JOINT BASE LEWIS McCHORD DESIGN STANDARDS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION SECTION 07 21 16

MINERAL FIBER BLANKET INSULATION

# 07/18

PART 1 GENERAL

* 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.

ASTM INTERNATIONAL (ASTM)

ASTM C665 (2017) Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

ASTM C930 (2018) Standard Classification of Potential Health and Safety Concerns Associated with Thermal Insulation Materials and Accessories

ASTM D3575 (2014) Flexible Cellular Materials Made From Olefin Polymers

ASTM D3833/D3833M (1996; R 2011) Water Vapor Transmission of Pressure-Sensitive Tapes

ASTM D4397 (2016) Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications

ASTM D5359 (2015) Standard Specification for Glass Cullet Recovered from Waste for Use in Manufacture of Glass Fiber

ASTM E136 (2016) Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C

ASTM E84 (2018) Standard Test Method for Surface Burning Characteristics of Building Materials

ASTM E96/E96M (2016) Standard Test Methods for Water Vapor Transmission of Materials

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 211 (2016) Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances

NFPA 31 (2016) Standard for the Installation of Oil-Burning Equipment

NFPA 54 (2018) National Fuel Gas Code

NFPA 70 (2017; ERTA 1-2 2017; TIA 17-1; TIA 17-2;

TIA 17-3; TIA 17-4; TIA 17-5; TIA 17-6;

TIA 17-7; TIA 17-8; TIA 17-9; TIA 17-10;

TIA 17-11; TIA 17-12; TIA 17-13; TIA

17-14) National Electrical Code TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY (TAPPI)

TAPPI T803 OM (2010) Puncture Test of Container Board

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.134 Respiratory Protection UL ENVIRONMENT (ULE)

ULE Greenguard UL Greenguard Certification Program

* 1. SUBMITTALS

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NOTE: If 01 33 29 is incorporated in the specifications, select that option below. If not, select the option for 01 57 19. Include items noted at SD-01 and SD-11 as applicable, based on project scope.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submittals with an "S" are for inclusion in the [Sustainability eNotebook, in conformance to Section 01 33 29 SUSTAINABILITY REPORTING]‌[Environmental Records Binder, in conformance to Section 01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS]. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Insulation (Recycled Content); S

Interior Materials (VOC Content); S

SD-03 Product Data Blanket Insulation

Sill Sealer Insulation Vapor Retarder

Pressure Sensitive Tape Accessories

SD-08 Manufacturer's Instructions Insulation

SD-11 Closeout Submittals

Insulation (Recycled Content); S

Interior Materials (VOC Content); S

1.3 SUSTAINABLE DESIGN CERTIFICATION

Facilities used by people sensitive to air quality conditions such as Child Development Centers and medical facilities shall be provided with products that meet Gold standard. Product must be third party certified in accordance with ULE Greenguard Gold.

* 1. DELIVERY, STORAGE, AND HANDLING
		1. Delivery

Deliver materials to site in original sealed wrapping bearing manufacturer's name and brand designation, specification number, type, grade, R-value, and class. Store and handle to protect from damage. Do not allow insulation materials to become wet, soiled, crushed, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storing, and protecting of materials before and during installation.

* + 1. Storage

Inspect materials delivered to the site for damage; unload and store out of weather in manufacturer's original packaging. Store only in dry locations, not subject to open flames or sparks, and easily accessible for inspection and handling.

* 1. SAFETY PRECAUTIONS
		1. Respirators

Provide installers with dust/mist respirators, training in their use, and protective clothing, all approved by National Institute for Occupational Safety and Health (NIOSH)/Mine Safety and Health Administration (MSHA) in accordance with 29 CFR 1910.134.

* + 1. Other Safety Concerns

Consider other safety concerns and measures as outlined in ASTM C930.

PART 2 PRODUCTS

* 1. PRODUCT SUSTAINABILITY CRITERIA

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NOTE: If 01 33 29 is incorporated in the specifications, select that option below. If not, select the option for 01 57 19.

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* + 1. Recycled Content for Insulation Materials

Provide products with recycled content and provide documentation in accordance with Section [01 33 29 SUSTAINABILITY REPORTING][01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS] paragraph RECYCLED CONTENT. For more information see [https://sftool.gov/greenprocurement/green-products/1/‌construction-materials/22/building-insulation/0?addon=False](https://sftool.gov/greenprocurement/green-products/1/construction-materials/22/building-insulation/0?addon=False) and https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program.

2.1.2 Reduce Volatile Organic Compounds (VOC)

 Provide interior products with reduced VOC content and provide documentation in accordance with Section [01 33 29 SUSTAINABILITY REPORTING][01 57 19 TEMPORARY ENVIRONMENTAL CONTROLS] paragraph REDUCE VOLATILE ORGANIC COMPOUNDS (VOC) (LOW EMITTING MATERIALS).

2.2 BLANKET INSULATION

ASTM C665, II, blankets with non-reflecting coverings and III, blankets with reflective coverings; Class A, membrane-faced surface with a flame spread of 25 or less when tested in accordance with ASTM E84.

* + 1. Thermal Resistance Value (R-VALUE)

The R-Value must be as indicated on drawings.

* + 1. Prohibited Materials

Do not provide asbestos-containing materials.

2.3 BLOCKING

Wood, metal, unfaced mineral fiber blankets in accordance with ASTM C665, Type I, or other approved materials. Use only non-combustible materials meeting the requirements of ASTM E136 for blocking around chimneys and heat producing devices.

2.5 VAPOR RETARDER

a. 0.15 mm 6 mil thick polyethylene sheeting conforming to ASTM D4397 and having a water vapor permeance of 57.2 ng/(Pa \* s \* m2) 1 perm or less when tested in accordance with ASTM E96/E96M.

2.6 PRESSURE SENSITIVE TAPE

As recommended by the vapor retarder manufacturer and having a water vapor permeance rating of 57.2 ng/(Pa \* s \* m2) one perm or less when tested in accordance with ASTM D3833/D3833M.

* 1. ACCESSORIES
		1. Adhesives

As recommended by insulation manufacturer. Interior products must meet requirements at paragraph REDUCED VOLATILE ORGANIC COMPOUND (VOC) CONTENT in this section.

* + 1. Mechanical Fasteners

Corrosion resistant fasteners as recommended by the insulation manufacturer.

PART 3 EXECUTION

* 1. EXISTING CONDITIONS

Before installing insulation, ensure that areas that will be in contact with the insulation are dry and free of projections which could cause voids, compressed insulation, or punctured vapor retarders. If moisture or other conditions are found that do not allow the workmanlike installation of the insulation, do not proceed but notify Contracting Officer of such conditions.

* 1. PREPARATION
		1. Blocking at Attic Vents and Access Doors

Prior to installation of insulation, install permanent blocking to prevent insulation from slipping over, clogging, or restricting air flow through soffit vents at eaves. Install permanent blocking around attic trap doors. Install permanent blocking to maintain accessibility to equipment or controls that require maintenance or adjustment.

* + 1. Blocking Around Heat Producing Devices

Install non-combustible blocking around heat producing devices to provide the following clearances:

* + - 1. Recessed lighting fixtures, including wiring compartments, ballasts, and other heat producing devices, unless these are certified by the manufacturer for installation surrounded by insulation: 75 mm 3 inches from outside face of fixtures and devices or as required by NFPA 70 and, if insulation is to be placed above fixture or device, 600 mm 24 inches above fixture.
			2. Masonry chimneys or masonry enclosing a flue: 50 mm 2 inches from outside face of masonry. Masonry chimneys for medium and high heat operating appliances: Minimum clearances required by NFPA 211.
			3. Vents and vent connectors used for venting the products of combustion, flues, and chimneys other than masonry chimneys: Minimum clearances as required by NFPA 211.
			4. Gas Fired Appliances: Clearances as required in NFPA 54.
			5. Oil Fired Appliances: Clearances as required in NFPA 31.

Blocking around flues and chimneys is not required when insulation blanket, including any attached vapor retarder, passed ASTM E136, in addition to meeting all other requirements stipulated in Part 2. Blocking is also not required if the chimneys are certified by the manufacturer for use in contact with insulating materials.

* 1. INSTALLATION
		1. Insulation

Install and handle insulation in accordance with manufacturer's instructions. Keep material dry and free of extraneous materials. Any materials that show visual evidence of biological growth due to presence of moisture must not be installed on the building project. Ensure personal protective clothing and respiratory equipment is used as required. Observe safe work practices.

* + - 1. Electrical wiring

Do not install insulation in a manner that would sandwich electrical wiring between two layers of insulation.

* + - 1. Continuity of Insulation

Install blanket insulation to butt tightly against adjoining blankets and to studs, rafters, joists, sill plates, headers and any obstructions. Where insulation required is thicker than depth of joist, provide full width blankets to cover across top of joists. Provide continuity and integrity of insulation at corners, wall to ceiling joints, roof, and floor. Avoid creating thermal bridges.

* + - 1. Installation at Bridging and Cross Bracing

Insulate at bridging and cross bracing by splitting blanket vertically at center and packing one half into each opening. Butt insulation at bridging and cross bracing; fill in bridged area with loose or scrap insulation.

3.3.1.4 Cold Climate Requirement

Place insulation to the outside of pipes.

3.3.1.5 Insulation Blanket with Affixed Vapor Retarder

Locate vapor retarder as indicated. Do not install blankets with affixed vapor retarders unless so specified. Unless the insulation manufacturer's instructions specifically recommend not to staple the flanges of the vapor retarder facing, staple flanges of vapor retarder at 150 mm 6 inch intervals flush with face or set in the side of truss, joist, or stud.

Avoid gaps and bulges in insulation and "fishmouth" in vapor retarders. Overlap both flanges when using face method. Seal joints and edges of vapor retarder with pressure sensitive tape. Stuff pieces of insulation into small cracks between trusses, joists, studs and other framing, such as at attic access doors, door and window heads, jambs, and sills, band joists, and headers. Cover these insulated cracks with vapor retarder material and tape all joints with pressure sensitive tape to provide air and vapor tightness.

3.3.1.6 Insulation without Affixed Vapor Retarder

Provide snug friction fit to hold insulation in place. Stuff pieces of insulation into cracks between trusses, joists, studs and other framing, such as at attic access doors, door and window heads, jambs, and sills, band joists, and headers.

3.3.1.7 Sizing of Blankets

Provide only full width blankets when insulating between trusses, joists, or studs. Size width of blankets for a snug fit where trusses, joists or studs are irregularly spaced.

3.3.1.8 Special Requirements for Ceilings

Place insulation under electrical wiring occurring across joists. Pack insulation into narrowly spaced framing. Do not block flow of air through soffit vents. Attach insulation to attic door by adhesive or staples.

3.3.1.9 Installation of Sill Sealer

Size sill sealer insulation and place insulation over top of masonry or concrete perimeter walls or concrete perimeter floor slab on grade. Fasten sill plate over insulation.

3.3.1.10 Special Requirements for Floors

Hold insulation in place with corrosion resistant wire mesh, wire fasteners, or wire lacing.

3.3.1.11 Access Panels and Doors

Affix blanket insulation to access panels greater than one square foot and access doors in insulated floors and ceilings. Use insulation with same

R-Value as that for floor or ceiling.

3.3.2 Installation of Separate Vapor Retarder

Apply continuous vapor retarder as indicated. Overlap joints at least 150 mm 6 inches and seal with pressure sensitive tape. Seal at sill, header, windows, doors and utility penetrations. Repair punctures or tears with pressure sensitive tape.

 -- End of Section --