Guide to Insulation Product Specifications

Introduction
The Guide to Insulation Product Specifications was updated by the National Insulation Association Technical Information Committee in July 2018 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 designated 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

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:
NIA
12100 Sunset Hills Rd., Suite 330
Reston, VA 20190
Tel: (703) 464-6422; Fax: (703) 464-5896
www.insulation.org

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C1594 Standard Specification for Polyimide Rigid Cellular Thermal Insulation
C1676 Standard Specification for Microporous Thermal Insulation
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Federal Specifications

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 Federal Specifications

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

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

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-2818C  Insulation Blanket, Thermal, Fibrous Mineral
MIL-I-2819F  Insulation Block, Thermal
MIL-I-13042A  Insulation Sleevings, Thermal, Tubular Flexible
MIL-I-15475C  Insulation Felt, Thermal, Fibrous Glass, Semi-rigid
MIL-I-16411F  Insulation Felt, Thermal, Glass Fiber
MIL-I-16562A  Insulation, Synthetic, Rubber-Like, Chemically Expanded, Cellular (Sheet Form)
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-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
MIL-W-80110C  Stud Welding Units, Independent DC Power Source with Separate Control Unit, Electric Arc
MIL-Y-1140H  Yarn, Cord, Sleevings, 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 Military Specifications

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

C167  Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations.
C168  Terminology Relating to Thermal Insulating Materials
C203  Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
C209  Test Methods for Cellulosic Fiber Insulation Board
C240  Test Methods of Testing Cellular Glass Insulation Block
C302  Test Method for Density and Dimensions of Preformed Pipe-Covering-Type Thermal Insulation
C303  Test Method for Density and Dimensions of Preformed Block-Type Thermal Insulation
C335  Test Method for Steady-State Heat Transfer Properties of Horizontal Pipe Insulation
C356  Test Method for Linear Shrinkage of Preformed High-Temperature Thermal Insulation Subjected to Soaking Heath
C390  Criteria for Sampling and Acceptance of Preformed Thermal Insulation Lots
C411  Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
C419  Practice for Making and Curing Test Specimens of Mastic Thermal Insulation Coatings
C423  Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
C447  Practice for Estimating the Maximum Use Temperature of Thermal Insulations
C450  Practice for Prefabrication and Field Fabrication of Thermal Insulating Fitting Cover for NPS Piping, Vessel Lagging, and Dished Head Segments
C461  Test Methods for Mastics and Coatings Used with Thermal Insulation
C488  Test Method for Conducting Exterior Exposure Tests of Finishes for Thermal Insulation
C585  Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System)
C634 Terminology Relating to Environmental Acoustics
C647 Guide to Properties and Tests of Mastics and Coating Finishes for Thermal Insulation
C653 Guide for Determination of the Thermal Resistance of Low-Density Blanket-Type Mineral Fiber Insulation
C680 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
C692 Test Method for Evaluating the Influence of Thermal Insulations on the External Stress Corrosion Cracking Tendency of Austenitic Stainless Steel
C740 Practice for Evacuated Reflective Insulation in Cryogenic Service
C755 Practice for Selection of Vapor Retarders for Thermal Insulation
C795 Standard Specification for Thermal Insulation for Use in Contact with Austenitic Stainless Steel
C871 Test Methods for Chemical Analysis of Thermal Insulation Materials for Leachable Chloride, Fluoride, Silicate, and Sodium Ions
C921 Practice for Determining the Properties of Jacketing Materials for Thermal Insulation
C929 Practice for Handling, Transporting, Shipping, Storage, Receiving, and Application of Thermal Insulation Materials to Be Used Over Austenitic Stainless Steel
C930 Classification of Potential Health and Safety Concerns Associated with Thermal Insulation Materials and Accessories
C1045 Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements
C1058 Practice for Selecting Temperatures for Evaluating and Reporting Thermal Properties of Thermal Insulation
C1101/C1101M Test Methods for Classifying the Flexibility or Rigidity of Mineral Fiber Blanket and Board Insulation
C1104/C1104M Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation
C1129 Standard Practice for Estimation of Heat Savings by Adding Thermal Insulation to Bare Valves and Flanges
C1136 Flexible, Low Permeance Vapor Retarders for Thermal Insulation
C1139 Fibrous Glass Thermal Insulation and Sound Absorbing Blanket and Board for Military Applications
C1199 Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
C1335 Test Methods for Measuring Non-Fibrous Content of Man-made Rock and Slag Mineral Fiber Insulation
C1338 Test Method for Determining Fungi Resistance of Insulation Materials and Facings
C1363 Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box
C1617 Standard Practice for Quantitative Accelerated Laboratory Evaluation of Extraction Solutions Containing Ions Leached from Thermal Insulation on Aqueous Corrosion of Metals
C1639 Standard Specification for Fabrication of Cellular Glass Pipe and Tubing Insulation
C1676 Standard Specification for Microporous Thermal Insulation
C1728 Standard Specification for Flexible Aerogel Insulation
C1729 Standard Specification for Aluminum Jacketing for Insulation
C1767 Standard Specification for Stainless Steel Jacketing for Use over Thermal Insulation
D792 Test Methods for Density and Specific Gravity Cellular Density of Plastics by Displacement
D1621 Test Method for Compressive Properties of Rigid Cellular Plastics
D1622 Test Method for Apparent Density of Rigid Cellular Plastics
D2126 Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
E84 Test method for Surface Burning Characteristics of Building Materials
E90 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
E96 Test Method for Water Vapor Transmission of Materials
E119 Test Method for Fire Tests of Building Construction and Materials
E136 Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
E176 Terminology Related to Fire Standards
E477 Test Method for Measuring Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers
E814 Test Method for Fire Tests of Through-Penetration Fire Stops
E2231 Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess the Surface Burning Characteristics
F683 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
- 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-1-585.
- Type I—Untreated

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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/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
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
- 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

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• Rock Wool Manufacturing Co.
• 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 LLC
  Type II—Pipe and tubing insulation
  • Pittsburgh Corning LLC
  Type III—Special Shapes
  • Pittsburgh Corning LLC
  Type IV—Board
  • Pittsburgh Corning LLC

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.
• 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
- 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.
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./ft³
Grade 2—Typical density 46 lb./ft³
Grade 3—Typical density 60 lb./ft³
Grade 4—Typical density 14 lb./ft³
• Johns Manville/Industrial Insulation Group
Grade 5—Typical density 18 lb./ft³
• Johns Manville/Industrial Insulation Group
Grade 6—Typical density 28 lb./ft³
• Johns Manville/Industrial Insulation Group
Grade 7—Typical density 40 lb./ft³
• Johns Manville/Industrial Insulation Group
Grade 8—Typical density 60 lb./ft³
• Johns Manville/Industrial Insulation Group

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.  
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)
- 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
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
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 LLC
  - 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.
     • 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
  • K-FLEX USA
C1482

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

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
• 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

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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.

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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.

HH-I-558C
Insulation, Blankets, Thermal (Mineral Fiber, Industrial Type)

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 Cancelled—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°F–1,800°F)
- Type V—Diatomaceous Silica (100°F–1,900°F)

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
  • 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.
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.
  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.

  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

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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 LLC
- 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.

**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.
• 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”
• 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

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.icsafe.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
  - 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.

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 LLC
- Vimasco Corp.

Type II—72-hour protection
• Armacell
• Foster Products (HB Fuller Construction Products)
• K-Flex USA
• Pittsburgh Corning LLC
• Vimasco Corp.

U.S. Coast Guard
• 46 CFR 164.006 Deck Covering for Merchant Vessels
• 46 CFR 164.007 Structural Insulations
• 46 CFR 164.008 Bulkhead Panels
• 46 CFR 164.009 Noncombustible Materials
  • Integrated Marketing Group

• 46 CFR 164.010 Structural Ceiling
• 46 CFR 164.012 Interior Finished

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