



OWENS CORNING® THERMAFIBER® INDUSTRIAL BOARD

General Specification Guide **SECTION 22 07 00**
23 07 00
40 42 00

GUIDE SPECIFICATIONS

PROJECT ENGINEER RESPONSIBILITY: This is a general specification guide, intended to be used by experienced construction professionals, in conjunction with good construction practice and professional judgment. This guide is to aid in the creation of a complete building specification that is to be fully reviewed and edited by the engineer. Sections of this guide shall be included, edited, or omitted based on the requirements of a specific project.

SECTION 22 07 17 - INDUSTRIAL MINERAL BOARD INSULATION PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes: Industrial mineral board insulation for tanks and equipment systems operating up to 1200 degrees F (650 degrees C).

1.2 REFERENCES

- A. ASHRAE – National Voluntary Consensus Standard 90.1 (2019) – "Energy Standard for Buildings Except Low-Rise Residential Buildings."
- B. ASTM C165 – "Standard Test Method for Measuring Compressive Properties of Thermal Insulation."
- C. ASTM C356 – "Standard Test Method for Linear Shrinkage of Preformed High Temperature Thermal Insulation Subjected to Soaking Heat."
- D. ASTM C411 – "Standard Test Method for Hot Surface Performance of High Temperature Thermal Insulation."
- E. ASTM C612 – "Standard Specification for Mineral Fiber Block and Board Thermal Insulation."
- F. ASTM C665 – "Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing."
- G. ASTM C795 – "Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel."
- H. ASTM C1104 – "Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation."
- I. ASTM C1335 – "Standard Test Method for Measuring Non-Fibrous Content of Man-Made Rock and Slag Mineral Fiber Insulation."
- J. ASTM C1338 – "Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings."
- K. ASTM C1617 – "Standard Practice for Quantitative Accelerated Laboratory Evaluation of Extraction Solutions Containing Ions Leached from Thermal Insulation on Aqueous Corrosion of Metals."
- L. ASTM C1729 – "Standard Specification for Aluminum Jacketing for Insulation."
- M. ASTM C1767 – "Standard Specification for Stainless Steel Jacketing for Insulation."
- N. ASTM E84 – "Standard Test Method for Surface Burning Characteristics of Building Materials."
- O. ASTM E136 – "Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C."
- P. CAN/CGSB-51.10 – "Mineral Fibre Thermal Insulation."
- Q. CAN4-S114 – "Standard Method of Test for Determination of Non-Combustibility In Building Materials."
- R. CAN/ULC-S102 – "Standard Method of Test for Surface Burning Characteristics of building Materials and Assemblies."
- S. MICA – "Commercial and Industrial Insulation Standards."
- T. MIL-DTL-24244D – "Military Specification for Insulation Material with Special Corrosion, Chloride and Fluoride Requirements."
- U. NRC 1.36 – "Nonmetallic Thermal Insulation for Austenitic Stainless Steel."
- V. PIP – "Process Industry Practice."
- W. UL 723 – "Test for Surface Burning Characteristics of Building Materials."

1.3 SYSTEM PERFORMANCE

- A. Insulation material shall meet the minimum thickness requirements of the National Voluntary Consensus Standard 90.1 (2019)

established by ASHRAE. However, if other factors such as condensation control or personal protection are to be considered, the selection of thickness of insulation shall satisfy the controlling factor.

- B. Insulation materials shall meet the fire hazard requirements of applicable building codes per one of the following nominally equivalent test methods:
 - 1. ASTM E84
 - 2. UL 723
 - 3. CAN/ULC-S102

1.4 SUBMITTALS

- A. Product Data: Provide product description, list of materials, thickness schedules for each service location and piece of equipment.
- B. Shop Drawings: Submit a list of insulation to be used for each service location.
- C. Samples: Submit samples of each insulation material to be used.

1.5 QUALITY ASSURANCE

- A. Work shall conform to accepted industry and trade standards for commercial and industrial insulations and to manufacturer's recommendations. Where available, it is recommended to use a National Insulation Association (NIA) certified (or other similarly certified) mechanical insulation inspector throughout the project to inspect and verify the materials and total insulation system have been installed correctly in accordance with the Owens Corning guide specifications.
- B. Insulation shall be installed by skilled and experienced applicators who are regularly engaged in commercial or industrial insulation work.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in factory containers with manufacturer's label showing manufacturer, product name and fire hazard information.
- B. Protect insulation from dirt, water, chemical attack and mechanical damage before, during and after installation.
- C. Do not install insulation that has been damaged, wet or contaminated. Remove it from jobsite.
 - 1. An exception may be allowed in cases where the contractor is able to demonstrate that wet insulation when fully dried out (either before installation or afterward following exposure to system operating temperatures) will provide installed performance that is equivalent in respects to new, completely dry insulation. In such cases, consult the insulation manufacturer for technical assistance.

1.7 PROJECTS AND SITE CONDITIONS

- A. Maintain job site temperature and conditions before, during and after installation as required by the product manufacturer.
- B. Installed insulation that has not been weatherproofed and is not protected by a roof and walls shall be protected from precipitation by weatherproof sheeting.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Basis of Design: Thermafiber® Industrial Board, for use up to 1200 degrees F (650 degrees C) by Owens Corning Insulating Systems, LLC, Toledo, OH 43659; www.owenscorning.com with the following characteristics:
 - 1. Provide product description, list of materials, thickness schedules for each service location and piece of equipment.
 - 2. Complies with ASTM C612 Types IA, IB, II, III, IVA and IVB
 - 3. Furnished in standard sizes of 24 inches x 48 inches (0.61m x 1.22m), 36 inches x 48 inches (1.09m x 1.22m) with thicknesses ranging from 1 inches to 10 inches (25mm to 254mm).
 - 4. Rated maximum service temperature of up to 1200 degrees F (650 degrees C).
 - 5. Does not exceed 25 Flame Spread and 50 Smoke Developed when tested in accordance with ASTM E84, UL 723, CAN/ULC-S102.
 - 6. Certified to meet the requirements of ASTM C795 for use over stainless steel.
 - 7. Certified to meet the requirements of ASTM C665 and C1617 for use over carbon steel.
 - 8. Rated as noncombustible when tested in accordance with ASTM E136.

2.2 FIELD APPLIED JACKETS

- A. Aluminum Jacketing
 - 1. Material and Thickness: 0.016 inches (0.045mm) Type T-3003 H-14 with a smooth or embossed finish with or without a factory applied inner layer.
- B. Stainless Steel Jacketing
 - 1. Material and Thickness: 0.010 inches (0.025mm) Type 304 stainless sheet with a smooth finish with or without a factory

applied inner layer.

- C. UV Resistant Jacketing
 - 1. May be applied in lieu of metal jacketing provided the jacketing manufacturers limitations with regard to pipe size, surface temperature and thermal expansion and contraction are followed.

2.3 ACCESSORIES

- A. Adhesives: Compatible with mineral fiber insulation.
- B. Fasteners: Pins with speed washers or studs with washers and nuts.
- C. Weatherproofing: Compatible mastic.

PART 3 – INSTALLATION

3.1 EXAMINATION

- A. Verify that materials and accessories can be installed in accordance with Contract Documents and material manufacturers' recommendations.
- B. Verify, by inspecting product labeling, submittal data, and certifications which may accompany the shipments, that materials and accessories to be installed on the project comply with applicable specifications and standards and meet specified thermal and physical properties.
- C. Before starting work under this section, carefully inspect the site and installed work of other trades and verify that such work is complete to the point where installation of materials and accessories under this section can begin.
- D. Verify that surfaces are clean, dry and free from dirt, scale, moisture, oil and grease prior to the installation.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's recommendations, approved submittals and in proper relationship with adjacent construction. Accessory materials shall also be installed in accordance with the current edition of the MICA "Commercial and Industrial Insulation Standards", of the Process Industry Practices.
- B. The preferred method for installing Thermafiber® Industrial Board insulation is described as follows.
 - 1. Pins or studs shall be welded onto the surface that is to be covered. Pins are to be installed on maximum 16 inches (406mm) centers and not more than 4 inches (102mm) from the edge of the insulation.
 - 2. The insulation is then impaled over the pins or studs and held in place with speed washers or nuts.
- C. For temperatures above 600 degrees F (316 degrees C) double layer insulation is recommended for optimal thermal performance.
 - 1. The first layer shall be secured by speed washers or nuts before the second layer can be installed.
 - 2. Stagger joints with a minimum of 6 inches (152mm) of overlap between the top and bottom layers.
 - 3. For applications where Thermafiber® Industrial Board Insulation is subjected to physical abuse or exposed to weather conditions or chemicals a rigid jacket is recommended.
 - 4. Secure the metal jacketing with screws, rivets or banding. Joints in the jacketing shall be staggered a minimum of 6 inches (152mm) from the joints in the insulation. Jacketing shall be overlapped to shed water. Longitudinal and butt joints shall be wide enough to provide a weather proof seal. Metal bands shall be used as butt joints and be evenly spaced between the joints for jacket securement.
- D. Fill joints, cracks and seams with mineral fiber.
- E. Neatly finish insulation at supports, protrusions and interruptions.
- F. Do not insulate over nameplates or ASME stamps. Form a tight insulation seal around them.
- G. When equipment with insulation requires periodic opening for maintenance, repair or routine inspection, install the insulation in such a way that it can be easily removed and replaced without damage.

3.3 FIELD QUALITY CONTROL

- A. Upon completion of insulation work, visually inspect the work and verify that it has been correctly installed. This may be done while work is in progress, to assure compliance with requirements herein to cover and protect insulation materials during installation.
- B. Work shall conform to accepted industry standards and to manufacturers recommendations. Owens Corning recommends the use of certified mechanical insulation inspectors who maintain current certification by the National Insulation Association (NIA) or the British Columbia Insulation Contractors Association (BCICA) Quality Assurance Certificate Program throughout the project. They will inspect and verify that the materials and the total insulation systems have been installed correctly in accordance with the specifications.

3.4 INSULATION PROTECTION

- A. Replace damaged insulation which cannot be satisfactorily repaired including insulation with damage to the jacketing that has been saturated with moisture.

- B. The insulation contractor shall advise the general and the mechanical contractor as to requirements for protection of the insulation work during the remainder of the construction period, to avoid damage and deterioration of the finished insulation work.

3.5 SAFETY PRECAUTIONS

- A. The insulation installers shall be properly protected during installation of the insulation. Protection when handling and applying insulation materials shall include but not be limited to: Disposable dust respirators, gloves, hard hats, and eye protection.
- B. The insulation contractor shall conduct job site operations in compliance with applicable provisions given by OSHA as well as with state and local safety and health codes and regulations that may apply.

End of Section

DISCLAIMER: It is the responsibility of both the specifier and the purchaser to determine if a product or system is suitable for its intended use. Neither Owens Corning, nor any of its subsidiary or affiliated companies, assume any responsibility for the content of this specification guide relative to actual projects and specifically disclaim any and all liability for any errors or omissions in design, detail, structural capability, attachment details, shop drawings or other construction related details, whether based upon the information provided by Owens Corning or otherwise.

ADDITIONAL INFORMATION AND SDS

Please visit our website at www.owenscorning.com/mechanical