Reference Name: NIA-TIC-201-8/25
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 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. These members offer a safety data sheet (SDS/SIS, as required) and a technical/product data sheet (TDS/PDS) for these products.

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

Hard copies of this guide can be downloaded from the NIA website at *www.insulation.org*:
NIA
516 Herndon Parkway., Suite D
Herndon, VA 20170
Tel: (703) 464-6422; Fax: (703) 464-5896
www.insulation.org

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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
C1916	Standard Specification for Flexible Protective Jackets Made of Modified Asphalt/Butyl Rubber for Use over Thermal Insulation

C1917 Standard Specification for Rigid Polyvinyl Chloride (PVC) Jacketing for Insulation
C1936 Standard Test Method for Corrosiveness of Mineral-Fiber or Cellulosic-Fiber Insulation by Comparison to Control
D1784 Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds

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 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)

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-DTL-32585 Insulation, Thermal and Acoustic, Fibrous Glass
MIL-A-3316C Adhesive, Fire-Resistant, Thermal Insulation
MIL-A-24179A Adhesive, Flexible Unicellular-Plastic Thermal Insulation
MIL-A-24699 Acoustical Transmission Loss Barrier Material
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-2781F Insulation, Pipe, Thermal
MIL-I-2818 C Insulation Blanket, Thermal, Fibrous Mineral
MIL-I-2819F Insulation Block, Thermal
MIL-I-22023 Insulation Felt, Thermal and Sound absorbing Felt, Fibrous Glass, Flexible
MIL-PRF-22344 Insulation, Pipe, Thermal, Fibrous Glass
MIL-I-13042A Insulation Sleeving, Thermal, Tubular Flexible
MIL-I-15475C Insulation Felt, Thermal, Fibrous Glass, Semi-rigid
MIL-I-23128B Insulation Blanket, Thermal, Refractory Fiber, Flexible
MIL-DTL-24244D (SH) Insulation Material, with Special Corrosion, Chloride, and Fluoride Requirements

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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
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

Suspended Specification	MIL-DTL Replacement
MIL-A-23054	Type II (Acoustic), Form 1 (Board), Facing C (Faced with perforated fibrous glass cloth)
MIL-I-16111	Type I (Thermal), Form 3 (Blanket without Binder)
MIL-I-22023, Type I Thermal Blanket	Type I (Thermal), Form 2 (Blanket with Binder), Facing A (Unfaced)
MIL-I-22023, Type II Acoustic Blanket	Type II (Acoustic), Form 2 (Blanket with Binder), Facing A (Unfaced)
MIL-I-22023, Type III Faced Thermal and Acoustic Blanket	Type II (Acoustic), Form 2 (Blanket with Binder), Facing D (Faced with polyester film reinforced with MIL-Y-1140 fibrous glass scrim construction adhered to polyester film with a fire-retardant thermosetting adhesive conforming to the fire requirements of MIL-DTL-3316)
MIL-I-742, Type I Fibrous Glass Cloth Faced Thermal Board	Superseded by MIL-DTL-32585 Type I (Thermal), Form 1 (Board), Facing B (Faced with fibrous glass cloth conforming to MIL-C-20079, Type I, Class 2)
MIL-I-742 Type II	Superseded by MIL-DTL-32585 Type I (Thermal), Form 1 (Board), facing A (Unfaced)
MIL-I-22023, Type II Unfaced Board	Type I (Thermal), Form 1 (Board), Facing A (Unfaced)
MIL-PRF-22344	Type I (Thermal), Form 4 (Preformed pipe)
MIL-I-22344D Insulation, Pipe, Thermal, Fibrous Glass	
MIL-I-16411F Insulation Felt, Thermal, Glass Fiber	
MIL-I-22023D Insulation Felt, Thermal and Sound Absorbing Felt, Fibrous Glass, Flexible	Superseded by MIL-DTL-32585 Type II (Acoustic), Form 2 (Blanket with binder), Facing D (Faced with ½-mil thick polyester film reinforced with MIL-Y-1140 fibrous glass yarns scrim in a 4-yarns-per-inch by 3-yarns-per-inch construction adhered to polyester film with a fire-retardant thermosetting adhesive conforming to the fire requirements of MIL-A-3316)
MIL-I-22344D, Insulation, Pipe, Thermal, Fibrous Glass	
MIL-I-16562A, Insulation, Synthetic, Rubber-Like, Chemically Expanded, Cellular (Sheet Form)	
MIL-A-24179A, Adhesive, Flexible Unicellular-Plastic	

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Thermal Insulation	

MIL-I-16411 superseded by MIL-DTL-32585 Type I (thermal), form 3 (blanket without binder)

MIL-I-22023 type I thermal blanket superseded by MIL-DTL-32585 Type I (thermal), form 2 (blanket with binder), facing A (unfaced)

MIL-I-22023 type II acoustic blanket superseded by MIL-DTL-32585
Type II (acoustic), form 2 (blanket with binder), facing A

MIL-I-22023, type III faced, thermal and acoustic blanket
Superseded by MIL-DTL-32585
Type II (acoustic), form 2 (blanket with binder), facing D (faced with ½-mil thick polyester film reinforced with MIL-Y-1140 fibrous glass yarns scrim in a 4-yarns-per-inch by 3-yarns-per-inch construction adhered to polyester film with a fire-retardant thermosetting adhesive conforming to the fire requirements of MIL-A-3316)

MIL-PRF-22344 superseded by MIL-DTL-32585 Type I (thermal), form 4 (preformed pipe)

MIL-A-23054 Military Specification: Acoustical Absorptive Board, Fibrous Glass Perforated Fibrous Glass Cloth Faced
Superseded by MIL-DTL-32585 Type II (acoustic), form 1 (board), facing C (faced with perforated fibrous glass cloth)

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
- Guide Specification for Military Construction CEGS 15250, “Thermal Insulation for Mechanical Systems”
- Unified Facilities Guide Specifications, Section 23 07 00, “Thermal Insulation for Mechanical Systems”

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
- 46 CFRI 164.007 Structural Insulations
- 46 CFRI 164.009 Noncombustible Materials
- USCG Standard 164.109
    - Knauf
    - Manson

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.

C165 Test Method for Measuring Compressive Properties of Thermal Insulations.
C167 Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations.

C168	Terminology Relating to Thermal Insulating Materials
C177	Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus
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 Coefficiencies 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
C518	Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
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
C665 Sect. 13.8	Qualitative Measure of Corrosiveness of 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
C1763	Standard Test Method for Water Absorption by Immersion of Thermal Insulation Materials
C1879	Standard Practice for Installation of Aluminum and Stainless Steel Jacketing over Thermal Insulation on Pipe and Rigid Tubing

C1936 (formerly ASTM C665 section 13.8) Standard Test Method For Corrosiveness Of Mineral-Fiber Or Cellulosic-Fiber Insulation By Comparison To Control

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

- Ideal Products
- Johns Manville
- 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

- Johns Manville
- 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.

- Ideal Products
- Johns Manville
- 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

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
- 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)
- Ideal Products
- Johns Manville

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
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

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

Type II—Maximum use 450°F
- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type III—Maximum use 450°F
- CertainTeed, LLC
- Johns Manville
- Knauf Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type IV—Maximum use 850°F
- Johns Manville
- Knauf Insulation
- Owens Corning
- Rockfibras Do Brazil Ind Com
- ROCKWOOL Technical Insulation

Type V—Maximum use 1,000°F
- CertainTeed, LLC
- 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 Insulation, 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 Insulation, LLC
- Johns Manville

Type II—Minimum compressive resistance of 35 psi.

- Duna-USA
- Kingspan Insulation, LLC
- Johns Manville

Type III—Minimum compressive resistance of 45 psi.

- Duna-USA
- Kingspan Insulation, LLC
- Johns Manville

Type IV—Minimum compressive resistance of 21 psi

- Duna-USA
- Kingspan Insulation, LLC
- Johns Manville

Type V—Minimum compressive resistance of 80 psi.

- Kingspan Insulation, LLC
- Johns Manville

Type VI—Minimum compressive resistance of 125 psi.

- Kingspan Insulation, 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

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

Type II—Maximum use 1,200°F

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

Type III—Maximum use 1200°F

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

Type V—Maximum use 1,800°F

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$_3$
Grade 2—Typical density 46 lb/ft$_3$
Grade 3—Typical density 60 lb./ft$_3$
Grade 4—Typical density 14 lb./ft$_3$
- Johns Manville

Grade 5—Typical density 18 lb./ft$_3$
- Johns Manville

Grade 6—Typical density 28 lb./ft$_3$
- Johns Manville
- Promat

Grade 7—Typical density 40 lb./ft$_3$
- Johns Manville

Grade 8—Typical density 60 lb./ft$_3$
- 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

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
- Alkegen
- Owens Corning
- Morgan Advanced Materials Thermal Ceramics

Type III—Maximum temperature use 2,400°F
- 3M
- Alkegen
- Morgan Advanced Materials Thermal Ceramics

Type IV—Maximum temperature use 2,600°F
- 3M
- Alkegen
- Morgan Advanced Materials Thermal Ceramics

Type V—Maximum temperature use 3,000°F
- 3M
- Alkegen
- Morgan Advanced Materials Thermal Ceramics

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/Childers (HB Fuller Construction Products)

Type II—Nonflammable in the liquid (wet) state and will not pass edge-burning test
- Foster Products/Childers (HB Fuller Construction Products)

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/Childers (HB Fuller Construction Products)

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
- 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
- Owens Corning

Type II—Flat, in sheet form

- CertainTeed, LLC
- Johns Manville
- Knauf 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 Insulation, LLC
- Owens Corning
- Polyguard Products
- 3M

Type X (0.01 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
- Owens Corning

Type II—Unfaced sound absorbing blanket
- CertainTeed, LLC
- Johns Manville
- Knauf 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
- 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
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

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

C1728
Standard Specification for Flexible Aerogel Insulation

Type I, Grade 1B
- Aspen Aerogels
- Armacell

Type III, Grade 1A
- Aspen Aerogels
- Armacell

Type III, Grade 1 B

Type IV, Grade 1 A
- Armacell

Type V, Grade 1 A
- Armacell

C1729

Standard Specification for Aluminum Jacketing for Insulation

- Ideal Products
- Johns Manville
- RPR Products, Inc.

C1767

Standard Specification for Stainless Steel Jacketing for Use over Thermal Insulation

- Ideal Products
- Johns Manville
- RPR Products, Inc.

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

Type I

- 3M
- Ideal Tape
- Polyguard Products

Type II

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

Type III

- Foster Products (HB Fuller Construction Products)
- Ideal Tape
- Polyguard Products

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.

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

ASTM C1917
Standard Specification for Rigid Polyvinyl Chloride (PVC) Jacketing for Insulation
• Johns Manville
• Proto Corp.
• Speedline Corp.

ASTM C1936
Standard Test Method for Corrosiveness of Mineral-Fiber or Cellulosic-Fiber Insulation by Comparison to Control

Federal or Military 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-I-16411F
Insulation Felt, Thermal, Glass Fiber
Covers glass fiber insulation felt for thermal insulation of machinery and equipment.
• Integrated Marketing Group
• Lewco Specialty Products, Inc.

MIL-DTL-24244D (SH)
Insulation Material, with Special Corrosion, Chloride, and Fluoride Requirements
Covers asbestos-free thermal insulation, cement, and adhesives, and asbestos containing thermal insulation tape, all with special corrosion, chloride, and fluoride requirements.
Types I through XVIII (see specifications)
• Alkegen
• Foster Products (HB Fuller Construction Products)
• Integrated Marketing Group
• Johns Manville
• Knauf Insulation
• Lewco Specialty Products, Inc.
• Owens Corning
• ROCKWOOL Technical Insulation

MIL-PRF-32161
Performance Specification: Insulation, High Temperature Fire Protection, Thermal and Acoustic

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)
- 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)

- Certified Energy Appraisers
- Certified Insulation Inspectors
- Insulation Installation Video Series
- *Insulation Outlook* Magazine
- Insulation Science Glossary
- Insulation Specifications Chart
- Jacketing Specifications Chart
- Mastics Specifications Chart
- Mechanical Insulation Basics
- Mechanical Insulation Design Guide
- Sealants 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

Updated August 2025 by NIA's Technical Information Committee.

- 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
- 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 l 164.006 Deck Covering for Merchant Vessels
- 46 CFR1 164.007 Structural Insulations
  - Johns Manville
  - Owens Corning
  - Promat
- 46 CFR1 164.008 Bulkhead Panels
- 46 CFR l 164.009 Noncombustible Materials
  - Integrated Marketing Group
  - Johns Manville
  - Owens Corning
  - Promat
- 46 CFR1 164.010 Structural Ceiling
- 46 CFR1 164.012 Interior Finished

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