



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

This standard is issued under the fixed designation F683; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the U.S. 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 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *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 Documents²

2.1 ASTM Standards:³

A167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip (Withdrawn 2014)⁴

A653/A653M Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process

B209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate

B209M Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric)

C168 Terminology Relating to Thermal Insulation

C195 Specification for Mineral Fiber Thermal Insulating Cement

C449/C449M Specification for Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement

C533 Specification for Calcium Silicate Block and Pipe Thermal Insulation

C534 Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form

C547 Specification for Mineral Fiber Pipe Insulation

C552 Specification for Cellular Glass Thermal Insulation

C553 Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications

C610 Specification for Molded Expanded Perlite Block and Pipe Thermal Insulation

C612 Specification for Mineral Fiber Block and Board Thermal Insulation

C680 Practice for Estimate of the Heat Gain or Loss and the Surface Temperatures of Insulated Flat, Cylindrical, and Spherical Systems by Use of Computer Programs

C892 Specification for High-Temperature Fiber Blanket Thermal Insulation

C1482 Specification for Polyimide Flexible Cellular Thermal and Sound Absorbing Insulation

D962 Specification for Aluminum Powder and Paste Pigments for Paints

F1138 Specification for Spray Shields for Mechanical Joints

2.2 Federal Specifications:⁵

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:⁵

MIL-PRF-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 For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

⁴ The last approved version of this historical standard is referenced on www.astm.org.

⁵ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://dodssp.daps.dla.mil>.