

# Guide to Insulation Product Specifications

## Introduction

The *Guide to Insulation Product Specifications* was updated by the National Insulation Association Technical Information Committee. 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**  
**516 Herndon Parkway., Suite D**  
**Herndon, VA 20170**  
**Tel: (703) 464-6422; Fax: (703) 464-5896**  
[www.insulation.org](http://www.insulation.org)

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<b>C1427</b>	Specification for Flexible Cellular Polyolefin Thermal Insulation in Sheet and Tubular form
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<b>C1639</b>	Standard Specification for Fabrication of Cellular Glass Pipe and Tubing Insulation
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<b>C1695</b>	Standard Specification for Fabrication of Flexible Removable and Reusable Blanket Insulation for Hot Service
<b>C1696</b>	Standard Guide for Industrial Thermal Insulation Systems
<b>C1710</b>	Standard Guide for Installation of Flexible Closed Cell Preformed Insulation in Tube and Sheet Form
<b>C1728</b>	Standard Specification for Flexible Aerogel Insulation
<b>C1729</b>	Standard Specification for Aluminum Jacketing for Insulation
<b>C1763</b>	Standard Test Method for Water Absorption by Immersion of Thermal Insulation Materials
<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>C1879</b>	Standard Practice for Installation of Aluminum and Stainless Steel Jacketing over Thermal Insulation on Pipe and Rigid Tubing
<b>C1902</b>	Standard Specification for Cellular Glass Insulation Used in Building and Roof Applications
<b>C1916</b>	Standard Specification for Flexible Protective Jackets Made of Modified Asphalt/Butyl Rubber for Use over Thermal Insulation
<b>D1784</b>	Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

## Federal Specifications

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

## Replacement Information for Canceled Federal Specifications

**HH-B-100B Canceled. Replaced by ASTM C1136.**

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 C739.**

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 Canceled. Replaced by ASTM C665.**

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

**HH-I-523C Canceled. Replaced by ASTM C533.**

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

**HH-I-524C Canceled. Replaced by ASTM C578.**

Insulation Board, Thermal (Polystyrene)

**HH-I-525A Canceled. Replaced by ASTM C640.**

Insulation Board, Thermal (Cork)

Cork insulation board for thermal insulation.

**HH-I-526C Canceled. Replaced by ASTM C726.**

Insulation Board, Thermal (Mineral Fiber)

**HH-I-592B Canceled. Replaced by ASTM C728.**

Insulation Board, Thermal (Mineral Aggregate)

**HH-I-530B Canceled. Replaced by ASTM C591.**

Insulation Board, Thermal, Unfaced (Polyurethane or Polyisocyanurate)

**HH-I-545B Canceled. Replaced by ASTM C1071.**

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

**H-I-551E Canceled. Replaced by ASTM C552.**

Insulation, Block and Board, Thermal (Cellular Glass)

**HH-I-558C Canceled. Replaced by Numerous ASTM document.**

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

Covers industrial mineral fiber insulation.

**HH-I-573B Canceled. Replaced by ASTM C534.**

Insulation, Thermal (Flexible Unicellular Sheet and Pipe Covering)

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**HH-I-574B Canceled. Replaced by ASTM C549.**

Insulation, Thermal (Perlite)

**HH-I-585C Canceled. Replaced by ASTM C516.**

Insulation, Thermal (Vermiculite)

**HH-I-1030B Canceled. Replaced by ASTM C764.**

Insulation, Thermal (Mineral Fiber, for Pneumatic or Poured Application)

**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

**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.

**LLL-I-535B Canceled. Replaced by ASTM C208 and others.**

Insulation Board, Thermal (Cellulosic Fiber)

**SS-C-160A Canceled. Replaced by ASTM C195 (Type III Grade U), ASTM C196 (Type IV), and ASTM C 449/C 449M (Type III Grade F).**

Cements, Insulation Thermal

Heat-resisting cements.

Type III—Mineral Wool

Type IV—Vermiculite (100°–1,800°F)

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

## Military Specifications

**MIL-A-23054A** Acoustic Absorptive Board, Fibrous Glass Perforated Fibrous Glass Cloth Faced

**MIL-A-24179A** Adhesive, Flexible Unicellular-Plastic Thermal Insulation

**MIL-A-24699** Acoustical Transmission Loss Barrier Material

**MIL-A-3316C** Adhesive, Fire-Resistant, Thermal Insulation

**MIL-C-2861E** Cement, Insulation, High Temperature

**MIL-C-19565C** Coating Compounds, Thermal Insulation, Fire- and Water-Resistant, Vapor-Barrier

**MIL-C-20079H** Cloth, Glass; Tape, Textile Glass; and Thread, Glass and Wire-Reinforced Glass

**MIL-C-24576A** Cloth, Silica Glass; Cloth, Coated, Glass, Silicone-Rubber Coated

**MIL-I-742F** Insulation Board, Thermal, Fibrous Glass

**MIL-I-2781F** Insulation, Pipe, Thermal

**MIL-I-2818 C** Insulation Blanket, Thermal, Fibrous Mineral

**MIL-I-2819F** Insulation Block, Thermal

**MIL-I-13042A** Insulation Sleeving, Thermal, Tubular Flexible

**MIL-I-15475C** Insulation Felt, Thermal, Fibrous Glass, Semi-rigid

**MIL-I-16411F** Insulation Felt, Thermal, Glass Fiber

**MIL-I-22023D** Insulation Felt, Thermal and Sound Absorbing Felt, Fibrous Glass, Flexible

**MIL-I-22344D** Insulation, Pipe, Thermal, Fibrous Glass

**MIL-I-23128B** Insulation Blanket, Thermal, Refractory Fiber, Flexible

**MIL-DTL-24244D (SH)** Insulation Material, with Special Corrosion, Chloride, and Fluoride Requirements

**MIL-PRF-32161** Performance Specification for Insulation Fire Protection, Thermal, and Acoustic

**MIL-S-24149C** Studs, Welding, and Arc Shields (Ferrules)

**MIL-T-23397B** Tapes, Pressure Sensitive Adhesive for Masking During Paint Stripping Operations

**MIL-W-23680E** Stud Welding Systems, DC, Integral Power Source and Control Unit, Electric Arc and Capacitor Discharge

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**MIL-W-80110C** Stud Welding Units, Independent DC Power Source with Separate Control Unit, Electric Arc  
**MIL-Y-1140H** Yarn, Cord, Sleeving, Cloth, and Tape—Glass  
**ELECTRIC BOAT SPECIFICATION – EB 4013** Anti-Sweat and Refrigerant Insulation Systems (Sheet and Tubes)  
**DOD-I-24688 / MIL-DTL-24688A** Insulation; Polyimide, Sheet and Tube

## Replacement Information for Canceled Military Specifications

**MIL-P-15280J** Inactive. Plastic Material, Unicellular (Sheets and Tubes)

**MIL-I-16562A** **Canceled.** Insulation, Synthetic, Rubber-Like, Chemically Expanded, Cellular (Sheet Form). Replaced with ASTM D6576, Standard Specification for Flexible Cellular Rubber Chemically Blown, Type II for closed cell expanded rubber.

**MIL-A-24699** **Canceled. No Replacement.**

Acoustical Transmission Loss Barrier Material

Covers two types of acoustical transmission loss barriers.

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

Type II—Wire-reinforced lead

**MIL-B-5924B** **Canceled. Replaced by ASTM C800.**

Batting, Insulation, Glass Fibers

**MIL-C-2861E** **Canceled. Replacement is ASTM C195.**

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.

**MIL-I-2818 C** **Canceled. No Replacement.**

Insulation Blanket, Thermal, Fibrous Mineral

Covers wire-reinforced fibrous mineral wool insulation blanket.

**MIL-I-13042A** **Canceled. No Replacement.**

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.

**MIL-I-15475C** **Canceled. No Replacement.**

Insulation Felt, Thermal, Fibrous Glass, Semi-rigid

Covers fibrous glass felt sheets for thermal insulation.

**MIL-I-22023D** **Canceled. Replaced by ASTM C1139.**

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.

**MIL-P-15280J** **Inactive**

Plastic Material, Unicellular (Sheets and Tubes)

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

## 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.

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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)
<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

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<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>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.

### 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.

- 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.

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

- 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.

- 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

**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

**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
  - Rockfibras Do Brazil Ind Com
- Type II—Up to 1,700°F
  - Johns Manville

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## 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

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

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, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type II—Up to 1,200°F (molded)

- Johns Manville
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type III—Up to 1,200°F (V-groove)

- Johns Manville
- Rockfibras Do Brazil Ind Com

Type IV—Up to 1,000°F

- Johns Manville
- Knauf Insulation
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type V—Up to 1,400°F

- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

## C549

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### **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

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

- Owens Corning

Type II—Pipe and tubing insulation

- Owens Corning

Type III—Special Shapes

- Owens Corning

Type IV—Board

- Owens Corning

### **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, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type II—Maximum use 450°F

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type III—Maximum use 450°F

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type IV—Maximum use 850°F

- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type V—Maximum use 1,000°F

- CertainTeed, LLC

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- Johns Manville
- Knauf Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type VI—Maximum use 1,000°F

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type VII—Maximum use 1,200°F

- Johns Manville
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

## **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 IV

- Kingspan, LLC

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

- Johns Manville
- 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.

- Kingspan, LLC
- Johns Manville

Type II—Minimum compressive resistance of 35 psi.

- Duna-USA
- Kingspan, LLC
- Johns Manville

Type III—Minimum compressive resistance of 45 psi.

- Duna-USA
- Kingspan, LLC
- Johns Manville

Type IV—Minimum compressive resistance of 21 psi

- Duna-USA
- Kingspan, LLC
- Johns Manville

Type V—Minimum compressive resistance of 80 psi.

- Kingspan, LLC
- Johns Manville

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Type VI—Minimum compressive resistance of 125 psi.

- Kingspan, LLC
- Johns Manville

## **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

- GLT Products
- Johns Manville
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type II—Maximum use 1,200°F

- GLT Products
- Johns Manville
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type III—Maximum use 1200°F

- GLT Products
- Johns Manville
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

## **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

## **C612**

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

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

Type IA, IB—Maximum use 450°F

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type II—Maximum use 850°F

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type III—Maximum use 1,000°F

- Knauf Insulation
- Johns Manville
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type IV A, IV B—Maximum use 1,200°F

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- Johns Manville
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type V—Maximum use 1,800°F

- Owens Corning

## 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

Grade 5—Typical density 18 lb./ft<sup>3</sup>

- Johns Manville

Grade 6—Typical density 28 lb./ft<sup>3</sup>

- Johns Manville

- Promat

Grade 7—Typical density 40 lb./ft<sup>3</sup>

- Johns Manville

Grade 8—Typical density 60 lb./ft<sup>3</sup>

- Johns Manville

## 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, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

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

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com

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

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com

## C667

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## **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
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

### **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.

- Johns Manville

### **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.

Type I—Pneumatic application

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com

Type II—Poured application

- Rockfibras Do Brazil Ind Com
- Owens Corning

### **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

Type II—For use to 700°F

- Johns Manville

### **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

- Morgan Advanced Materials Thermal Ceramics

Type II—Maximum temperature use 1,600°F

- 3M
- Owens Corning
- Morgan Advanced Materials Thermal Ceramics
- Unifrax Corp.

Type III—Maximum temperature use 2,400°F

- 3M
- Morgan Advanced Materials Thermal Ceramics
- Unifrax Corp.

Type IV—Maximum temperature use 2,600°F

- 3M
- Morgan Advanced Materials Thermal Ceramics

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- Unifrax Corp.
- Type V—Maximum temperature use 3,000°F
- 3M
  - Morgan Advanced Materials 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)
  - Pabco-Childers Metals
- Type II—Nonflammable in the liquid (wet) state and will not pass edge-burning test
- Foster Products (HB Fuller Construction Products)
  - Pabco-Childers Metals
- Type III—Flammable in the liquid (wet) state and will pass edge-burning test
- Type IV—Flammable in the liquid (wet) state and will not pass edge-burning test
- Foster Products (HB Fuller Construction Products)
  - Pabco-Childers Metals

## **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, LLC
  - Johns Manville
  - Knauf Insulation
  - Manson Insulation
  - Owens Corning
  - Rockfibras Do Brazil Ind Com
- Type II—With vapor-retarder facing
- Johns Manville
  - Rockfibras Do Brazil Ind Com

## **C1014**

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

Covers spray-applied mineral fiber thermal or acoustical insulation.

- Owens Corning

## **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, LLC
  - Johns Manville
  - Knauf Insulation

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- Manson Insulation
  - Owens Corning
- Type II—Flat, in sheet form
- CertainTeed, LLC
  - 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.

- Integrated Marketing Group
- Lewco Specialty Products, Inc.

## **C1126**

### **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

- Johns Manville
- Polyguard Products

Type III—For use as pipe insulation

- Johns Manville
- 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

Type II (0.02 perm max, moderate strength)

- Lamtec Corp.
- Johns Manville

Type II (0.10 perm max, high strength)

- Lamtec Corp.
- Johns Manville

Type IV (0.10 perm max, moderate strength)

- Lamtec Corp.
- Johns Manville

Type VII (0.01 perm max, high strength)

Type VIII (0.02 perm max, moderate strength)

Type IX (0.00 perm max)

- K-Flex USA
- Kingspan, LLC
- Owens Corning
- Polyguard Products
- 3M

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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, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning

Type II—Unfaced sound absorbing blanket

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning

Type III—Faced, thermal and sound absorbing board

- CertainTeed, LLC
- Johns Manville
- 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

### **C1290**

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

- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Manson Insulation
- Owens Corning

### **C1393**

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

- CertainTeed, LLC
- Knauf Insulation
- Johns Manville
- Owens Corning
- Rockfibras Do Brazil Ind Com

### **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
- K-FLEX USA

### **C1482**

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**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
- T-Fit

Type II—Open-Cell Flexible Foam

**C1594**

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

**C1676**

**Standard Specification for Microporous Thermal Insulation**

Non-Hydrophobic, Type II, Grade 2A

- Morgan Advanced Materials Thermal Ceramics
- Promat

Hydrophobic, Type II, Grade 2B

- Johns Manville
- Morgan Advanced Materials Thermal Ceramics
- Promat

**C1695**

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

**C1696**

**Standard Guide for Industrial Thermal Insulation Systems**

**C1710**

**Standard Guide for Installation of Flexible Closed Cell Preformed Insulation in Tube and Sheet Form**

**C1728**

**Standard Specification for Flexible Aerogel Insulation**

Type I, Grade 1B

- Aspen Aerogels

Type III, Grade 1A

- Aspen Aerogels
- Armacell

Type III, Grade 1 B

Type IV, Grade 1 A

- Armacell

**C1729**

**Standard Specification for Aluminum Jacketing for Insulation**

- Pabco-Childers Metals
- RPR Products, Inc.

**C1763**

Standard Test Method for Water Absorption by Immersion of Thermal Insulation Materials

**C1767**

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

- Pabco-Childers Metals

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

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Type I

- Ideal Tape
- 3M

Type II

- 3M
- Foster Products (HB Fuller Construction Products)

Type III

- Foster Products (HB Fuller Construction Products)
- 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.

- Johns Manville
- Proto Corp.
- Speedline Corp.

#### **C1879**

Standard Practice for Installation of Aluminum and Stainless Steel Jacketing over Thermal Insulation on Pipe and Rigid Tubing

#### **C1902**

##### **Standard Specification for Cellular Glass Insulation Used in Building and Roof Applications**

Type I—minimum R-3.6 per inch thermal resistance at 75°F mean temperature, minimum compressive strength 50 psi.

- Owens Corning

Type II—minimum R-3.1 per inch thermal resistance at 75°F mean temperature, minimum compressive strength 55 psi.

- Owens Corning

Type III—minimum R-2.9 per inch thermal resistance at 75°F mean temperature, minimum compressive strength 100 psi.

- Owens Corning

Type IV—minimum R-2.6 per inch thermal resistance at 75°F mean temperature, minimum compressive strength 160 psi.

- Owens Corning

Type V—minimum R-2.3 per inch thermal resistance at 75°F mean temperature, minimum compressive strength 240 psi.

- Owens Corning

#### **C1916**

##### **Standard Specification for Flexible Protective Jackets Made of Modified Asphalt/Butyl Rubber for Use over Thermal Insulation**

Type I, Grade 1, Class A

- Foster Products (HB Fuller Construction Products)
- Owens Corning
- Polyguard Products

Type I, Grade 1, Class B

Type I, Grade 2, Class A

Type 1, Grade 3, Class A

- Polyguard Products

Type 1, Grade 3, Class B

- Owens Corning

Type 1, Grade 3, Class C

Type 1, Grade 4, Class A

- Owens Corning

Type 1, Grade 4, Class C

- Foster Products (HB Fuller Construction Products)
- Owens Corning
- Polyguard Products

Type II, Grade 1, Class B

- Owens Corning

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# 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.

## **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.

Type II—72-hour protection

## **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

- 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

- Integrated Marketing Group
- Lewco Specialty Products, Inc.

Form 5—Tape

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

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

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

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- 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* (2021, 9th 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
- Mechanical Insulation Basics
- Mechanical Insulation Design Guide
- Certified Insulation Inspectors
- Certified Energy Appraisers

**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
  - NFGS—07221 Masonry Wall Insulation
  - NFGS—07222 Tapered Roof Insulation

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- 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
- K-Flex USA
- Owens Corning

##### Type II—72-hour protection

- Armacell
- Foster Products (HB Fuller Construction Products)
- K-Flex USA
- Owens Corning

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

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

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#### **2022 REVISION**

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