Guide to Insulation Product Specifications

Introduction

The *Guide to Insulation Product Specifications* was updated by the National Insulation Association Technical Information Committee in March 2009. 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.

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

ASTM Guides, Practices and Test Methods

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 indicates the year that the standard was adopted or, if revised, the year of last revision.

Users are advised to refer to the version of the standard in effect at the time of preparation of purchase documents and specifications. The standards listed below are current as this guide goes to press.

C 165-05 Test Method for Measuring Compressive Properties of Thermal Insulations.
C 167-03 Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations.
C 168-05a Terminology Relating to Thermal Insulating Materials
C 177-04 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus
C 203-05a Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
C 209-07ae1 Test Methods for Cellulosic Fiber Insulation Board
C 240-08 Test Methods of Testing Cellular Glass Insulation Block
C 302-07 Test Method for Density and Dimensions of Preformed Pipe-Covering-Type Thermal Insulation
C 303-07 Test Method for Density and Dimensions of Preformed Block-Type Thermal Insulation
C 335-05ae1 Test Method for Steady-State Heat Transfer Properties of Horizontal Pipe Insulation
C 356-03 Test Method for Linear Shrinkage of Preformed High-Temperature Thermal Insulation Subjected to Soaking Heath
C 390-03 Criteria for Sampling and Acceptance of Preformed Thermal Insulation Lots
C 411-05 Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation
C 419-00 Practice for Making and Curing Test Specimens of Mastic Thermal Insulation Coatings
C 423-07a Test Method for Sound Absorption and Sound Absorption Coefficiencies by the Reverberation Room Method
C 447-03 Practice for Estimating the Maximum Use Temperature of Thermal Insulations
C 450-02 Practice for Prefabrication and Field Fabrication of Thermal Insulating Fitting Cover for NPS Piping, Vessel Lagging, and Dished Head Segments
C 461-03 Test Methods for Mastics and Coatings Used with Thermal Insulation
C 488-05 Test Method for Conducting Exterior Exposure Tests of Finishes for Thermal Insulation
C 518-04 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
C 585-04 Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System)
C 634-02 Terminology Relating to Environmental Acoustics
C 647-00 Guide to Properties and Tests of Mastics and Coating Finishes for Thermal Insulation
C 653-07 Guide for Determination of the Thermal Resistance of Low-Density Blanket-Type Mineral Fiber Insulation
C 680-04e3 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
C 692-06 Test Method for Evaluating the Influence of Thermal Insulations on the External Stress Corrosion Cracking Tendency of Austenitic Stainless Steel
C 740-04 Practice for Evacuated Reflective Insulation in Cryogenic Service
C 755-03 Practice for Selection of Vapor Retarders for Thermal Insulation
C 871-04 Test Methods for Chemical Analysis of Thermal Insulation Materials for Leachable Chloride, Fluoride, Silicate, and Sodium Ions
C 921-03a Practice for Determining the Properties of Jacketing Materials for Thermal Insulation
C 929-04e1 Practice for Handling, Transporting, Shipping, Storage, Receiving, and Application of Thermal Insulation Materials to Be Used Over Austenitic Stainless Steel
C 930-05 Classification of Potential Health and Safety Concerns Associated with Thermal Insulation Materials and Accessories

C 1045-01 Practice for Calculating Thermal Transmission Properties from Steady-State Heat Flux Measurements
C 1058-03 Practice for Selecting Temperatures for Evaluating and Reporting Thermal Properties of Thermal Insulation
C 1101/C 1101M-06
Test Methods for Classifying the Flexibility or Rigidity of Mineral Fiber Blanket and Board Insulation
C 1104/C 1104M-06 Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation
C 1129-01 Standard Practice for Estimation of Heat Savings by Adding Thermal Insulation to Bare Valves and Flanges
C1199-00 Standard Test Method for Measuring the Steady-State Thermal Transmittance of Fenestration Systems Using Hot Box Methods
C 1335-04 Test Methods for Measuring Non-Fibrous Content of Man-made Rock and Slag Mineral Fiber Insulation
C 1338-00 Test Method for Determining Fungi Resistance of Insulation Materials and Facings
C 1363-05 Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box
D 792-00 Test Methods for Density and Specific Gravity Cellular Density of Plastics by Displacement
D 1621-04a Test Method for Compressive Properties of Rigid Cellular Plastics
D 1622-03 Test Method for Apparent Density of Rigid Cellular Plastics
D 2126-04 Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
E 84-06 Test method for Surface Burning Characteristics of Building Materials
E 90-04 Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions
E 96-05 Test Method for Water Vapor Transmission of Materials
E 119-04a Test Method for Fire Tests of Building Construction and Materials
E 136-04 Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
E 176-06 Terminology Related to Fire Standards
E 477-06a Test Method for Measuring Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers
E 814-06 Test Method for Fire Tests of Through-Penetration Fire Stops
E 2231-02e1 Standard Practice for Specimen Preparation and Mounting of Pipe and Duct Insulation Materials to Assess the Surface Burning Characteristics
F 683-03a Practice for Selection and Application of Thermal Insulation for Piping and Machinery

ASTM Specifications

A 240/A240M-06b
Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels
Covers chromium, chromium-nickel, and chromium-manganese-nickel stainless and heat-resisting steel plate, sheet, and strip for pressure vessels.
• ITW Insulation Systems/Pabco-Childers Metals
• R.P.R. Products, Inc.

A 653/A 653M-06
Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
• R.P.R. Products, Inc.

A 792/A 792M-06
Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process
• ITW Insulation Systems/Pabco-Childers Metals

• R.P.R. Products, Inc.

B 209-06
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.

C 195-00
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.
• Vesuvius USA Corp.

C 196-05
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.

C 208-01
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

C 449/C 449M-00
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.
• Industrial Insulation Group, LLC
• Insulco, Division of Mfs, Inc.

C 516-02
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
• Thermal Ceramics, Inc.
Type II—Surface treated

C 533-07
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.
Type Ia—Up to 1,200°F Pipe and Block

• Einsulation.com, Inc.
• Industrial Insulation Group, LLC
• Rockfibras Do Brazil Ind Com
Type II—Up to 1,700°F
• Industrial Insulation Group, LLC

C 534-05
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

C 547-07
Mineral Fiber Preformed Pipe Insulation
Covers mineral fiber preformed pipe insulation for use on surfaces up to 1,200°F.
Type I—Up to 850°F (molded)
• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
Type II—Up to 1,200°F (molded)
• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC-MPT Division
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
Type III—Up to 1,200°F (V-groove)

• Industrial Insulation Group, LLC-MPT Division
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
Type IV— Up to 1,000°F
• Industrial Insulation Group, LLC-MPT Division
• Knauf Insulation GmbH
• Rockfibras Do Brazil Ind Com
• Roxul, Inc.
Type V—Up to 1,400°F
• Rockfibras Do Brazil Ind Com
• Roxul, Inc.

C 549-06
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
• Industrial Insulation Group, LLC
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.

C 552-07
Cellular Glass Thermal Insulation
Covers cellular glass insulation for use at temperatures up to 800°F. Replaces federal specification HH-I-551.
Type I—Flat Block
• Pittsburgh Corning Corp.
Type II—Pipe and tubing insulation
• Pittsburgh Corning Corp.
Type III—Special Shapes
• Pittsburgh Corning Corp.
Type IV—Board
• Pittsburgh Corning Corp.

C 553-02
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.
• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.
Type II—Maximum use 450°F
• CertainTeed Corp.
• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC

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

Type III—Maximum use 450°F

• CertainTeed Corp.
• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.

Type IV—Maximum use 850°F

• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.

Type V—Maximum use 1,000°F

• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.

Type VI—Maximum use 1,000°F

• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.

Type VII—Maximum use 1,200°F

• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.

C 578-06
Rigid, Cellular Polystyrene Thermal Insulation
Covers cellular polystyrene for use at temperatures up to 165°F. Replace federal specification HH-I-524. Specification covers 10 types of rigid cellular polystyrenes that are commercially available. See specification for description of each type.
• ITW Insulation Systems
• Dyplast Products, LLC
• Knauf Insulation GmbH
• Owens Corning

C 591-05
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 strength of 16 psi.
• ITW Insulation Systems
• Dyplast Products, LLC
• Kingspan Corp.
Type II—Minimum compressive strength of 35 psi.
• ITW Insulation Systems
• Dyplast Products, LLC
• Kingspan Corp.
Type III—Minimum compressive strength of 45 psi.
• ITW Insulation Systems
• Dyplast Products, LLC
• Kingspan Corp.
Type IV—Minimum compressive strength of 21 psi
• ITW Insulation Systems
• Dyplast Products, LLC
• Kingspan Corp.

C 592-04
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
• Einsulation.com, Inc.
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Thermafiber, Inc.
Type II—Maximum use 1,200°F
• Einsulation.com, Inc.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Thermafiber, Inc.
Type III—Maximum use 1200°F

• Industrial Insulation Group, LLC
• Rockfibras Do Brazil Ind Com

C 610-07
Molded expanded Perlite Block and Pipe Thermal Insulation
Covers expanded perlite block and pipe insulation for use at temperatures up to 1,200°F.
• Aislantes Minerales, SA de CV
• Howred Corp.
• Industrial Insulation Group, LLC
• ITW Insulation Systems
• Sproule Manufacturing Co., Inc.

C 612-04
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.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.
Type II—Maximum use 850°F
• CertainTeed Corp.
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.
Type III—Maximum use 1,000°F
• Fibrex Insulations Inc.
• Knauf Insulation GmbH
• Industrial Insulation Group, LLC
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Thermafiber, Inc.
Type IVa, IVb—Maximum use 1,200°F
• Fibrex Insulations Inc.
• Industrial Insulation Group, LLC
• 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.

C 656-07
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$_3$
• Industrial Insulation Group, LLC
Grade 5—Typical density 18 lb./ft$_3$
• Industrial Insulation Group, LLC
Grade 6—Typical density 28 lb./ft$_3$
• Industrial Insulation Group, LLC
Grade 7—Typical density 40 lb./ft$_3$
• Industrial Insulation Group, LLC
Grade 8—Typical density 60 lb./ft$_3$
• Industrial Insulation Group, LLC

C 665-06
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.
• Industrial Insulation Group, LLC
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• 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 GmbH
• Manson Insulation Corp.
• 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 GmbH
• Manson Insulation Corp.
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.
• Thermafiber, Inc.

C 667-01
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.

C 726-05
Mineral Fiber Roof Insulation Board
Covers mineral fiber insulation board used principally above structural roof decks as a base for built-up roofing. Replaces federal specification HH-I-526.
• Fibrex Insulations Inc.
• Johns Manville Corp.
• Rockfibras Do Brazil Ind Com
• Roxul, Inc.

C 728-05
Perlite Thermal Insulation Board
Covers perlite thermal insulation board used principally above structural roof decks and as a base for builtup, modified, and elastomeric membrane roofing. Replaces federal specification HH-I-529.
• ITW Insulation Systems
• Johns Manville Corp.

C 739-05b
Cellulosic Fiber (Wood-Base) Loose Fill Thermal Insulation
Covers chemically treated, recycled cellulosic fiber (wood-base) loose-fill type thermal insulation, processed for installation by pneumatic or pouring methods, for use in attics or enclosed spaces in housing and other framed buildings at temperatures up to 180°F. Replaces federal specification HH-I-515.

C 764-06
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 GmbH
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Thermafiber, Inc.
Type II—Poured application
• Rockfibras Do Brazil Ind Com
• Thermafiber, Inc.

C 795-03
Thermal Insulation for Use in contact with Austenitic Stainless Steel
Covers non-metallic thermal insulation for use in contact with austenitic stainless steel equipment and piping. Similar to N.R.C. Reg. Guide # 1.36.
• Aeroflex USA, Inc.
• Alpha Associates, Inc.
• Armacell LLC
• BGF Industries, Inc.
• ETS Schaefer Corp.
• Fibrex Insulations Inc.
• Howred Corp.

• Industrial Insulation Group, LLC
• Johns Manville Corp.
• K-Flex USA
• Knauf Insulation GmbH
• Lewco Specialty Products, Inc.
• Manson Insulation Corp.
• Owens Corning
• Pittsburgh Corning Corp.
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Sproule Manufacturing Co., Inc.
• Thermafiber, Inc.
• Unifrax Corp.
• Vesuvius USA Corp.

C 800-05
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.

C 892-05
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
Type II—Maximum temperature use 1,600°F
• 3M Fire Protection Products
• ETS Schaefer Corp.
• Thermafiber, Inc.
• Thermal Ceramics, Inc.
• Unifrax Corp.
• Vesuvius USA Corp.
Type III—Maximum temperature use 2,400°F
• 3M Fire Protection Products
• ETS Schaefer Corp.
• Thermal Ceramics, Inc.
• Unifrax Corp.
• Vesuvius USA Corp.
Type IV—Maximum temperature use 2,600°F
• 3M Fire Protection Products
• ETS Schaefer Corp.
• Thermal Ceramics, Inc.
• Unifrax Corp.
• Vesuvius USA Corp.
Type V—Maximum temperature use 3,000°F
• 3M Fire Protection Products
• Thermal Ceramics, Inc.
• Unifrax Corp.
• Vesuvius USA Corp.

C 916-01e1
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
• Fomo Products
• Foster Products (Specialty Construction Brands, Inc.)
• 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 (Specialty Construction Brands, Inc.)
• 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 (Specialty Construction Brands, Inc.)
• ITW Insulation Systems/Pabco-Childers Metals
• Mon-Eco Industries, Inc.

C 991-03
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 GmbH
• Manson Insulation Corp.
• Owens Corning
• Rockfibras Do Brazil Ind Com
Type II—With vapor-retarder facing
• Johns Manville Corp.
• Rockfibras Do Brazil Ind Com

C 1014-03
Spray-Applied Mineral Fiber Thermal and Sound Absorbing Insulation
Covers spray-applied mineral fiber thermal or acoustical insulation.
• Thermafiber, Inc.

C 1029-05
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 strength 15 psi
• Fomo Products
• RHH Foam Systems Inc.
Type II—Minimum compressive strength 25 psi
• Fomo Products
Type III—Minimum compressive strength 40 psi
Type IV—Minimum compressive strength 60 psi

C 1071-05
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 GmbH
• Manson Insulation Corp.
• Owens Corning
Type II—Flat, in sheet form
• CertainTeed Corp.
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning

C 1086-04
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.
• BGF Industries, Inc.
• ETS Schaefer Corp.
• Lewco Specialty Products, Inc.
• Newtex Industries, Inc.
• Rockfibras Do Brazil Ind Com
• Thermal Ceramics, Inc.
• Vesuvius USA Corp.

C 1126-04
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
• Kingspan Corp.
Type III—For use as pipe insulation
• Kingspan Corp.

C 1136-06
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 between temperatures of 20°F and 150°F. Replaces federal specification HH-B-100.
• Alpha Associates, Inc.
• Compac Corp.
• Johns Manville Corp.
• Lamtec Corp.
• Venture Tape Corp.
• Vytech Industries, Inc.

C 1139-02
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 GmbH
• Manson Insulation Corp.

• Owens Corning
Type II—Unfaced sound absorbing blanket
• CertainTeed Corp.
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning
Type III—Faced, thermal and sound absorbing board
• CertainTeed Corp.
• Johns Manville Corp.
• Knauf Insulation GmbH

C 1149-02
Self-Supported Spray Applied Cellulosic Thermal/Acoustical Insulation
Covers self-supported spray applied cellulosic fibers intended for use as thermal or acoustical insulation.

C 1224-03
Reflective Insulation for Building Applications
Covers reflective insulations for use in building applications.

C 1289-06
Faced Rigid Cellular Polyisocyanurate Thermal Insulation
Covers various types (I through VI) faced boards. Replaces ASTM C 1013-94. See specifications for a more detailed description.

C 1290-06
Flexible Fibrous Glass Blanket Insulation Used to Externally Insulate HVAC Ducts
• CertainTeed Corp.
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning

C 1393-00a
Specification for Perpendicularly Oriented Mineral Fiber Roll and Sheet Thermal Insulation for Pipes and Tanks
• CertainTeed Corp.
• Knauf Insulation GmbH
• Industrial Insulation Group, LLC-MPT Division
• Owens Corning
• Rockfibras Do Brazil Ind Com
• Rock Wool Manufacturing Co.

C 1410-05a
Specification for Melamine Thermal and Sound-Absorbing Insulation
• Accessible Products Co./TechLite Insulation

C 1427-07
Specification for Flexible Cellular Polyolefin Thermal Insulation in Sheet and Tubular form
• Armacell LLC
• Nomaco Insulation

C 1482-09
Standard Specification for Polyimide Flexible Cellular Thermal and Sound Absorbing Insulation.
• Evonik Foams, Inc.

C 1534-07
Specification for Flexible Polymeric Foam Sheet Insulation Used as a Thermal and Sound Absorbing Liner for Duct
Type I
• Aeroflex USA, Inc.
• Armacell LLC
• K-Flex USA
Type II
• Evonik Foams, Inc

D 1784-06
Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds
Covers rigid PVC and CPVC compounds intended for general purpose use in extruded or molded form, including piping applications involving special chemical and acid resistance or heat resistance, composed of poly (vinyl chloride), chlorinated poly (vinyl chloride), or vinyl chloride copolymers containing at least 80 percent vinyl chloride, and the necessary compounding requirements.
• GLT Products and Speedline Corp.
• Johns Manville Corp.
• Proto Corp.

Federal Specifications

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

HH-B-100B Canceled. Replaced by ASTM C 1136.
Barrier Material, Vapor (for Pipe, Duct and Equipment Thermal Insulation)
Vapor barriers (jackets and facing) applied over thermal insulation for pipes, ducts, and equipment.
Type I—Low vapor transmission, high puncture resistance (for use on insulation for piping, ducts, and equipment)
Type II—Medium vapor transmission, moderate puncture resistance (for use on insulation for ducts and equipment)

HH-I-515E Canceled. Replaced by ASTM C 739.
Insulation, Thermal (Loose Fill For Pneumatic or Poured Application): Cellulosic or Wood Fiber
Covers chemically treated, recycled cellulosic fiber (wood base) loose-fill thermal insulation for use in attics or enclosed spaces in housing, and other framed buildings at ambient temperatures ranging from –50° to 180°F, by pneumatic or poured application. Last revised June 1992.
Type I—Pneumatic application
Type II—Poured application

HH-I-521F
Insulation Blankets, Thermal (Mineral Fiber, For Ambient Temperatures)
Canceled. Replaced by ASTM C 665.

HH-I-523C
Insulation, Block and Pipe Covering, Thermal (Calcium Silicate for Temperatures to 1,200°F)
Canceled. Replaced by ASTM C 533.

HH-I-524C
Insulation Board, Thermal (Polystyrene)
Canceled. Replaced by ASTM C 578.

HH-I-525A
Insulation Board, Thermal (Cork)
Cork insulation board for thermal insulation.
Canceled. Replaced by ASTM C 640.

HH-I-526C
Insulation Board, Thermal (Mineral Fiber)
Canceled. Replaced by ASTM C 726.

HH-I-592B
Insulation Board, Thermal (Mineral Aggregate)
Canceled. Replaced by ASTM C 728.

HH-I-530B
Insulation Board, Thermal, Unfaced (Polyurethane or Polyisocyanurate)
Canceled. Replaced by ASTM C 591.

HH-I-545B
Insulation, Thermal and Acoustical (Mineral Fiber, Duct Lining Material)
Canceled. Replaced by ASTM C 1071.

H-I-551E
Insulation, Block and Board, Thermal (Cellular Glass)
Canceled. Replaced by ASTM C 552.

HH-I-558C
Insulation, Blankets, Thermal (Mineral Fiber, Industrial Type)
Covers industrial mineral fiber insulation. Last revised January 1992. Replaced by numerous ASTM documents.

HH-I-573B
Insulation, Thermal (Flexible Unicellular Sheet and Pipe Covering)
Canceled. Replaced by ASTM C 534.

HH-I-574B
Insulation, Thermal (Perlite)
Canceled. Replaced by ASTM C 549.

HH-I-585C
Insulation, Thermal (Vermiculite)
Canceled. Replaced by ASTM C 516.

HH-I-1030B
Insulation, Thermal (Mineral Fiber, for Pneumatic or Poured Application) Canceled. Replaced by ASTM C 764.

HH-I-1252B 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.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, 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.
• Compac Corp.
• Ideal Tape Co.
• Venture Tape Corp.

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LLL-I-535B
Insulation Board, Thermal
(Cellulosic Fiber)
Canceled. Replaced by ASTM C 208, and others.

SS-C-160A
Cements, Insulation Thermal
Heat-resisting cements. Canceled. Replaced by ASTM C 195 (Type III Grade U), ASTM C 196 (Type IV), and ASTM C 449/C 449M (Type III Grade F).
Type III—Mineral Wool
Type IV—Vermiculite (100°–1,800°F)
Type V—Diatomaceous Silica (100°-1,900°F)

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 (Specialty Construction Brands, Inc.)
• Mon-Eco Industries, Inc.
• K-Flex USA

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 (Specialty Construction Brands, Inc.)
• ITW Insulation Systems/Pabco-Childers Metals
• Mon-Eco Industries, Inc.
• Vimasco Corp.
Grade B—Pigmented red
• Foster Products (Specialty Construction Brands, Inc.)
• ITW Insulation Systems/Pabco-Childers Metals
• Mon-Eco Industries, Inc.
• Vimasco Corp.
Class 2
Grade A—Pigment white
• Foster Products (Specialty Construction Brands, Inc.)
• ITW Insulation Systems/Pabco-Childers Metals
• Mon-Eco Industries, Inc.
Class 3
Grade A—Pigmented white
• Foster Products (Specialty Construction Brands, Inc.)
• 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.
• Industrial Insulation Group, LLC
• Insulco, Division of Mfs, Inc.
• 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 (Specialty Construction Brands, Inc.)
• 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.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, Inc.
Type II—Tape
• Alpha Associates, Inc.
• Auburn Mfg., Inc.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, Inc.
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Type III—Sewing thread
• ACS Industries, Inc.
• Alpha Associates, Inc.
• Auburn Mfg., Inc.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, 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.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, Inc.
Type II—Fibrous glass coated with silicone rubber
• Alpha Associates, Inc.
• Auburn Mfg., Inc.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, 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 GmbH
• Manson Insulation Corp.

MIL-I-2781F

Insulation, Pipe, Thermal
Covers preformed thermal insulation for use on pipes at surface temperatures up to 1,200°F.
• Industrial Insulation Group, LLC

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
• Industrial Insulation Group, LLC
Class 3—Temperatures up to 1,500°F
• Industrial Insulation Group, LLC

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 GmbH

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.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, 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 GmbH
• Manson Insulation Corp.

• Owens Corning
Type II—Unfaced, sound absorbing felt
• CertainTeed Corp.
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.
• Owens Corning
Type III—Faced, thermal and sound absorbing felt
• CertainTeed Corp.
• Johns Manville Corp.
• Knauf Insulation GmbH
• Manson Insulation Corp.

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 GmbH
• Manson Insulation Corp.
• Owens Corning

MIL-I-23128B
Insulation Blanket, Thermal, Refractory Fiber, Flexible
Covers asbestos-free thermal insulation, cement, and adhesives, and asbestos containing thermal insulation tape, all with special corrosion, chloride, and fluoride requirements.
Types I through XVII (see specifications)

MIL-DTL-24244D (SH)
Insulation Material, with Special Corrosion, Chloride, and Fluoride Requirements
Covers asbestos-free thermal insulation, cement, and adhesives, and asbestos containing thermal insulation tape, all with special corrosion, chloride, and fluoride requirements.
Types I through XVIII (see specifications)
• Alpha Associates, Inc.
• Auburn Mfg., Inc.
• Fibrex Insulations Inc.
• Foster Products (Specialty Construction Brands, Inc.)
• Howred Corp.
• Industrial Insulation Group, LLC-MPT Division
• Insulco, Division of Mfs, Inc.
• Johns Manville Corp.
• Knauf Insulation GmbH
• Lewco Specialty Products, Inc.
• Manson Insulation Corp.
• McAllister Mills, Inc.
• Newtex Industries, Inc.
• Owens Corning
• Pittsburgh Corning Corporation
• Rock Wool Manufacturing Co.
• Roxul, Inc.
• Sproule Manufacturing Co., Inc.
• Thermafiber, Inc.
• Thermal Ceramics, Inc.
• Unifrax Corp.
• Vesuvius USA 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.
• AGM Industries, Inc.
• Gemco
• 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.
• Gemco
• 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.
• Gemco
• 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.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
Class S—Staple fiber
Form 1—Yarn
• Lewco Specialty Products, Inc.
Form 2—Cordage

• Lewco Specialty Products, Inc.
Form 3—Sleeving
• Lewco Specialty Products, Inc.
• Newtex Industries, Inc.
Form 4—Cloth
• Alpha Associates, Inc.
• Auburn Mfg., Inc.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, Inc.
Form 5—Tape
• Alpha Associates, Inc.
• Auburn Mfg., Inc.
• Ideal Tape Co.
• Lewco Specialty Products, Inc.
• McAllister Mills, Inc.
• Newtex Industries, Inc.

ELECTRIC BOAT SPECIFICATION – EB 4013
Anti-Sweat and Refrigerant Insulation Systems (Sheet and Tubes)
• Armacell LLC
• K-Flex USA

DOD-I-24688
Insulation; Polyimide, Sheet and Tube
• Evonik Foams, Inc.

Miscellaneous Specifications and Standards

American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE)
• ANSI/ASHRAE/IES 90.1-1980, “Energy Conservation in New Building Design”
• ASHRAE/IES 90.1-1989, “Energy Efficient Design of New Buildings Except New Low-Rise Residential Buildings”
• Terminology of Heating, Ventilation, Air Conditioning, and Refrigeration
• ASHRAE 90.1-2001 “Energy Standard for Buildings Except Low-Rise Residential Buildings”
www.ashrae.org

U.S. Coast Guard
• 46 CFR l 164.006 Deck Covering for Merchant Vessels
• 46 CFR1 164.007 Structural Insulations
• 46 CFR1 164.008 Bulkhead Panels
• 46 CFR l 164.009 Noncombustible Materials
• 46 CFR1 164.010 Structural Ceiling
• 46 CFR1 164.012 Interior Finished

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

Corps of Engineers, Department of the Army
• Guide Specification for Military Construction CEGS 15250, “Thermal Insulation for 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* (1999, Fifth Edition)

National Insulation Association (NIA)
• Glossary of Insulation Industry Terms (December 1986)

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

Federal Construction Guide Specifications (FCGS)
FCGS—07250 Sprayed Fire Protection
FCGS—07260 Firestopping Division 15-Mechanical
FCGS—15180 Insulation of Mechanical Systems

National Fire Protection Association (NFPA)
NFPA 90A—*Standard for the Installation of Air Conditioning and Ventilating Systems—2002 Edition*
NFPA 90B—*Standard for the Installation of Warm Air Heating and Air Conditioning Systems—2002 Edition*
Contact NFPA at 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9109, (800) 344-3555, Fax (800) 593-6372, www.nfpa.org.

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

Energy Codes
International Code Council (ICC), www.iccsafe.org
ASHRAE 90.1, www.ashrae.org
THIS REVISION AND CORRECTIONS DATED: **April 6, 2010**
NATIONAL INSULATION ASSOCIATION

2010 REVISION April 6, 2010