be solvent welded in accordance with manufacturer's recommendations. Tacks and staples will not be allowed.

2.2 DUCT INSULATION AND JACKET

2.2.1 Blanket Type Duct Insulation

UNI 9299. Fibrous glass insulation, minimum density of 16 kg/m³ 16 kg/m³. Thermal conductivity shall be 0.040 W/m degrees C at 24 degrees C 0.040 W/m degrees C at 24 degrees C mean. Provide with duct insulation jacket.

2.2.2 Rigid Type Duct Insulation

UNI 9299. Fibrous glass insulation, minimum density of 48 kg/m³. Thermal conductivity shall be 0.033 W/m degrees C degrees at 24 degrees C. Provide with duct insulation jacket.

2.2.3 Duct Insulation Jacket

Provide manufacturer's standard fire-retardant vapor barrier FSK jacket. FSK jacket shall be fabricated of a glass scrim reinforced laminate of aluminum foil and kraft paper bonded together with a fire retardant adhesive. Moisture vapor transmission shall not exceed 4.1×10^{-6} grams/(hr)(m²)(Pa). Jacket shall be suitable for painting.

2.3 EQUIPMENT INSULATION AND JACKET

Insulate all equipment and accessories as specified and as indicated on drawings. Increase the specified insulation thickness for equipment only where necessary to equal the thickness of angles or other structural members to make a smooth, exterior surface. Additional insulation is not required for factory-insulated equipment.

2.3.1 Mineral Fiber Block and Board Insulation

UNI 9299, minimum density of 96 kg per cubic meter. Thermal conductivity shall be 0.032 w/(m.k) at 24 degrees C.

2.3.3 Calcium Silicate Block and Board Insulation

UNI 10376. Inorganic, hydrous calcium silicate, non-asbestos fibrous reinforcement; incombustible. Thermal Conductivity of 0.086 at 260 degrees C, dry density of 240 kg per cubic meter, and compressive strength of 413.4 kPa minimum at 5 percent deformation. Flame spread 0 and smoke developed 0, when tested in accordance with ASTM E 84. Provide in preformed pipe

sections as appropriate for surface.

2.3.5 Phenolic Block and Board Insulation

UNI 7819. Insulation shall be CFC free phenolic foam and shall be provided with a factory applied vapor barrier jacket. Provide with nominal density of 35.0 kg/ cubic meter, thermal conductivity of 0.019 W/mK at 24 degrees C, 0.34 ng/Pa.s.m water vapor permeability, and water absorption not exceeding 0.5 percent by volume. Insulation surface burning characteristics (ASTM E 84) for 50 mm thickness shall not exceed a flame spread of 25 and not exceed a smoke developed of 50.

2.3.6 Equipment Insulation Jacket

Provide manufacturer's standard fire-retardant vapor barrier jacket. Provide equipment insulation with aluminum jacket or waterproof aluminum pigmented mastic as recommended by the insulation manufacturer.

NOTE: Delete the following if an engineered double wall stack product is to be utilized. Coordinate with boiler specification Section 15515, "Low Pressure Water Heating Boilers (Under 800,000 BTU/HR Output).

2.4 BOILER STACK INSULATION AND JACKET

Provide insulation for hot stacks (vents) within buildings.

2.4.1 Mineral Fiber Preformed Pipe Insulation

UNI 6547 and UNI 8811, minimum density of 96 kg per cubic meter.

2.4.2 Calcium Silicate Preformed Pipe Insulation

UNI 10376. Inorganic, hydrous calcium silicate, non-asbestos fibrous reinforcement; incombustible. Thermal Conductivity of 0.086 at 260 degrees C, dry density of 240 kg per cubic meter, and compressive strength of 413.4 kPa minimum at 5 percent deformation. Flame spread 0 and smoke developed 0, when tested in accordance with ASTM E 84. Provide in preformed pipe sections as appropriate for surface.

2.4.3 Aluminum Jacket

UNI EN 485-3 and UNI EN 485-4, minimum thickness of 0.40 mm, with factory-applied polyethylene and kraft paper moisture barrier on inside surface. Provide corrugated surface aluminum jackets. Provide stainless steel bands, minimum width of 13 mm. Provide factory prefabricated aluminum insulation covers for fittings.

PART 3 EXECUTION

3.1 INSTALLATION OF MECHANICAL INSULATION

Clean exterior of mechanical systems prior to the application of field-applied insulation. Install field-applied insulation in accordance with the manufacturer's recommendations and as specified herein. The completed installation shall have a fire hazard rating in accordance with ASTM E 84; flame-spread rating shall not exceed 25 and smoke developed rating shall not exceed 50 except as otherwise specified herein. Insulation shall be clean and dry when installed and prior to the application of jackets and coatings. Do not use short pieces of insulation materials where a full length section will fit. Provide insulation materials and jackets with smooth and even surfaces, with jackets drawn tight, and smoothly secured on longitudinal laps and end laps. Insulate fittings and piping accessories with premolded, precut, or field fabricated insulation of the same material and thickness as the adjoining pipe insulation. Provide unions, flanges, and piping accessories with readily removable sections of insulation and jacket. Provide insulation continuous through pipe hangers, pipe supports, pipe sleeves, wall openings, and ceiling openings, except at fire dampers in duct systems. Provide a complete moisture and vapor seal wherever insulation terminates against hangers, anchors, and other projections through insulation on cold surfaces; fill joints, breaks, punctures, and voids with vapor barrier compound and cover with vapor sealed material. Do not conceal equipment nameplates. Cover ends of exposed insulation with waterproof mastic.

3.2 PIPING INSULATION

Provide factory preformed pipe insulation. For insulation protection shields; provide rigid pipe insulation of the same thickness as adjacent pipe insulation and having a minimum compressive strength of 240 mm or provide hardwood plugs having a minimum of 650 mm bearing surface with the wood grain perpendicular to the pipe, between the insulation protection shields and the pipe; except insulation having a minimum density of 112 kg/m³ may be provided between the insulation protection shields and the pipe for piping 50 mm and smaller. Install insulation with joints tightly butted. Overlap longitudinal jacket laps not less than 38 mm. Wrap butt joints with butt strips not less than 75 mm wide of identical materials as jacket. Cement jacket laps and butt strips on both surfaces with fire-resistant, waterproof bonding adhesive or with factory-applied self-sealing system. Staples shall be stainless steel, outside clinched without complete penetration of insulation. If vapor barrier jacket is pierced or punctured, brush coat with vapor barrier coating to provide a vapor-tight covering. If molded or mitered fitting covers are used, join with fire-resistant, waterproof bonding adhesive or wire in place and provide with a smooth coat of finishing cement. For copper tubing sizes 50 mm and less, pipe insulation for elbows, tees, and valves may be mitered.

3.2.1 Insulation for Water Piping

Provide mineral fiber preformed pipe insulation for heating hot water piping, hot and cold domestic water piping, roof drain piping, and cold drain piping. Rigid cellular phenolic preformed pipe insulation having an insulating efficiency not less than that of the specified thickness of mineral fiber pipe insulation may be provided in lieu of mineral fiber pipe insulation.

3.2.1.1 Heating Hot Water piping, and Hot and Cold Domestic Water Piping

Provide piping sizes less than 15 to 38 mm with minimum of 25 mm thick mineral fiber pipe insulation. Recirculating hot domestic water piping loop shall have minimum of 25 mm thick mineral fiber pipe insulation. Pipe sizes of 50 through 80 mm shall have minimum of 38 mm thick mineral fiber pipe insulation. Pipe sizes 100 mm and larger shall have minimum of 50 mm thick mineral fiber pipe insulation.

3.2.1.2 Cold Drain Piping

Provide minimum of 25 mm thick mineral fiber pipe insulation. Do not insulate cold drain piping in crawl spaces or exposed to the weather.

3.2.1.3 Roof Drain Piping

Provide minimum of 25 mm thick mineral fiber pipe insulation for horizontal roof drain piping above grade, underside of roof drain body, and vertical piping between roof drain body and horizontal roof drain piping.

3.2.1.4 Water Piping With Electric-Resistance Heater Cable

Provide minimum of 50 mm thick mineral fiber pipe insulation.

3.2.2 Insulation for Chilled Water Piping and Chilled-Hot Water Piping

NOTE: Use bracketed paragraph if ambient design wet bulb temperature is below 22 degrees C for summer design conditions.

Provide rigid cellular phenolic preformed pipe insulation and jacket for chilled water piping and chilled-hot water piping. Provide piping sizes less than 65 mm with minimum of 38 mm thick rigid cellular phenolic pipe insulation. Provide piping sizes 75 mm and larger with minimum of 50 mm thick rigid cellular phenolic pipe insulation. For chilled water piping and chilled-hot water piping, the ends of pipe insulation and the space between the ends of pipe insulation and the piping shall be sealed off with waterproof vapor barrier coating at and around valves, fittings, flanges, unions, and in pipe runs at intervals not to exceed 4.57 mm. The entire distribution system shall be insulated and sealed with a waterproof vapor barrier coating or piping insulation jacket. Minimum thickness of rigid cellular phenolic preformed pipe insulation exposed to the weather shall be increased by 25 mm greater than the above thickness. [Mineral fiber preformed pipe insulation with solvent welded PVC jacket and insulating efficiency not less than that of the specified thickness of rigid cellular phenolic preformed pipe insulation may be provided in lieu of rigid cellular phenolic preformed pipe insulation.]

3.2.3 Insulation for Refrigerant Suction Piping

Provide minimum of 25 mm thick flexible elastomeric cellular preformed pipe

insulation. Seal joints with waterproof vapor barrier adhesive. Cover joints with 38 mm wide waterproof vapor barrier tape. Provide flexible elastomeric cellular insulation with two coats of white exterior acrylic emulsion paint.

3.2.4 Insulation for Steam Piping and Condensate Piping

Provide mineral fiber preformed pipe insulation. Minimum thickness of mineral fiber preformed pipe insulation exposed to the weather shall be 25 mm greater than minimum thickness in the following table.

MINIMUM THICKNESS OF MINERAL FIBER PIPING INSULATION (mm)

Nominal Pipe Sizes (mm)	Steam Piping Insulation Thickness (mm)	Condensate Piping Insulation Thickness (mm)
up to 32	38	25
38 to 80	50	38
100 and larger	76	51

3.2.5 Piping Insulation Covering

Provide piping insulation with piping insulation jacket.

3.2.6 Piping Insulation Covering Exposed to the Weather

Provide piping insulation with aluminum jacket. Machine cut the jacket to produce a straight, smooth edge. Lap longitudinal seams and circumferential seams not less than 50 mm. Install jackets on horizontal piping with the longitudinal seam approximately midway between horizontal centerline and the bottom side of pipe. Install with the top edge of jacket overlapping the bottom edge of jacket and with the seam of each jacket slightly offset from the seam of the adjacent jacket. Install jackets on vertical piping and on piping pitched from the horizontal from low point to high point so the lower circumferential edge of each jacket overlaps the jacket below. Provide factory prefabricated covers for insulation on fittings, valves, and flanges. Finish jackets neatly at pipe hangers and pipe supports. Terminate jackets neatly at the ends of unions, valves, and strainers. Secure jacket with stainless steel bands spaced not more than 200 mm centers.

3.3 DUCT INSULATION

Provide duct insulation and jacket on exterior of supply ducts, return ducts, outside air intake ducts, and plenums, including metal on back of louvers, diffusers and registers. Apply insulation with joints tightly butted. Space pins or anchors at maximum of 300 mm centers; secure insulation with washers and clips. Pins or anchors shall be metal electrically welded to duct surface or shall be metal attached to duct surface with waterproof adhesive especially designed for attachment to metal surfaces. Sagging of duct insulation will not be permitted. Insulation shall be tightly and smoothly applied to the ducts. Provide

minimum thickness of 38 mm of rigid duct insulation in mechanical equipment rooms and where indicated. Provide minimum thickness of 50 mm of blanket duct insulation in other locations. Both exterior duct insulation and acoustical duct lining are required when acoustical duct lining is indicated.

3.3.1 Blanket Duct Insulation

Secure to bottom of rectangular horizontal and sloping ducts more than 600 mm wide by impaling over pins or anchors. Secure to all sides of horizontal ducts by impaling over pins or anchors spaced at not more than 600 mm intervals.

3.3.2 Rigid Duct Insulation

Secure to duct by impaling over pins or anchors located not more than 75 mm from edge of insulation and spaced at maximum 300 mm centers.

3.3.3 Vapor Barrier

Fill joints, breaks, punctures, and voids with vapor barrier coating compound and cover with vapor barrier jacket. At joints, the vapor barrier jacket for insulation shall be covered with 100 mm wide pressure-sensitive vapor seal tape of material identical to jackets, or shall have 50 mm wide laps drawn tight and secured with vapor seal adhesive. The joints and openings where the facing is pierced or punctured by pins, staples, or other means shall be brush coated with 51 mm wide strips of vapor barrier coating compound.

3.4 WEATHERPROOF DUCT INSULATION

Provide minimum thickness of 75 mm of rigid type duct insulation , or rigid cellular phenolic thermal preformed board insulation on exterior of supply ducts, return ducts, and plenums exposed to the weather. Coat sides, ends, and edges of insulation with a waterproof mastic. Apply insulation in a solid bed of waterproof adhesive and additionally secure with 1.0 mm galvanized metal studs welded to the metal ducts and having stainless steel washers not less than 51 mm in diameter under the metal mechanical fasteners for bearing on the insulation and to hold the insulation in place. Provide studs at the rate of one per 0.10 sq. m of metal duct, spaced at maximum of 300 mm centers along both edges of top, bottom, and sides of ducts and at joints in insulation. After the insulation is in place, cover joints and corner joints, with glass fiber reinforcing mesh 300 mmwide and continuous for the length of every joint; apply glass fiber reinforcing mesh in waterproof adhesive. After covering is complete, coat exterior surfaces of insulation with an approved waterproof and weather-resistant aluminum pigmented mastic recommended by the insulation manufacturer for this type of application. Apply mastic in two equal coats to a minimum total thickness of 6.5 mm; reinforce between coats with a layer of glass fiber reinforcing mesh; lap glass fiber reinforcing mesh 150 mm at joints. Repeat this procedure to provide two layers of glass fabric and mastic. Insulation less than 300 mm in least dimension shall not be used along the edges of the duct bottom. Slope insulation from top center line of horizontal rectangular ducts to top edges of ducts with minimum

slope of 80 mm per meter to prevent water from ponding on top of duct insulation.

3.5 EQUIPMENT INSULATION

3.5.1 Pumps

Provide pumps with insulated metal casings properly shaped for a correct fit and designed for easy removal and replacement. Joints shall coincide with joints in each pump casing. Apply minimum thickness of 51 mm of insulation in a solid bed of waterproof adhesive to exterior of metal casings. After the insulation is in place, coat exterior surfaces of insulation with an approved waterproof and weather-resistant aluminum pigmented mastic recommended by the insulation manufacturer for this type of application. Apply mastic in two equal coats to a minimum total thickness of 6.5 mm; reinforce between coats with a layer of glass fiber reinforcing mesh; lap glass fiber reinforcing mesh 150 mm at joints.

3.5.2 Expansion Tanks, Receivers, Converters, and Storage Tanks

Provide minimum thickness of 50 mm of insulation for expansion tanks. Provide minimum thickness of 100 mm of insulation for condensate receivers, converters, and hot domestic water storage tanks. Secure insulation with 1.6 mm stainless steel or copper clad wire or 19 mm wide 38 mm thick stainless steel bands, each spaced on 300 mm centers. Miter or cut insulation to ensure tight joints. Seal joints with insulating mastic. Provide insulation with 15 mm thick hard-finish cement applied over zinc-coated wire netting. After the cement is in place, coat exterior surfaces of cement with an approved waterproof and weather-resistant aluminum pigmented mastic. Apply mastic in two equal coats to a minimum total thickness of 6.5 mm; reinforce between coats with a layer of glass fiber reinforcing mesh; lap glass fiber reinforcing mesh 150 mm at joints.

3.6 BOILER STACK INSULATION AND JACKET

Provide minimum thickness of 100 mm of insulation for boiler stacks inside of buildings. Provide insulation with aluminum jacket.

3.7 FIELD INSPECTIONS

Visually inspect the insulation installation of all mechanical systems to ensure that materials conform to requirements specified herein.

-- End of Section --