

# Guide to Insulation Product Specifications

## Introduction

The *Guide to Insulation Product Specifications* was updated by the National Insulation Association Technical Information Committee in November 2016 after their meeting. This guide lists ASTM, federal and military specifications that pertain to the thermal insulation industry. It encompasses both industrial and commercial mechanical insulations as well as building envelope and fire resistance insulations. Related application and finishing accessory materials also are included.

Some government construction agencies (General Services Administration, Department of Housing and Urban Development, Department of Defense, Corps of Engineers, etc.) issue specifications or standards that designate insulation materials. This guide is intended to serve the limited purpose of describing, in a general way, the specifications and standards so designated. It should be kept in mind that the materials listed in this guide are subject to change, as are the specifications and standards themselves. Users are encouraged to review the current version of the applicable specification and/or standard.

This guide organizes each specification by type (ASTM, federal, or military), number and title and describes its scope. NIA Associate Members that manufacture products that claim conformance to the referenced specification are listed below each specification.

Do not rely upon the guide to determine whether a product meets contract specifications or to obtain approvals under purchase orders or contracts. These determinations must be made by careful examination of the contract specifications, the manufacturer's literature, and the provision of the government specification or standard referred to in the contract documents. For specific product information and specifications compliance, consult the particular manufacturer.

## Ordering Information

To order a copy of an ASTM specification, contact the following:

**Order Department**  
**ASTM International**  
**100 Barr Harbor Drive**  
**West Conshohocken, PA 19428**  
**Tel: (610) 832-9585; Fax (610) 832-9555**  
[www.astm.org](http://www.astm.org)

Requests for copies of federal and military specifications should be made on company letterhead and sent to the following address:  
**700 Robbins Ave.**  
**Philadelphia, PA 19111-5094**  
(Allow 8-10 working days for processing)

Hard copies of this guide can be downloaded from the NIA website at [www.insulation.org](http://www.insulation.org):  
**NIA**  
**12100 Sunset Hills Rd., Suite 330**  
**Reston, VA 20190**  
**Tel: (703) 464-6422; Fax: (703) 464-5896**  
[www.insulation.org](http://www.insulation.org)

## Table of Contents of the Standards Available in this Guide

<b>A240/A240M</b>	Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels
<b>A653/A653M</b>	Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
<b>A792/A792M</b>	Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
<b>B209</b>	Aluminum and Aluminum-Alloy Sheet and Plate [Metric]
<b>C195</b>	Mineral Fiber Thermal Insulating Cement
<b>C196</b>	Expanded or Exfoliated Vermiculite Thermal Insulating Cement
<b>C208</b>	Cellulosic Fiber Insulation Board
<b>C449/C449M</b>	Mineral Fiber Hydraulic-Setting Thermal Insulating and Finishing Cement

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

<b>C516</b>	Vermiculite Loose Fill Thermal Insulation
<b>C533</b>	Calcium Silicate Block and Pipe Thermal Insulation
<b>C534</b>	Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form
<b>C547</b>	Mineral Fiber Preformed Pipe Insulation
<b>C549</b>	Perlite Loose Fill Insulation
<b>C552</b>	Cellular Glass Thermal Insulation
<b>C553</b>	Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
<b>C578</b>	Rigid, Cellular Polystyrene Thermal Insulation
<b>C591</b>	Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation
<b>C592</b>	Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation (Metal-Mesh Covered) (Industrial Type)
<b>C610</b>	Molded expanded Perlite Block and Pipe Thermal Insulation
<b>C612</b>	Mineral Fiber Block and Board Thermal Insulation
<b>C656</b>	Structural Insulating Board, Calcium Silicate
<b>C665</b>	Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing
<b>C667</b>	Prefabricated Reflective Insulation Systems for Equipment and Pipe Operating at Temperatures Above Ambient Air
<b>C726</b>	Mineral Wool Roof Insulation Board
<b>C728</b>	Perlite Thermal Insulation Board
<b>C764</b>	Mineral Fiber Loose-Fill Thermal Insulation
<b>C800</b>	Glass Fiber Blanket Insulation (Aircraft Type)
<b>C892</b>	High-Temperature Fiber Blanket Thermal Insulation
<b>C916</b>	Adhesives for Duct Thermal Insulation
<b>C991</b>	Flexible Glass Fiber Insulation for Pre-Engineered Metal Buildings
<b>C1014</b>	Spray-Applied Mineral Fiber Thermal and Sound Absorbing Insulation
<b>C1029</b>	Spray-Applied Rigid Cellular Polyurethane Thermal Insulation
<b>C1071</b>	Thermal and Acoustical Insulation (Glass Fiber, Duct Lining Material)
<b>C1086</b>	Glass Fiber Felt Thermal Insulation
<b>C1126</b>	Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation
<b>C1136</b>	Flexible, Low Permeance Vapor Retarders for Thermal Insulation
<b>C1139</b>	Fibrous Glass Thermal Insulation and Sound Absorbing Blanket and Board for Military Applications
<b>C1289</b>	Faced Rigid Cellular Polyisocyanurate Thermal Insulation
<b>C1290</b>	Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts
<b>C1393</b>	Specification for Perpendicularly Oriented Mineral Fiber Roll and Sheet Thermal Insulation for Pipes and Tanks
<b>C1410</b>	Specification for Melamine Thermal and Sound-Absorbing Insulation
<b>C1427</b>	Specification for Flexible Cellular Polyolefin Thermal Insulation in Sheet and Tubular form
<b>C1482</b>	Standard Specification for Polyimide Flexible Cellular Thermal and Sound Absorbing Insulation
<b>C1534</b>	Specification for Flexible Polymeric Foam Sheet Insulation Used as a Thermal and Sound Absorbing Liner for Duct
<b>C1594</b>	Standard Specification for Polyimide Rigid Cellular Thermal Insulation
<b>C1676</b>	Standard Specification for Microporous Thermal Insulation
<b>C1695</b>	Standard Specification for Fabrication of Flexible Removable and Reusable Blanket Insulation for Hot Service
<b>C1729</b>	Standard Specification for Aluminum Jacketing for Insulation
<b>C1767</b>	Standard Specification for Stainless Steel Jacketing for Use over Thermal Insulation
<b>C1775</b>	Standard Specification for Laminate Protective Jacket and Tape for Use over Thermal Insulation for Outdoor Applications
<b>D1784</b>	Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

## Federal Specifications

<b>HH-P-31F</b>	Packing and Lagging Material, Fibrous Glass Metallic and Plain Cloth and Tape
<b>L-T-80B</b>	Tape, Pressure-Sensitive Adhesive (Aluminum-Backed)
<b>SS-S-111C</b>	Sound Controlling Materials (Trowel and Spray Applications)

## Replacement Information for Federal Specifications

<b>HH-B-100B</b>	Canceled. Replaced by ASTM C 1136. Barrier Material, Vapor (for Pipe, Duct and Equipment Thermal Insulation)
<b>HH-I-515E</b>	Canceled. Replaced by ASTM C 739. Insulation, Thermal (Loose Fill For Pneumatic or Poured Application): Cellulosic or Wood Fiber

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

<b>HH-I-521F</b>	Canceled. Replaced by ASTM C 665. Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures)
<b>HH-I-523C</b>	Canceled. Replaced by ASTM C 533. Insulation, Block and Pipe Covering, Thermal (Calcium Silicate for Temperatures to 1,200°F)
<b>HH-I-524C</b>	Canceled. Replaced by ASTM C 578. Insulation Board, Thermal (Polystyrene)
<b>HH-I-525A</b>	Canceled. Replaced by ASTM C 640. Insulation Board, Thermal (Cork)
<b>HH-I-526C</b>	Canceled. Replaced by ASTM C 726. Insulation Board, Thermal (Mineral Fiber)
<b>HH-I-592B</b>	Canceled. Replaced by ASTM C 728. Insulation Board, Thermal (Mineral Aggregate)
<b>HH-I-530B</b>	Canceled. Replaced by ASTM C 591. Insulation Board, Thermal, Unfaced (Polyurethane or Polyisocyanurate)
<b>HH-I-545B</b>	Canceled. Replaced by ASTM C 1071. Insulation, Thermal and Acoustical (Mineral Fiber, Duct Lining Material)
<b>H-I-551E</b>	Canceled. Replaced by ASTM C 552. Insulation, Block and Board, Thermal (Cellular Glass)
<b>HH-I-558C</b>	Last revised January 1992. Replaced by numerous ASTM documents. Insulation, Blankets, Thermal (Mineral Fiber, Industrial Type)
<b>HH-I-573B</b>	Canceled. Replaced by ASTM C 534. Insulation, Thermal (Flexible Unicellular Sheet and Pipe Covering)
<b>HH-I-574B</b>	Canceled. Replaced by ASTM C 549. Insulation, Thermal (Perlite)
<b>HH-I-585C</b>	Canceled. Replaced by ASTM C 516. Insulation, Thermal (Vermiculite)
<b>HH-I-1030B</b>	Canceled. Replaced by ASTM C 764. Insulation, Thermal (Mineral Fiber, for Pneumatic or Poured Application)
<b>HH-I-1252B</b>	Canceled. No Replacement. Insulation, Thermal, Reflective (Aluminum Foil)
<b>L-P-535E</b>	Inactive. Plastic Sheet (Sheeting); Plastic Strip; Poly (Vinyl Chloride) and Poly (Vinyl Chloride-Vinyl Acetate), Rigid
<b>LLL-I-535B</b>	Canceled. Replaced by ASTM C 208, and others. Insulation Board, Thermal (Cellulosic Fiber)
<b>SS-C-160A</b>	Canceled. Replaced by ASTM C 195. Cements, Insulation Thermal Heat-resisting cements.

## Military Specifications

<b>MIL-A-23054A</b>	Acoustic Absorptive Board, Fibrous Glass Perforated Fibrous Glass Cloth Faced
<b>MIL-A-24179A</b>	Adhesive, Flexible Unicellular-Plastic Thermal Insulation
<b>MIL-A-24699</b>	Acoustical Transmission Loss Barrier Material
<b>MIL-A-3316C</b>	Adhesive, Fire-Resistant, Thermal Insulation
<b>MIL-C-2861E</b>	Cement, Insulation, High Temperature
<b>MIL-C-19565C</b>	Coating Compounds, Thermal Insulation, Fire- and Water-Resistant, Vapor-Barrier
<b>MIL-C-20079H</b>	Cloth, Glass; Tape, Textile Glass; and Thread, Glass and Wire-Reinforced Glass
<b>MIL-C-24576A</b>	Cloth, Silica Glass; Cloth, Coated, Glass, Silicone-Rubber Coated
<b>MIL-I-742F</b>	Insulation Board, Thermal, Fibrous Glass
<b>MIL-I-2781F</b>	Insulation, Pipe, Thermal
<b>MIL-I-2818 C</b>	Insulation Blanket, Thermal, Fibrous Mineral
<b>MIL-I-2819F</b>	Insulation Block, Thermal
<b>MIL-I-13042A</b>	Insulation Sleeving, Thermal, Tubular Flexible
<b>MIL-I-15475C</b>	Insulation Felt, Thermal, Fibrous Glass, Semi-rigid
<b>MIL-I-16411F</b>	Insulation Felt, Thermal, Glass Fiber
<b>MIL-I-16562A</b>	Insulation, Synthetic, Rubber-Like, Chemically Expanded, Cellular (Sheet Form)
<b>MIL-I-22023D</b>	Insulation Felt, Thermal and Sound Absorbing Felt, Fibrous Glass, Flexible
<b>MIL-I-22344D</b>	Insulation, Pipe, Thermal, Fibrous Glass
<b>MIL-I-23128B</b>	Insulation Blanket, Thermal, Refractory Fiber, Flexible
<b>MIL-DTL-24244D (SH)</b>	Insulation Material, with Special Corrosion, Chloride, and Fluoride Requirements
<b>MIL-S-24149C</b>	Studs, Welding, and Arc Shields (Ferrules)
<b>MIL-T-23397B</b>	Tapes, Pressure Sensitive Adhesive for Masking During Paint Stripping Operations
<b>MIL-W-23680E</b>	Stud Welding Systems, DC, Integral Power Source and Control Unit, Electric Arc and Capacitor Discharge
<b>MIL-W-80110C</b>	Stud Welding Units, Independent DC Power Source with Separate Control Unit, Electric Arc
<b>MIL-Y-1140H</b>	Yarn, Cord, Sleeving, Cloth, and Tape—Glass
<b>ELECTRIC BOAT SPECIFICATION – EB 4013</b>	Anti-Sweat and Refrigerant Insulation Systems (Sheet and Tubes)
<b>DOD-I-24688 / MIL-DTL-24688A</b>	Insulation; Polyimide, Sheet and Tube

## Replacement Information for Military Specifications

<b>MIL-P-15280J</b>	Inactive. Plastic Material, Unicellular (Sheets and Tubes)
<b>MIL-B-5924B</b>	Canceled. Replaced by ASTM C 800. Batting, Insulation, Glass Fibers

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

## Miscellaneous Specifications and Standards

American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE)  
Corps of Engineers, Department of the Army  
Energy Codes  
Federal Construction Guide Specifications (FCGS)  
Manufacturers Standardization Society of the Valve and Fitting Industry, Inc.  
Midwest Insulation Contractors Association (MICA)  
Model Building Codes  
National Insulation Association (NIA)  
Naval Facilities Engineering Command  
Nuclear Regulatory Commission  
National Fire Protection Association (NFPA)  
SCAQ MD  
U.S. Coast Guard

## A Listing of Guides, Practices and Test Methods Available Through ASTM

The following selected ASTM standards describe test methods and practices to determine specific characteristics of building and construction materials and shall not be used to specify materials. These methods may be referenced in ASTM standards or other specification and standards. ASTM standards must be reviewed every five years and, if not revised, either approved again or withdrawn.

Standards pertaining to thermal insulation generally are developed by ASTM Committee C-16 on Thermal Insulation and thus are identified with the prefix C followed by a three- or four-digit number. A two-digit number following the dash (omitted in this document) indicates the year that the standard was adopted or, if revised, the year of last revision.

Users are advised to refer to the current version of the standard in effect at the time of preparation of purchase documents and specifications.

<b>C165</b>	Test Method for Measuring Compressive Properties of Thermal Insulations.
<b>C167</b>	Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations.
<b>C168</b>	Terminology Relating to Thermal Insulating Materials
<b>C177</b>	Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus
<b>C203</b>	Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
<b>C209</b>	Test Methods for Cellulosic Fiber Insulation Board
<b>C240</b>	Test Methods of Testing Cellular Glass Insulation Block
<b>C302</b>	Test Method for Density and Dimensions of Preformed Pipe-Covering-Type Thermal Insulation
<b>C303</b>	Test Method for Density and Dimensions of Preformed Block-Type Thermal Insulation
<b>C335</b>	Test Method for Steady-State Heat Transfer Properties of Horizontal Pipe Insulation
<b>C356</b>	Test Method for Linear Shrinkage of Preformed High-Temperature Thermal Insulation Subjected to Soaking Heat
<b>C390</b>	Criteria for Sampling and Acceptance of Preformed Thermal Insulation Lots
<b>C411</b>	Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
<b>C419</b>	Practice for Making and Curing Test Specimens of Mastic Thermal Insulation Coatings
<b>C423</b>	Test Method for Sound Absorption and Sound Absorption Coefficiencies by the Reverberation Room Method
<b>C447</b>	Practice for Estimating the Maximum Use Temperature of Thermal Insulations
<b>C450</b>	Practice for Prefabrication and Field Fabrication of Thermal Insulating Fitting Cover for NPS Piping, Vessel Lagging, and Dished Head Segments
<b>C461</b>	Test Methods for Mastics and Coatings Used with Thermal Insulation
<b>C488</b>	Test Method for Conducting Exterior Exposure Tests of Finishes for Thermal Insulation
<b>C518</b>	Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
<b>C585</b>	Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System)

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

<b>C634</b>	Terminology Relating to Environmental Acoustics
<b>C647</b>	Guide to Properties and Tests of Mastics and Coating Finishes for Thermal Insulation
<b>C653</b>	Guide for Determination of the Thermal Resistance of Low-Density Blanket-Type Mineral Fiber Insulation
<b>C680</b>	Practice for Determination of Heat Gain or Loss and the Surface Temperatures of Insulated Pipe and Equipment Systems by the Use of a Computer Program
<b>C692</b>	Test Method for Evaluating the Influence of Thermal Insulations on the External Stress Corrosion Cracking Tendency of Austenitic Stainless Steel
<b>C740</b>	Practice for Evacuated Reflective Insulation in Cryogenic Service
<b>C755</b>	Practice for Selection of Vapor Retarders for Thermal Insulation
<b>C795</b>	Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel
<b>C871</b>	Test Methods for Chemical Analysis of Thermal Insulation Materials for Leachable Chloride, Fluoride, Silicate, and Sodium Ions
<b>C921</b>	Practice for Determining the Properties of Jacketing Materials for Thermal Insulation
<b>C929</b>	Practice for Handling, Transporting, Shipping, Storage, Receiving, and Application of Thermal Insulation Materials to Be Used Over Austenitic Stainless Steel
<b>C930</b>	Classification of Potential Health and Safety Concerns Associated with Thermal Insulation Materials and Accessories
<b>C1045</b>	Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements
<b>C1058</b>	Practice for Selecting Temperatures for Evaluating and Reporting Thermal Properties of Thermal Insulation
<b>C1101/C1101M</b>	Test Methods for Classifying the Flexibility or Rigidity of Mineral Fiber Blanket and Board Insulation
<b>C1104/C1104M</b>	Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation
<b>C1129</b>	Standard Practice for Estimation of Heat Savings by Adding Thermal Insulation to Bare Valves and Flanges
<b>C1136</b>	Flexible, Low Permeance Vapor Retarders for Thermal Insulation
<b>C1139</b>	Fibrous Glass Thermal Insulation and Sound Absorbing Blanket and Board for Military Applications
<b>C1199</b>	Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
<b>C1335</b>	Test Methods for Measuring Non-Fibrous Content of Man-made Rock and Slag Mineral Fiber Insulation
<b>C1338</b>	Test Method for Determining Fungi Resistance of Insulation Materials and Facings
<b>C1363</b>	Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box
<b>C1617</b>	Standard Practice for Quantitative Accelerated Laboratory Evaluation of Extraction Solutions Containing Ions Leached from Thermal Insulation on Aqueous Corrosion of Metals
<b>C1639</b>	Standard Specification for Fabrication of Cellular Glass Pipe and Tubing Insulation
<b>C1676</b>	Standard Specification for Microporous Thermal Insulation
<b>C1728</b>	Standard Specification for Flexible Aerogel Insulation
<b>C1729</b>	Standard Specification for Aluminum Jacketing for Insulation
<b>C1767</b>	Standard Specification for Stainless Steel Jacketing for Use over Thermal Insulation
<b>D792</b>	Test Methods for Density and Specific Gravity Cellular Density of Plastics by Displacement
<b>D1621</b>	Test Method for Compressive Properties of Rigid Cellular Plastics
<b>D1622</b>	Test Method for Apparent Density of Rigid Cellular Plastics
<b>D2126</b>	Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
<b>E84</b>	Test method for Surface Burning Characteristics of Building Materials
<b>E90</b>	Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
<b>E96</b>	Test Method for Water Vapor Transmission of Materials
<b>E119</b>	Test Method for Fire Tests of Building Construction and Materials
<b>E136</b>	Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
<b>E176</b>	Terminology Related to Fire Standards
<b>E477</b>	Test Method for Measuring Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers
<b>E814</b>	Test Method for Fire Tests of Through-Penetration Fire Stops
<b>E2231</b>	Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess the Surface Burning Characteristics
<b>F683</b>	Practice for Selection and Application of Thermal Insulation for Piping and Machinery

## **ASTM Specifications and Conforming Products from NIA members**

This guide organizes each specification by type (ASTM, federal, or military), number, title, and describes its scope. NIA Associate Members that manufacture products that claim conformance to the referenced specification are listed below each specification.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

**A240/A240M****Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels**

Covers chromium, chromium-nickel, and chromium-manganese-nickel stainless and heat-resisting steel plate, sheet, and strip for pressure vessels.

- ITW Insulation Systems/Pabco-Childers Metals
- R.P.R. Products, Inc.

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

- R.P.R. Products, Inc.

**A792/A792M****Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process**

- ITW Insulation Systems/Pabco-Childers Metals
- R.P.R. Products, Inc.

**B209****Aluminum and Aluminum-Alloy Sheet and Plate [Metric]**

Covers aluminum and aluminum alloy flat sheet, coiled sheet, and plate.

- ITW Insulation Systems/Pabco-Childers Metals
- R.P.R. Products, Inc.

**C195****Mineral Fiber Thermal Insulating Cement**

Covers mineral fiber thermal insulating materials in the form of dry cement which, when mixed with a suitable proportion of water, applied as a plastic mass, and dried in place, affords resistance to heat transmission on surfaces operating at temperatures between 100° and 1,600°F. Replaces federal specification Ss-C-160A in part.

**C196****Expanded or Exfoliated Vermiculite Thermal Insulating Cement**

Covers expanded or exfoliated vermiculite thermal insulating material in the form of dry cement or plaster, intended to be mixed with a suitable proportion of water, applied as a plastic mass, and dried in place, for use as insulation on surfaces operating at temperatures between 100° and 1,800°F. The cement shall not be used where it will be exposed to combustion conditions, such as the hot face lining of a furnace. Replaces federal specification SS-C-160A in part.

**C208****Cellulosic Fiber Insulation Board**

Covers the principal types, grades, and sizes of insulating board.

- Type I—Sound deadening board
- Type II—Roof insulation board
- Type III—Ceiling tiles and panels
- Type IV—Wall sheathing
- Type V—Backer board
- Type VI—Roof deck

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

Covers mineral fiber insulating and finishing cement, shipped in dry mix form, including hydraulic-setting binder, which when mixed with water and applied in accordance with the manufacturer's direction, affords a smooth surface as a final finish for heated surfaces between 100° and 1,200°F. Replaces federal specification SS-C-160A in part.

- Johns Manville/Industrial Insulation Group

**C516****Vermiculite Loose Fill Thermal Insulation**

Covers expanded or exfoliated vermiculite loose fill insulation for use at temperatures ranging from -459° to 1,400°F. Replaces federal specification HH-I-585.

- Type I—Untreated
- Type II—Surface treated

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

### C533

#### **Calcium Silicate Block and Pipe Thermal Insulation**

Covers calcium silicate block and pipe thermal insulation for use on surfaces with temperatures between 80 °F and 1700 °F. Replaces federal specification HH-I-523. Maximum density of less than 15 pcf.

Type Ia—Up to 1,200°F Pipe and Block

- Johns Manville/Industrial Insulation Group
- Rockfibras Do Brazil Ind Com

Type II—Up to 1,700°F

- Johns Manville/Industrial Insulation Group

### C534

#### **Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form**

Covers preformed flexible elastomeric cellular thermal insulation in sheet and tubular form for use on surfaces operating up to 350°F. Replaces federal specification HH-I-573.

Type I—Tubular

Grade 1—Regular

- Aeroflex USA, Inc.
- Armacell LLC
- K-Flex USA
- Nomaco Insulation

Grade 2—High Temperature

- Armacell LLC

Grade 3—Non-halogen

- Aeroflex USA, Inc.
- Armacell LLC
- K-Flex USA

Type II—Sheet

Grade 1—Regular

- Aeroflex USA, Inc.
- Armacell LLC
- K-Flex USA
- Nomaco Insulation

Grade 2—High Temperature

- Armacell LLC

Grade 3—Non-halogen

- Aeroflex USA, Inc.
- Armacell LLC
- K-Flex USA

### C547

#### **Mineral Fiber Preformed Pipe Insulation**

Covers mineral fiber preformed pipe insulation for use on surfaces up to 1,200°F. Within each type, there are also different grades available.

Type I—Up to 850°F (molded)

- CertainTeed
- Johns Manville/Industrial Insulation Group
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- Rock Wool Manufacturing Co.
- Roxul, Inc.

Type II—Up to 1,200°F (molded)

- Johns Manville/Industrial Insulation Group
- Rockfibras Do Brazil Ind Com
- Rock Wool Manufacturing Co.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

- Roxul, Inc.
- Type III—Up to 1,200°F (V-groove)
  - Johns Manville/Industrial Insulation Group
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
- Type IV— Up to 1,000°F
  - Johns Manville/Industrial Insulation Group
  - Knauf Insulation
  - Rockfibras Do Brazil Ind Com
  - Roxul, Inc.
- Type V—Up to 1,400°F
  - Rockfibras Do Brazil Ind Com
  - Roxul, Inc.

## C549

### **Perlite Loose Fill Insulation**

Covers expanded perlite loose fill insulation for use up to 1,400°F. Replaces federal specification HH-I-574.

- Type I—Untreated
  - Johns Manville/Johns Manville/Industrial Insulation Group
- Type II—Surface treated to produce water repellency
- Type III—Surface treated to limit dust generated during application
- Type IV—Surface treated to produce water repellency and limit dust generated during application.

## C552

### **Cellular Glass Thermal Insulation**

Covers cellular glass insulation for use at temperatures up to 800°F. Replaces federal specification HH-I-551.

- Type I—Flat Block
  - Pittsburgh Corning Corp.
- Type II—Pipe and tubing insulation
  - Pittsburgh Corning Corp.
- Type III—Special Shapes
  - Pittsburgh Corning Corp.
- Type IV—Board
  - Pittsburgh Corning Corp.

## C553

### **Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications**

Covers mineral fiber blanket intended for use at temperatures up to 1,200°F

- Type I—Maximum use 450°F
  - CertainTeed Corp.
  - Johns Manville/Industrial Insulation Group
  - Johns Manville Corp.
  - Knauf Insulation
  - Manson Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type II—Maximum use 450°F
  - CertainTeed Corp.
  - Johns Manville/Industrial Insulation Group
  - Johns Manville Corp.
  - Knauf Insulation
  - Manson Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*



- Roxul, Inc.
  - Thermafiber, Inc.
- Type III—Maximum use 450°F
- CertainTeed Corp.
  - Johns Manville/Industrial Insulation Group
  - Johns Manville Corp.
  - Knauf Insulation
  - Manson Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type IV—Maximum use 850°F
- Johns Manville/Industrial Insulation Group
  - Johns Manville Corp.
  - Knauf Insulation
  - Manson Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type V—Maximum use 1,000°F
- CertainTeed Corp.
  - Johns Manville/Industrial Insulation Group
  - Johns Manville Corp.
  - Knauf Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type VI—Maximum use 1,000°F
- CertainTeed Corp.
  - Johns Manville/Industrial Insulation Group
  - Johns Manville Corp.
  - Knauf Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type VII—Maximum use 1,200°F
- Johns Manville/Industrial Insulation Group
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.

## **C578**

### **Rigid, Cellular Polystyrene Thermal Insulation**

Covers cellular polystyrene for use at temperatures up to 165°F. Replace federal specification HH-I-524. Specification covers various types of rigid cellular polystyrenes that are commercially available. See specification for description of each type.

Type I-VII is EPS – Polystyrene for Pipe Insulation.

Type XIII is extruded polystyrene (XPS) billet available at various thicknesses of 7-10 inches

- ITW Insulation Systems

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

- Polyguard Products

Types XII, X, IV, VI, VII, and V are extruded polystyrene (XPS) boards available at various thicknesses up to 4 inches

- Knauf Insulation
- Owens Corning

## C591

### **Unfaced Preformed Rigid Cellular Polyisocyanurate Thermal Insulation**

Covers unfaced, preformed rigid cellular polyisocyanurate plastic material intended for use at temperatures up to 300°F. Replaces federal specification HH-I-530.

Type I—Minimum compressive resistance of 16 psi.

- Dyplast Products, LLC
- ITW Insulation Systems

Type II—Minimum compressive resistance of 35 psi.

- Dyplast Products, LLC
- ITW Insulation Systems

Type III—Minimum compressive resistance of 45 psi.

- Dyplast Products, LLC
- ITW Insulation Systems

Type IV—Minimum compressive resistance of 21 psi

- Dyplast Products, LLC
- ITW Insulation Systems

Type V—Minimum compressive resistance of 80 psi.

- Dyplast Products, LLC
- ITW Insulation Systems

Type VI—Minimum compressive resistance of 125 psi.

- Dyplast Products, LLC
- ITW Insulation Systems

## C592

### **Mineral Fiber Blanket Insulation and Blanket-Type Pipe Insulation (Metal-Mesh Covered) (Industrial Type)**

Covers metal-mesh covered mineral fiber blanket and blanket-type insulation for use at temperatures up to 1,200°F.

Type I—Maximum use 850°F

- Johns Manville/Industrial Insulation Group
- Rockfibras Do Brazil Ind Com
- Rock Wool Manufacturing Co.
- Roxul, Inc.
- Thermafiber, Inc.

Type II—Maximum use 1,200°F

- Johns Manville/Industrial Insulation Group
- Rockfibras Do Brazil Ind Com
- Rock Wool Manufacturing Co.
- Roxul, Inc.
- Thermafiber, Inc.

Type III—Maximum use 1200°F

- Johns Manville/Industrial Insulation Group
- Rockfibras Do Brazil Ind Com
- Roxul, Inc.

## C610

### **Molded expanded Perlite Block and Pipe Thermal Insulation**

Covers expanded perlite block and pipe insulation for use at temperatures up to 1,200°F.

- Johns Manville/Industrial Insulation Group
- ITW Insulation Systems

## C612

### **Mineral Fiber Block and Board Thermal Insulation**

Covers mineral fiber board insulation for use at temperatures up to 1,800°F.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

- Type IA, IB—Maximum use 450°F
- CertainTeed Corp.
  - Johns Manville/Industrial Insulation Group
  - Johns Manville Corp.
  - Knauf Insulation
  - Manson Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type II—Maximum use 850°F
- CertainTeed Corp.
  - Johns Manville/Industrial Insulation Group
  - Johns Manville Corp.
  - Knauf Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type III—Maximum use 1,000°F
- Knauf Insulation
  - Johns Manville/Industrial Insulation Group
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type IVa, IVb—Maximum use 1,200°F
- Johns Manville/Industrial Insulation Group
  - Rockfibras Do Brazil Ind Com
  - Rock Wool Manufacturing Co.
  - Roxul, Inc.
  - Thermafiber, Inc.
- Type V—Maximum use 1,800°F
- Rock Wool Manufacturing Co.
  - Thermafiber, Inc.

## C656

### Structural Insulating Board, Calcium Silicate

Covers structural insulating board for use in general insulation, fire-resistive, and marine-bulkhead applications at temperatures up to 1,700°F.

- Type I—For use up to 1,400°F
- Type II—For use up to 1,700°F
- Grade 1—Typical density 36 lb./ft<sup>3</sup>
- Grade 2—Typical density 46 lb./ft<sup>3</sup>
- Grade 3—Typical density 60 lb./ft<sup>3</sup>
- Grade 4—Typical density 14 lb./ft<sup>3</sup>
- Johns Manville/Industrial Insulation Group
- Grade 5—Typical density 18 lb./ft<sup>3</sup>
- Johns Manville/Industrial Insulation Group
- Grade 6—Typical density 28 lb./ft<sup>3</sup>
- Johns Manville/Industrial Insulation Group
- Grade 7—Typical density 40 lb./ft<sup>3</sup>
- Johns Manville/Industrial Insulation Group
- Grade 8—Typical density 60 lb./ft<sup>3</sup>
- Johns Manville/Industrial Insulation Group

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

**C665****Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing**

Covers mineral fiber blanket insulation used to thermally or acoustically insulate ceilings, floors, and walls in light frame construction and manufactured housing. Replaces federal specification HH-I-521.

Type I—Blankets without membrane coverings

- CertainTeed Corp.
- Johns Manville/Industrial Insulation Group
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- Rock Wool Manufacturing Co.
- Roxul, Inc.
- Thermafiber, Inc.

Type II—Blankets with a nonreflective vapor-retarder membrane covering one principal face

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- Rock Wool Manufacturing Co.
- Thermafiber, Inc.

Type III—Blankets with a reflective vapor-retarder covering on principal face

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- Rock Wool Manufacturing Co.
- Thermafiber, Inc.

**C667****Prefabricated Reflective Insulation Systems for Equipment and Pipe Operating at Temperatures Above Ambient Air**

Covers metal prefabricated, reflective insulation systems for equipment and piping operating at temperatures above ambient in air.

**C726****Mineral Wool Roof Insulation Board**

Covers mineral wool insulation board used principally above structural roof decks as a base for built-up roofing. Replaces federal specification HH-I-526.

- Johns Manville Corp.
- Rockfibras Do Brazil Ind Com
- Roxul, Inc.

**C728****Perlite Thermal Insulation Board**

Covers perlite thermal insulation board used principally above structural roof decks and as a base for built up, modified, and elastomeric membrane roofing. Replaces federal specification HH-I-529.

- ITW Insulation Systems
- Johns Manville Corp.

**C764****Mineral Fiber Loose-Fill Thermal Insulation**

Covers nodulated mineral fiber thermal insulation for use in attics or enclosed spaces in housing and other framed buildings. Replaces federal specification HH-I-1030.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

- Type I—Pneumatic application
  - CertainTeed Corp.
  - Johns Manville Corp.
  - Knauf Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
  - Thermafiber, Inc.
- Type II—Poured application
  - Rockfibras Do Brazil Ind Com
  - Thermafiber, Inc.

## **C800**

### **Glass Fiber Blanket Insulation (Aircraft Type)**

Covers glass fiber blanket thermal and acoustical insulation for use up to 700°F in aircraft applications. Replaces MIL-B-59248.

- Type I—For use to 450°F
  - Johns Manville Corp.
- Type II—For use to 700°F
  - Johns Manville Corp.

## **C892**

### **High-Temperature Fiber Blanket Thermal Insulation**

Covers high-temperature fiber blanket thermal insulation for use at temperatures from 1,350°F up to 3,000°F.

- Type I—Maximum temperature use 1,350°F
  - Thermal Ceramics
- Type II—Maximum temperature use 1,600°F
  - 3M Fire Protection Products
  - Thermafiber, Inc.
  - Thermal Ceramics
  - Unifrax Corp.
- Type III—Maximum temperature use 2,400°F
  - 3M Fire Protection Products
  - Thermal Ceramics
  - Unifrax Corp.
- Type IV—Maximum temperature use 2,600°F
  - 3M Fire Protection Products
  - Thermal Ceramics
  - Unifrax Corp.
- Type V—Maximum temperature use 3,000°F
  - 3M Fire Protection Products
  - Thermal Ceramics
  - Unifrax Corp.

## **C916**

### **Adhesives for Duct Thermal Insulation**

Establishes minimum material requirements for adhesives to bond thermal insulation duct liner on the interior surfaces of sheet metal air conditioning ducts.

- Type I—Nonflammable in the liquid (wet) state and will pass edge-burning test
  - Foster Products (HB Fuller Construction Products)
  - ITW Insulation Systems/Pabco-Childers Metals
  - Mon-Eco Industries, Inc.
- Type II—Nonflammable in the liquid (wet) state and will not pass edge-burning test
  - Foster Products (HB Fuller Construction Products)
  - ITW Insulation Systems/Pabco-Childers Metals
  - Mon-Eco Industries, Inc.
- Type III—Flammable in the liquid (wet) state and will pass edge-burning test
  - Mon-Eco Industries, Inc.
- Type IV—Flammable in the liquid (wet) state and will not pass edge-burning test
  - Foster Products (HB Fuller Construction Products)

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

- ITW Insulation Systems/Pabco-Childers Metals
- Mon-Eco Industries, Inc.

### **C991**

#### **Flexible Glass Fiber Insulation for Pre-Engineered Metal Buildings**

Covers flexible glass fiber insulation for use as interior surface of walls and roofs of manufactured metal buildings.

Type I—Without vapor-retarder facing

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com

Type II—With vapor-retarder facing

- Johns Manville Corp.
- Rockfibras Do Brazil Ind Com

### **C1014**

#### **Spray-Applied Mineral Fiber Thermal and Sound Absorbing Insulation**

Covers spray-applied mineral fiber thermal or acoustical insulation.

- Thermafiber, Inc.

### **C1029**

#### **Spray-Applied Rigid Cellular Polyurethane Thermal Insulation**

Covers spray-applied rigid cellular polyurethane for use as thermal insulation at temperatures between -22° and 225°F.

Type I—Minimum compressive resistance 15 psi

Type II—Minimum compressive resistance 25 psi

Type III—Minimum compressive resistance 40 psi

Type IV—Minimum compressive resistance 60 psi

### **C1071**

#### **Thermal and Acoustical Insulation (Glass Fiber, Duct Lining Material)**

Covers fibrous glass insulation used as a thermal and acoustical liner for interior surfaces of ducts, plenums, and other air handling equipment. Replaces federal specification HH-I-545.

Type I—Flat, in rolls

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning

Type II—Flat, in sheet form

- CertainTeed Corp.
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning

### **C1086**

#### **Glass Fiber Felt Thermal Insulation**

Covers glass fiber unsupported needled felt binder-free insulation used for thermal insulation of machinery and equipment at temperatures up to 1,200°F.

- Alpha Associates, Inc.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.
- Rockfibras Do Brazil Ind Com

### **C1126**

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

### **Faced or Unfaced Rigid Cellular Phenolic Thermal Insulation**

Covers faced or unfaced rigid cellular phenolic thermal insulation, in either board or tubular form, for use at temperatures between -40°F and 257°F.

Type I—For use as roof insulation board

Type II—For use as sheathing or rigid panel for non-load bearing applications

- ITW Insulation Systems
- Polyguard Products

Type III—For use as pipe insulation

- ITW Insulation Systems
- Polyguard Products

### **C1136 Flexible, Low Permeance Vapor Retarders for Thermal Insulation**

Covers vapor retarders for thermal insulation, specifically flexible materials with permeance of 0.10 perm or lower and surface burning characteristics of 25 flame spread/50 smoke or lower, for use indoors between temperatures of -20°F and 150°F. For use indoors or outdoors with weather protection. Replaces federal specification HH-B-100.

Type I (0.02 perm max, high strength)

- Lamtec Corp.
- Johns Manville Corp.

Type II (0.02 perm max, moderate strength)

- Lamtec Corp.
- Johns Manville Corp.

Type II (0.10 perm max, high strength)

- Lamtec Corp.
- Johns Manville Corp.

Type IV (0.10 perm max, moderate strength)

- Lamtec Corp.
- Johns Manville Corp.

Type VII (0.01 perm max, high strength)

Type VIII (0.02 perm max, moderate strength)

Type IX (0.00 perm max)

- Dyplast
- HiCube Coating, LLC
- K-Flex USA
- Pittsburgh Corning
- Polyguard Products
- 3M/Venture Tape

Type X (0.02 perm max)

- Lamtec

### **C1139**

#### **Fibrous Glass Thermal Insulation and Sound Absorbing Blanket and Board for Military Applications**

Covers unfaced flexible fibrous glass blanket and faced board used as thermal and sound absorbing insulation at temperatures up to 450°F for military applications as a replacement for MIL-I-22023D.

Type I—Unfaced thermal blanket

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning

Type II—Unfaced sound absorbing blanket

- CertainTeed Corp.
- Johns Manville Corp.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

- Knauf Insulation
- Manson Insulation
- Owens Corning

Type III—Faced, thermal and sound absorbing board

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation

**C1289**

**Faced Rigid Cellular Polyisocyanurate Thermal Insulation**

Covers various types (I through VI) faced boards. Replaces ASTM C1013-94. See specifications for a more detailed description. The service temperature ranges from -40°F to +200 °F.

- Johns Manville Corp.

**C1290**

**Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts**

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning

**C1393**

**Specification for Perpendicularly Oriented Mineral Fiber Roll and Sheet Thermal Insulation for Pipes and Tanks**

- CertainTeed Corp.
- Knauf Insulation
- Johns Manville/Industrial Insulation Group
- Owens Corning
- Rockfibras Do Brazil Ind Com
- Rock Wool Manufacturing Co.

**C1410**

**Specification for Melamine Thermal and Sound-Absorbing Insulation**

**C1427**

**Specification for Flexible Cellular Polyolefin Thermal Insulation in Sheet and Tubular form**

- Aeroflex USA, Inc.
- Armacell, LLC
- Nomaco Insulation

**C1482**

**Standard Specification for Polyimide Flexible Cellular Thermal and Sound Absorbing Insulation.**

**C1534**

**Specification for Flexible Polymeric Foam Sheet Insulation Used as a Thermal and Sound Absorbing Liner for Duct**

Type I—Closed-Cell Flexible Foam

- Aeroflex USA, Inc.
- Armacell, LLC
- K-Flex USA
- Nomaco Insulation

Type II—Open-Cell Flexible Foam

**C1594**

**Standard Specification for Polyimide Rigid Cellular Thermal Insulation**

**C1676**

**Standard Specification for Microporous Thermal Insulation**

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*



Non-Hydrophobic, Type II, Grade 2A

- Promat
- Thermal Ceramics

Hydrophobic, Type II, Grade 2B

- Promat
- Johns Manville/Industrial Insulation Group
- Thermal Ceramics

**C1695**

**Standard Specification for Fabrication of Flexible Removable and Reusable Blanket Insulation for Hot Service**

- Auburn Mfg., Inc.

**C1728**

**Standard Specification for Flexible Aerogel Insulation**

Type I, Grade 1B

- Aspen Aerogels

Type III, Grade 1A

- Aspen Aerogels

Type III, Grade 2

**C1729**

**Standard Specification for Aluminum Jacketing for Insulation**

- ITW Insulation Systems/Pabco-Childers Metals
- RPR Products, Inc.

**C1767**

**Standard Specification for Stainless Steel Jacketing for Use over Thermal Insulation**

- ITW Insulation Systems/Pabco-Childers Metals

**C1775 Standard Specification for Laminate Protective Jacket and Tape for Use over Thermal Insulation for Outdoor Applications**

Type I

- HiCube Coating, LLC
- Ideal Tape
- 3M/Venture Tape

Type II

- HiCube Coating, LLC
- 3M/Venture Tape

Type III

- HiCube Coating, LLC
- Ideal Tape

**D1784**

**Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds**

Covers rigid PVC and CPVC compounds intended for general purpose use in extruded or molded form, including piping applications involving special chemical and acid resistance or heat resistance, composed of poly (vinyl chloride), chlorinated poly (vinyl chloride), or vinyl chloride copolymers containing at least 80 percent vinyl chloride, and the necessary compounding requirements.

- GLT Products and Speedline Corp.
- Johns Manville Corp.
- Proto Corp.

# Federal Specifications

Federal Law (Public Law 132) has mandated that Federal and Military Specifications shall be replaced with consensus or performance standards available in the public domain. To comply with this federal law, some of the following Federal or Military Specifications either have been made obsolete or soon will be obsolete. These obsolete specifications are included for reference only, and the new appropriate specifications are indicated.

## **HH-B-100B Canceled. Replaced by ASTM C 1136.**

Barrier Material, Vapor (for Pipe, Duct and Equipment Thermal Insulation)

Vapor barriers (jackets and facing) applied over thermal insulation for pipes, ducts, and equipment.

Type I—Low vapor transmission, high puncture resistance (for use on insulation for piping, ducts, and equipment)

Type II—Medium vapor transmission, moderate puncture resistance (for use on insulation for ducts and equipment)

## **HH-I-515E Canceled. Replaced by ASTM C 739.**

Insulation, Thermal (Loose Fill For Pneumatic or Poured Application): Cellulosic or Wood Fiber

Covers chemically treated, recycled cellulosic fiber (wood base) loose-fill thermal insulation for use in attics or enclosed spaces in housing, and other framed buildings at ambient temperatures ranging from –50° to 180°F, by pneumatic or poured application. Last revised June 1992.

Type I—Pneumatic application

Type II—Poured application

## **HH-I-521F**

Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures)

Canceled. Replaced by ASTM C 665.

## **HH-I-523C**

Insulation, Block and Pipe Covering, Thermal (Calcium Silicate for Temperatures to 1,200°F)

Canceled. Replaced by ASTM C 533.

## **HH-I-524C**

Insulation Board, Thermal (Polystyrene)

Canceled. Replaced by ASTM C 578.

## **HH-I-525A**

Insulation Board, Thermal (Cork)

Cork insulation board for thermal insulation.

Canceled. Replaced by ASTM C 640.

## **HH-I-526C**

Insulation Board, Thermal (Mineral Fiber)

Canceled. Replaced by ASTM C 726.

## **HH-I-592B**

Insulation Board, Thermal (Mineral Aggregate)

Canceled. Replaced by ASTM C 728.

## **HH-I-530B**

Insulation Board, Thermal, Unfaced (Polyurethane or Polyisocyanurate)

Canceled. Replaced by ASTM C 591.

## **HH-I-545B**

Insulation, Thermal and Acoustical (Mineral Fiber, Duct Lining Material)

Canceled. Replaced by ASTM C 1071.

## **H-I-551E**

Insulation, Block and Board, Thermal (Cellular Glass)

Canceled. Replaced by ASTM C 552.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

**HH-I-558C**

Insulation, Blankets, Thermal (Mineral Fiber, Industrial Type)

Covers industrial mineral fiber insulation. Last revised January 1992. Replaced by numerous ASTM documents.

**HH-I-573B**

Insulation, Thermal (Flexible Unicellular Sheet and Pipe Covering)

Canceled. Replaced by ASTM C 534.

**HH-I-574B**

Insulation, Thermal (Perlite)

Canceled. Replaced by ASTM C 549.

**HH-I-585C**

Insulation, Thermal (Vermiculite)

Canceled. Replaced by ASTM C 516.

**HH-I-1030B**

Insulation, Thermal (Mineral Fiber, for Pneumatic or Poured Application) Canceled. Replaced by ASTM C 764.

**HH-I-1252B Canceled—No Replacement**

Insulation, Thermal, Reflective (Aluminum Foil)

Aluminum foil insulation.

Form 1-Materials providing a minimum 19 millimeters (3/4-inch) reflective air space having an effective emittance (E) of 0.05 maximum

Form 2-Materials providing a minimum 10 millimeters (3/8-inch) reflective air space having an effective E of 0.05 maximum

**HH-P-31F**

Packing and Lagging Material, Fibrous Glass Metallic and Plain Cloth and Tape

Covers fibrous glass metallic cloth and tape packing for boiler casing access openings or insulation lagging pads and heavyweight, rubber-treated fibrous glass cloth and tape for pipe flange joint gaskets.

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.

**L-P-535E Inactive**

Plastic Sheet (Sheeting); Plastic Strip; Poly (Vinyl Chloride) and Poly (Vinyl Chloride-Vinyl Acetate), Rigid

Covers rigid unsupported poly (vinyl chloride) and poly (vinyl chloride-vinyl acetate) sheets (sheeting) and strip.

- Proto Corp.

**L-T-80B**

Tape, Pressure-Sensitive Adhesive (Aluminum-Backed)

Covers aluminum foil-backed pressure-sensitive adhesive tape designed for use in sealing applications where the properties of good weather resistance, reflectivity, and moisture vapor transmission resistance are required.

- Ideal Tape Co.
- Venture Tape Corp.

**LLL-I-535B**

Insulation Board, Thermal (Cellulosic Fiber)

Canceled. Replaced by ASTM C 208, and others.

**SS-C-160A**

Cements, Insulation Thermal

Heat-resisting cements. Canceled. Replaced by ASTM C 195 (Type III Grade U), ASTM C 196 (Type IV), and ASTM C 449/C 449M (Type III Grade F).

Type III—Mineral Wool

Type IV—Vermiculite (100°–1,800°F)

Type V—Diatomaceous Silica (100°–1,900°F)

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

### **SS-S-111C**

Sound Controlling Materials (Trowel and Spray Applications).

Covers acoustical materials for trowel or spray applications.

Type I—Cementitious materials

Type II—Fibrous materials

Type III—Synthetic Polymeric materials

- ITW Insulation Systems/Pabco-Childers Metals
- Mon-Eco Industries, Inc.

## **Military Specifications**

(Please see note under Federal Specifications regarding Public Law 132)

### **MIL-A-23054A**

Acoustic Absorptive Board, Fibrous Glass Perforated Fibrous Glass Cloth Faced

Covers fibrous glass cloth facing.

### **MIL-A-24179A**

Adhesive, Flexible Unicellular-Plastic Thermal Insulation

Covers high initial strength, heat- and water-resistant, contact-type adhesives for bonding flexible unicellular-plastic thermal insulation to itself and to metal surfaces.

- Aeroflex USA, Inc.
- Armacell LLC
- Foster Products (HB Fuller Construction Products)
- K-Flex USA
- Mon-Eco Industries, Inc.

### **MIL-A-24699**

Acoustical Transmission Loss Barrier Material

Covers two types of acoustical transmission loss barriers. Canceled without replacement.

Type I—Barium sulfate-loaded vinyl with fibrous glass facing

Type II—Wire-reinforced lead

### **MIL-A-3316C**

Adhesive, Fire-Resistant, Thermal Insulation

Covers fire-resistant adhesives for securing cloth and tape to certain thermal insulations and for securing thermal insulations to metal surfaces.

Class 1

Grade A—Pigmented white

- Foster Products (HB Fuller Construction Products)
- ITW Insulation Systems/Pabco-Childers Metals
- Mon-Eco Industries, Inc.
- Vimasco Corp.

Grade B—Pigmented red

- Foster Products (HB Fuller Construction Products)
- ITW Insulation Systems/Pabco-Childers Metals
- Mon-Eco Industries, Inc.
- Vimasco Corp.

Class 2

Grade A—Pigment white

- Foster Products (HB Fuller Construction Products)
- ITW Insulation Systems/Pabco-Childers Metals
- Mon-Eco Industries, Inc.

Class 3

Grade A—Pigmented white

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

- Foster Products (HB Fuller Construction Products)
- Mon-Eco Industries, Inc.

**MIL-B-5924B**

Batting, Insulation, Glass Fibers  
 Canceled. Replaced by ASTM C 800.

**MIL-C-2861E**

Cement, Insulation, High Temperature  
 Covers high temperature insulation cement for thermal control of irregular surfaces and for piping operating at temperatures between 100° and 1,800°F. Future replacement is ASTM C195.

- Johns Manville/Industrial Insulation Group
- Rock Wool Manufacturing Co.

**MIL-C-19565C**

Coating Compounds, Thermal Insulation, Fire- and Water-Resistant, Vapor-Barrier  
 Covers an interior vapor-barrier coating for insulated refrigerant and chilled water lines.

- Foster Products (HB Fuller Construction Products)
- ITW Insulation Systems/Pabco-Childers Metals
- Mon-Eco Industries, Inc.
- Vimasco Corp.

**MIL-C-20079H**

Cloth, Glass; Tape, Textile Glass; and Thread, Glass and Wire-Reinforced Glass  
 Covers fibrous glass cloth, tape, and sewing thread for use as thermal insulation compounds.

Type I—Cloth

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.

Type II—Tape

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.

Type III—Sewing thread

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Lewco Specialty Products, Inc.

**MIL-C-24576A**

Cloth, Silica Glass; Cloth, Coated, Glass, Silicone-Rubber Coated  
 Covers two types of woven cloth intended for use in protecting equipment and personnel from spatter from metal welding and cutting operations.

Type I—Silica glass

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.

Type II—Fibrous glass coated with silicone rubber

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.

**MIL-I-742F**

Insulation Board, Thermal, Fibrous Glass  
 Covers fire resistive fibrous glass thermal insulation board.

*Updated November 2016 by NIA's Technical Information Committee.  
 Copyright 2016 National Insulation Association. All rights reserved.*

Type I—Fibrous glass cloth-faced board

Type II—Unfaced board

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation

**MIL-I-2781F**

Insulation, Pipe, Thermal

Covers preformed thermal insulation for use on pipes at surface temperatures up to 1,200°F.

- Johns Manville/Industrial Insulation Group

**MIL-I-2818 C**

Insulation Blanket, Thermal, Fibrous Mineral

Covers wire-reinforced fibrous mineral wool insulation blanket.

Cancelled.

**MIL-I-2819F**

Insulation Block, Thermal

Covers thermal insulation block for use on machinery and equipment at surface temperatures up to 1,500°F.

Class 2—Temperatures up to 1,200°F

- Johns Manville/Industrial Insulation Group

Class 3—Temperatures up to 1,500°F

- Johns Manville/Industrial Insulation Group

**MIL-I-13042A**

Insulation Sleeving, Thermal, Tubular Flexible

Flexible braided or woven tubular thermal insulation sleeving intended primarily for covering heater ducts, exhaust pipes, and other tubes in vehicles. Canceled without replacement.

Composition I—Asbestos mixture

Composition II—Glass fiber

- Lewco Specialty Products, Inc.

**MIL-I-15475C**

Insulation Felt, Thermal, Fibrous Glass, Semi-rigid

Covers fibrous glass felt sheets for thermal insulation. Canceled without replacement.

- Johns Manville, Corp.

- Knauf Insulation

**MIL-I-16411F**

Insulation Felt, Thermal, Glass Fiber

Covers glass fiber insulation felt for thermal insulation of machinery and equipment.

- Alpha Associates, Inc.

- Auburn Mfg., Inc.

- Integrated Marketing Group

- Lewco Specialty Products, Inc.

**MIL-I-16562A**

Insulation, Synthetic, Rubber-Like, Chemically Expanded, Cellular (Sheet Form)

Covers chemically expanded synthetic rubber-like material (sheet form) for insulation purposes.

- Aeroflex USA, Inc.

- Armacell LLC

- K-Flex USA

**MIL-I-22023D**

Insulation Felt, Thermal and Sound Absorbing Felt, Fibrous Glass, Flexible

Covers lightweight, faced and unfaced flexible fibrous glass felt for thermal and sound absorbing insulation for use up to 400°F. Replacement is ASTM C 1139.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

Type I—Unfaced, thermal felt

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning

Type II—Unfaced, sound absorbing felt

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning

Type III—Faced, thermal and sound absorbing felt

- CertainTeed Corp.
- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation

**MIL-I-22344D**

Insulation, Pipe, Thermal, Fibrous Glass

Covers fibrous glass pipe insulation for use as thermal control on pipes, valves, and fittings for temperatures up to 370°F.

- Johns Manville Corp.
- Knauf Insulation
- Manson Insulation
- Owens Corning

**MIL-I-23128B**

Insulation Blanket, Thermal, Refractory Fiber, Flexible

Covers asbestos-free thermal insulation, cement, and adhesives, and asbestos containing thermal insulation tape, all with special corrosion, chloride, and fluoride requirements.

Types I through XVII (see specifications)

**MIL-DTL-24244D (SH)**

Insulation Material, with Special Corrosion, Chloride, and Fluoride Requirements

Covers asbestos-free thermal insulation, cement, and adhesives, and asbestos containing thermal insulation tape, all with special corrosion, chloride, and fluoride requirements.

Types I through XVIII (see specifications)

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Foster Products (HB Fuller Construction Products)
- Integrated Marketing Group
- Johns Manville/Industrial Insulation Group
- Johns Manville Corp.
- Knauf Insulation
- Lewco Specialty Products, Inc.
- Manson Insulation
- Owens Corning
- Pittsburgh Corning Corporation
- Rock Wool Manufacturing Co.
- Roxul, Inc.
- Thermafiber, Inc.
- Unifrax Corp.
- Vimasco Corp.

**MIL-P-15280J Inactive**

Plastic Material, Unicellular (Sheets and Tubes)

Covers chemically expanded unicellular elastomeric plastic foam material for thermal insulation.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

Form T—Tubular

- Aeroflex USA, Inc.
- Armacell LLC
- K-Flex USA

Form S—Sheet

- Aeroflex USA, Inc.
- Armacell LLC
- K-Flex USA

**MIL-S-24149C**

Studs, Welding, and Arc Shields (Ferrules)

Covers studs for welding with stud welding equipment and arc shields (ferrules) for shielding studs where applicable.

- Midwest Fasteners, Inc.

**MIL-T-23397B**

Tapes, Pressure Sensitive Adhesive for Masking During Paint Stripping Operations. Covers tapes for masking during paint stripping operations.

Type I—Three-hour protection

- Ideal Tape Co.
- Venture Tape Corp.

Type II—72-hour protection

- Venture Tape Corp.

**MIL-W-23680E**

Stud Welding Systems, DC, Integral Power Source and Control Unit, Electric Arc and Capacitor Discharge

Covers portable electric arc and capacitor discharge stud welding systems consisting of an integral direct current (DC) power source, timer controls, stud gun(s), and cables.

- Midwest Fasteners, Inc.

**MIL-W-80110C**

Stud Welding Units, Independent DC Power Source with Separate Control Unit, Electric Arc

Covers independent, direct current (DC) welding power sources and separate control units designed for electric arc stud welding with equipment and accessories.

- Midwest Fasteners, Inc.

**MIL-Y-1140H**

Yarn, Cord, Sleeving, Cloth, and Tape—Glass

Covers the basic forms of untreated glass fiber used by themselves or as components of other materials.

Class C—Continuous filament

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.

Class S—Staple fiber

Form 1—Yarn

- Lewco Specialty Products, Inc.

Form 2—Cordage

- Lewco Specialty Products, Inc.

Form 3—Sleeving

- Integrated Marketing Group
- Lewco Specialty Products, Inc.

Form 4—Cloth

- Alpha Associates, Inc.
- Auburn Mfg., Inc.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.

Form 5—Tape

- Alpha Associates, Inc.

*Updated November 2016 by NIA's Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*



- Auburn Mfg., Inc.
- Ideal Tape Co.
- Integrated Marketing Group
- Lewco Specialty Products, Inc.

#### **ELECTRIC BOAT SPECIFICATION – EB 4013**

Anti-Sweat and Refrigerant Insulation Systems (Sheet and Tubes)

- Armacell LLC
- K-Flex USA

#### **DOD-I-24688 / MIL-DTL-24688A**

Insulation; Polyimide, Sheet and Tube

## **Miscellaneous Specifications and Standards**

#### **American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE)**

- ANSI/ASHRAE/IES 90.1, “Energy Conservation in New Building Design”
- ASHRAE/IES 90.1, “Energy Efficient Design of New Buildings Except New Low-Rise Residential Buildings”
- Terminology of Heating, Ventilation, Air Conditioning, and Refrigeration
- ASHRAE 90.1 “Energy Standard for Buildings Except Low-Rise Residential Buildings”

*www.ashrae.org*

#### **Corps of Engineers, Department of the Army**

- Guide Specification for Military Construction CEGS 15250, “Thermal Insulation for Mechanical Systems”

#### **Energy Codes**

- International Code Council (ICC), *www.iccsafe.org*
- ASHRAE 90.1, *www.ashrae.org*

#### **Federal Construction Guide Specifications (FCGS)**

- FCGS—07250 Sprayed Fire Protection
- FCGS—07260 Firestopping Division 15-Mechanical
- FCGS—15180 Insulation of Mechanical Systems

#### **Manufacturers Standardization Society of the Valve and Fitting Industry, Inc.**

- MSS Publication SP-69, “Pipe Hangers and Supports-Selection and Application” (1983)

#### **Midwest Insulation Contractors Association (MICA)**

- *National Commercial and Industrial Insulation Standards* (2011, Seventh Edition)

#### **Model Building Codes**

- NFPA 5000, *www.nfpa.org*
- International Code Council (ICC), *www.iccsafe.org*
- Council of American Building Officials (CABO)

#### **National Insulation Association (NIA)**

- Insulation Science Glossary
- Insulation Specifications Chart

#### **Naval Facilities Engineering Command (NAVFACENGCOM)**

- Guide Specifications (NFGS) for Use in Regular Military Construction Projects
  - NFGS—07211 Loose Fill (Cellulosic and Mineral Fiber) Insulation
  - NFGS—07218 Spray Applied Cellulose Insulation
  - NFGS—07220 Roof Insulation

*Updated November 2016 by NIA’s Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*

- NFGS—07221 Masonry Wall Insulation
- NFGS—07222 Tapered Roof Insulation
- NFGS—07230 Perimeter and Under-Slab Insulation
- NFGS—07232 Ceiling, Wall, and Floor Insulation
- NFGS—07250 Spray-On Fireproofing
- NFGS—07250 Fireproofing
- NFGS—15250 Insulation of Mechanical Systems

#### **Nuclear Regulatory Commission**

- Regulatory Guide 1.36, “Non-Metallic Insulation for Austenitic Stainless Steel”

#### **National Fire Protection Association (NFPA)**

- NFPA 90A—*Standard for the Installation of Air Conditioning and Ventilating Systems*
- NFPA 90B—*Standard for the Installation of Warm Air Heating and Air Conditioning Systems*
- For the latest version, contact NFPA at 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9109, (800) 344-3555, Fax (800) 593-6372, [www.nfpa.org](http://www.nfpa.org).

#### **SCAQ MD**

- Regulation 1168-adhesives and coatings

#### **Adhesives**

- Aeroflex USA
- Armacell
- Foster Products (HB Fuller Construction Products)
- Johns Manville/Industrial Insulation Group
- Johns Manville Corp.
- K-Flex USA
- Pittsburgh Corning Corporation
- Vimasco Corp.

#### **Type II—72-hour protection**

- Armacell
- Foster Products (HB Fuller Construction Products)
- K-Flex USA
- Pittsburgh Corning Corporation
- Vimasco Corp.

#### **U.S. Coast Guard**

- 46 CFR 1 164.006 Deck Covering for Merchant Vessels
- 46 CFR1 164.007 Structural Insulations
- 46 CFR1 164.008 Bulkhead Panels
- 46 CFR 1 164.009 Noncombustible Materials
  - Integrated Marketing Group
- 46 CFR1 164.010 Structural Ceiling
- 46 CFR1 164.012 Interior Finished

THIS REVISION AND CORRECTIONS DATED: **November 2016**

#### **2016 REVISION**

Copyright © 2016. NATIONAL INSULATION ASSOCIATION. All rights reserved.

*Updated November 2016 by NIA’s Technical Information Committee.  
Copyright 2016 National Insulation Association. All rights reserved.*