



Standard Practice for Selection and Application of Thermal Insulation for Piping and Machinery¹

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This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice provides guidance in the selection of types and thicknesses of thermal insulation materials for piping, machinery, and equipment for nonnuclear shipboard applications. Methods and materials for installation, including lagging, are also detailed.

1.2 Supplemental requirements and exceptions to the requirements discussed herein for ships of the U.S. Navy are included in Supplementary Requirements S1.

1.3 Asbestos or asbestos-containing materials shall not be used.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents ²

2.1 ASTM Standards:

- A 167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip³
- A 653/A 653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process⁴
- B 209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate⁵
- B 209M Specification for Aluminum and Aluminum-Alloy Sheet and Plate [Metric]⁵
- C 168 Terminology Relating to Thermal Insulating Materials⁶

- C 195 Specification for Mineral Fiber Thermal Insulating Cement⁶
 - C 449/C449M Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement⁶
 - C 533 Specification for Calcium Silicate Block and Pipe Thermal Insulation⁶
 - C 534 Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form⁶
 - C 547 Specification for Mineral Fiber Pipe Insulation⁶
 - C 552 Specification for Cellular Glass Thermal Insulation⁶
 - C 553 Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications⁶
 - C 610 Specification for Molded Expanded Perlite Block and Pipe Thermal Insulation⁶
 - C 612 Specification for Mineral Fiber Block and Board Thermal Insulation⁶
 - C 680 Practice for Determination of Heat Gain or Loss and the Surface Temperatures of Insulated Pipe and Equipment Systems by the Use of a Computer Program⁶
 - C 892 Specification for High-Temperature Fiber Blanket Thermal Insulation⁶
 - D 962 Specification for Aluminum Powder and Paste Pigments for Paints⁷
 - D 3400 Specification for Liquid Sodium Silicates⁸
 - F 1138 Specification for Spray Shields for Mechanical Joints⁹
- #### 2.2 Federal Specifications:¹⁰
- HH-P-31 Packing and Lagging Material, Fibrous Glass Metallic and Plain Cloth and Tape
 - TT-P-28 Paint, Aluminum, Heat Resisting (1200°F)
- #### 2.3 Military Specifications:¹⁰
- DoD-C-15328 Primer (Wash), Pretreatment (Formula No. 117 for Metals) Metric
 - DoD-C-24596 Coating Compounds, Nonflaming, Fire-Protective (Metric)
 - DoD-E-24607 Enamel, Interior, Nonflaming (Dry), Chlorinated Alkyd Resin, Semigloss (Metric)

¹ This practice is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.02 on Insulation/Processes.

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² The latest revision of all referenced documents shall apply.

³ *Annual Book of ASTM Standards*, Vol 01.03.

⁴ *Annual Book of ASTM Standards*, Vol 01.06.

⁵ *Annual Book of ASTM Standards*, Vol 02.02.

⁶ *Annual Book of ASTM Standards*, Vol 04.06.

⁷ *Annual Book of ASTM Standards*, Vol 06.03.

⁸ *Annual Book of ASTM Standards*, Vol 15.04.

⁹ *Annual Book of ASTM Standards*, Vol 01.07.

¹⁰ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.