



MANSON INSULATION PRODUCTS LTD
MANUFACTURED BY KNAUF INSULATION

GUIDE SPECIFICATIONS IN CSI FORMAT
2016-02

This Specification Section is provided in CSI format for engineers and architects specifying fiberglass insulation manufactured by Knauf Insulation GmbH. in Shelbyville, Indiana. Delete insulation types not required for your project and include this Section in your Project Manual, or copy the applicable paragraphs into your existing office master specification for fiberglass insulation. Questions? Please contact Michelle Roberts, Chatham Hill Design and Build, LLC for specification assistance. michelle@chathamhilldesignbuild.com

SECTION 072100

FIBERGLASS INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fiberglass thermal and acoustical blanket insulation. (AK BLANKET™)
2. Fiberglass thermal and acoustical board insulation. (AK BOARD™)
3. Fiberglass thermal and acoustical smooth board insulation. (AK SMOOTH BOARD™)
4. Fiberglass equipment, pipe and tank insulation. (AK FLEX™)
5. Fiberglass duct liner insulation. (AKOUSTI-LINER™)
6. Fiberglass thermal and acoustic duct liner insulation. (AKOUSTI-LINER R™)
7. Fiberglass duct wrap insulation. (ALLEY WRAP B™)
8. Fiberglass duct board insulation. (ALLEY KAT AIR DUCT BOARD™)
9. Fiberglass pipe insulation. (ALLEY-K™)
10. Fiberglass pipe insulation. (AK-CLAD™)
11. Fiberglass high temperature batt and blanket insulation. (HT BATT and HD BLANKET)
12. Fiberglass high temperature blanket insulation. (HT BLANKET)
13. Fiberglass high temperature board insulation. (HT BOARD)
14. Fiberglass high temperature panel insulation. (HT PANEL)
15. Fiberglass acoustical board insulation. (Akousti-Board Black™)
16. Fiberglass acoustical blanket insulation. (Akousti-Shield™)

1.2 SUBMITTALS

- A. Product Data: For each product specified, including a list of the standards that the product complies with.
- B. Sustainable Design Certifications:



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1. Indoor Air Quality Certification: GREENGUARD Environmental Institute, GREENGUARD GOLD certified for superior indoor air quality performance. [Click Here](#) to review Sustainable Building Programs Credits & Codes, including LEED v4. (AKOUSTI-LINER™) (AKOUSTI-LINER R™) (ALLEY WRAP™) (ALLEY-K™).
2. USGBC LEED v4 Credit EQc1 – Interior Design & Construction – Enhanced Indoor Air Quality Strategies - Option 2D (AKOUSTI-LINER™) (AKOUSTI-LINER R™) (ALLEY WRAP™) (ALLEY-K™).
3. USGBC LEED v4 Credit EQc2– Interior Design & Construction - Low-Emitting Materials (AKOUSTI-LINER™) (AKOUSTI-LINER R™) (ALLEY WRAP™) (ALLEY-K™).
4. USGBC LEED v4 Credit EQc4 – Interior Design & Construction – Indoor Air Quality Assessment - Option 2 Air Testing (AKOUSTI-LINER™) (AKOUSTI-LINER R™) (ALLEY WRAP™) (ALLEY-K™).
5. USGBC LEED v4 Credit EQc1- Building Design & Construction – Enhanced Indoor Air Quality Strategies - Option 2 Additional Enhanced IAQ Strategies - D (AKOUSTI-LINER™) (AKOUSTI-LINER R™) (ALLEY WRAP™) (ALLEY-K™).
6. USGBC LEED v4 Credit EQc4 – Building Design & Construction – Indoor Air Quality Assessment - Option 2 Air Testing (AKOUSTI-LINER™) (AKOUSTI-LINER R™) (ALLEY WRAP™) (ALLEY-K™).
7. USGBC LEED v4 Credit MRc2 – Operations & Maintenance – Purchasing - Facility Maintenance and Renovation – Option 1(AKOUSTI-LINER™) (AKOUSTI-LINER R™) (ALLEY WRAP™) (ALLEY-K™)
8. USGBC LEED Credit MRc4 - For products containing recycled content, provide documentation indicating percentages, by weight, of postconsumer and pre-consumer recycled content. Include statement indicating costs for each product having recycled content. Provide cost breakdowns for the total installed cost and material-only cost.
9. USGBC LEED Credit MRc5 - For products and materials selected to comply with requirements for regional materials, provide product data indicating location of material manufacturer and point of extraction, harvest, and/or recovery for each raw material. Include statement indicating distance to Project, cost for each regional material, and fraction by weight that is considered regional.
10. NAHB ICC 700 National Green Building Standard – 901.11 - Insulation

1.3 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of building insulation through one source from a single manufacturer.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration by moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.



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PART 2 - PRODUCTS

2.1 INSULATION

- A. Manufacturer: Knauf Insulation GmbH, as manufactured in Shelbyville, Indiana. Telephone: 1-800-626-7661, www.imanson.com.
- B. Fiberglass Thermal and Acoustical Blanket Insulation: AK BLANKET™ by Manson Insulation Products Ltd.
1. Material: Glass fibers bonded with a thermosetting resin, unfaced.
 2. Compliance: ASTM C 553, Type I, Type II.
 3. Maximum Service Temperature: ASTM C 411, unfaced, up to 350°F (177°C).
 4. Odor: ASTM C 1304, not objectionable.
 5. Mold Growth: ASTM C 1338, no growth.
 6. Water Vapor Sorption: ASTM C 1104, less than 3% by weight when exposed to air at 120°F (49°C) and 95% humidity for 96 hours.
 7. Sound Absorption Coefficient: ASTM C 423, Type A Mounting, 1.5 pcf (24 kg/m³) density, 1 inch (25 mm) thickness, NRC 0.65, 2 inch (51 mm) thickness, NRC 1.05.
 8. Thermal Conductivity: ASTM C 518 at 75°F mean temperature, 1.5 pcf (24 kg/m³) density, 0.24 BTU-in. ft³°F (0.035 m².°C/W).
 9. Surface Burning Characteristics: ASTM E 84 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed. UL/ULC Classified.
 10. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- C. Fiberglass Thermal and Acoustical Board Insulation: AK BOARD™ by Manson Insulation Products Ltd.
1. Material: Inorganic glass fibers preformed into boards bonded by a thermosetting resin.
 2. Facings: Plain (unfaced), factory applied foil-scrim-kraft (FSK), all service jacket (ASJ).
 3. Compliance:
 - a. ASTM C 612, Type IA (1.6, 2.25, 3.0, 4.25, 6.0 pcf) (26, 36, 48, 68, 96 kg/m³); Type IB (3.0, 4.25, 6.0 pcf) (48, 68, 96 kg/m³).
 - b. ASTM C 1136 (facings): FSK Type II, ASJ Type I, II.
 - c. California Title 24.
 - d. City of New York MEA #324-83-M.
 4. Corrosiveness: ASTM C 665, will not accelerate corrosion of aluminum, steel or copper.
 5. Puncture Resistance: TAPPI Test T803 Beach Units, FSK facings 25, ASJ facings 50.
 6. Temperature Range: ASTM C411, Operating temperatures from 0°F to 450°F (-18°C to 232°C)
 7. Water Vapor Transmission: ASTM E 96, Procedure A, FSK and ASJ vapor retarders maximum vapor transmission rate of .02 perms.
 8. Water Vapor Sorption: ASTM C 1104, less than 5% by weight when exposed to air at 120°F (49°C) and 95% humidity for 96 hours.



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9. Shrinkage: ASTM C 356, less than 0.3% linear shrinkage.
 10. Microbial Growth: ASTM C 1338, ASTM G 21, ASTM G 22, does not promote or support the growth of mold, fungi or bacteria.
 11. CGSM 51-GP-10M, Canadian specification for mineral fiber board insulation.
 12. Surface Burning Characteristics: UL 723, CAN/ULC-S102-M-88, ASTM E 84, NFPA 90A & 90B, flame spread index not exceeding 25 and smoke developed index not exceeding 50.
 13. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- D. Fiberglass Thermal and Acoustical Smooth Board Insulation: AK SMOOTH BOARD™ by Manson Insulation Products Ltd.
1. Material: Inorganic glass fibers preformed into boards bonded by a thermosetting resin.
 2. Compliance:
 - a. ASTM C 612, Type IA, Type IB.
 - b. HH-1-558C, Form A, Class 1 and Class 2.
 - c. ASTM C795
 - d. California Title 24.
 3. Corrosiveness: ASTM C 665, will not accelerate corrosion of aluminum, steel or copper.
 4. Temperature Range: ASTM C 411, operating temperatures from 0°F to 450°F (-18°C to 232°C).
 5. Water Vapor Sorption: ASTM C 1104, less than 5% by weight.
 6. Shrinkage: ASTM C 356, less than 0.3% linear shrinkage.
 7. Microbial Growth: ASTM C 1338, no growth.
 8. CGSB 51-GP-10M, CAN/ULC S102-M-88, Canadian Specification for mineral fiber board insulation.
 9. Odor: ASTM C 1304, not objectionable.
 10. Surface Burning Characteristics: UL 723, CAN/ULC-S102-M-88, ASTM E 84, NFPA 90A & 90B, NFPA 255, flame spread index not exceeding 25 and smoke developed index not exceeding 50.
 11. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- E. Fiberglass Equipment, Pipe and Tank Insulation: AK FLEX™ by Manson Insulation Products Ltd.
1. Material: Semi-rigid fiberglass blanket, 2.5 pcf density, in roll form.
 2. Facings: Factory applied foil-scrim-kraft (FSK), or all service jacket (ASJ).
 3. Compliance:
 - a. ASTM C 612, Type IA (1.6, 2.25, 3.0, 6.0 pcf) (26, 36, 48, 96 kg/m³); Type IB (3.0, 6.0 pcf) (48, 96 kg/m³).
 - b. ASTM C 1136 (facings), FSK: Type II, ASJ: Type I,II
 - c. California Title 24.
 - d. City of New York MEA #363-83-M.



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4. Temperature Range: ASTM C 411, operating temperature to 850°F (454°C).
 5. Water Vapor Transmission: ASTM E 96, Procedure A, FSK and ASJ vapor retarders maximum rate of .02 perms.
 6. Water Vapor Sorption: ASTM C104, less than 5% by weight when exposed to air at 120°F (49°C) and 95% humidity for 96 hours.
 7. Puncture Resistance: TAPPI TEST T 803 (Beach Units), FSK facings 25, ASJ facing 50.
 8. Shrinkage: ASTM C 356, less than 0.3% linear shrinkage.
 9. Microbial Growth: ASTM C1338, G21, G22, does not promote or support the growth of fungi or bacteria.
 10. CGSB 51-GP-10M, CAN/ULC S102-M-88, Canadian Specification for mineral fiber board insulation.
 11. Surface Burning Characteristics: ASTM E 84, UL (ASJ/FSK) and UL 723, flame spread index not exceeding 25 and smoke developed index not exceeding 50.
 12. Corrosiveness: ASTM C665, will not accelerate corrosion of aluminum, steel or copper.
 13. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- F. Fiberglass Duct Liner Insulation: AKOUSTI-LINER™ by Manson Insulation Products Ltd.
1. Material: Inorganic glass fibers bonded with a thermosetting binder. Airstream surface faced with a black mat bonded to the black fiberglass substrate.
 2. Edge Coating to Seal Fibers: With or without edge coating.
 3. Compliance:
 - a. ASTM C 1071, Type I.
 - b. NFPA 90A.
 - c. NFPA 90B.
 - d. City of New York MEA #323-83-M.
 - e. California Title 24.
 - f. CAN/ULC S102-M88.
 - g. CAN/CGSB 51.11-92.
 - h. No added formaldehyde
 4. Indoor Air Quality Certification: GREENGUARD Environmental Institute, GREENGUARD GOLD Certified for superior indoor air quality (IAQ) performance.
 5. Hot Surface Performance: ASTM C 411, operating temperature to 250°F (121°C).
 6. Water Vapor Sorption: ASTM C 1104, less than 3.0% by weight.
 7. Air Flow Characteristics: ASTM C 1071, air velocity rating 6,000 ft/min (30.5 m/s).
 8. Bacteria Resistance: ASTM G 22, does not breed or promote growth.
 9. Fungi Resistance: ASTM C 1338, ASTM G 21, does not breed or promote growth.
 10. Corrosiveness: ASTM C 665, will not accelerate corrosion.
 11. Surface Burning Characteristics: UL/ULC listed; ASTM E 84, NFPA 255, CAN/ULC S102-88M, UL 723, flame spread index not exceeding 25 and smoke developed index not exceeding 50.
 12. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.



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13. Deca Free: Does not contain polybrominated diphenyl ethers (PBDE) such as: Penta – BDE, Octa – BDE, or Deca -BDE
- G. Fiberglass Thermal and Acoustical Duct Liner Insulation: AKOUSTI-LINER R™ by Manson Insulation Products Ltd.
1. Material: Inorganic glass fibers bonded with a thermosetting binder. Airstream surface faced with a black mat bonded to the brown fiberglass substrate.
 2. Compliance:
 - a. ASTM C 1071, Type II.
 - b. NFPA 90A.
 - c. NFPA 90B.
 - d. CAN/CGSB 51.11-92.
 3. Indoor Air Quality Certification: GREENGUARD Environmental Institute, GREENGUARD GOLD Certified for superior indoor air quality (IAQ) performance.
 4. Air Flow Characteristics: ASTM C 1071, air velocity rating 5,000 ft/min (25.4 m/s), tested 12,500 ft/min (63.5 m/s).
 5. Water Vapor Sorption: ASTM C 1104, less than 3.0% by weight.
 6. Microbial Growth: ASTM C 1338, ASTM G 21, ASTM G 22, does not breed or promote growth.
 7. Surface Burning Characteristics: UL/ULC listed; ASTM E 84, NFPA 255, CAN/ULC S102-88M, flame spread index not exceeding 25 and smoke developed index not exceeding 50.
 8. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
 9. Deca Free: Does not contain polybrominated diphenyl ethers (PBDE) such as: Penta – BDE, Octa – BDE, or Deca -BDE
- H. Fiberglass Duct Wrap Insulation: ALLEY WRAP B™ by Manson Insulation Products Ltd.
1. Material: Thermal and acoustical blanket insulation made from highly resilient, inorganic glass fibers bonded by a thermosetting resin.
 2. Compliance:
 - a. ASTM C1139 Unfaced, Type I, Type II: Grade 1 - 0.75lb/ft³, Grade 2 - 1.0lb/ft³, Grade3 – 1.5lb/ft³
 - b. CAN/ULC S102-M88.
 - c. CAN/CGSB 51. 11-92.
 - d. ASTM C 553; Type I, II, III.
 - e. ASTM C 1136; Type II.
 - f. ASTM C 1290.
 - g. California Title 24 (installed at 25% compression).
 - h. HH-I-558C; Form B, Type I, Class 7.
 - i. NFPA 90A and 90B.
 - j. No added formaldehyde



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3. Indoor Air Quality Certification: GREENGUARD Environmental Institute, GREENGUARD GOLD Certified for superior indoor air quality (IAQ) performance.
 4. Surface Burning Characteristics: ASTM E 84, CAN/ULC S102-M88, NFPA 285 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed.
 5. Temperature Limitation: Faced, on ducts operating up to 250°F (121°C). Unfaced, up to 350°F (177°C).
 6. Water Vapor Permeance: ASTM E 96, Procedure A), FSK facings maximum water vapor permeance of 0.2 perms.
 7. Water Vapor Sorption: ASTM C 1104, less than 5% by weight when tested for 96 hours at 120°F (49°C) and 95% relative humidity.
 8. Corrosiveness: ASTM C 665, will not accelerate corrosion of a steel panel compared to sterile cotton.
 9. Mold Growth: ASTM C 1338, no growth.
 10. Puncture Resistance: TAPPI Test T803 (Beach Units), FSK: 25.
 11. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- I. Fiberglass Duct Board Insulation: ALLEY KAT AIR DUCT BOARD™ by Manson Insulation Products Ltd.
1. Material: Rigid fiber glass board faced on one side with a foil-scrim-kraft (FSK) vapor retarder and with lightweight black fiber glass mat on the airstream surface. Used to fabricate rectangular or Max10 air duct systems. Product is offered in two stiffness ratings, EI-475 and EI-800 as applicable. Both types are available with butt edge or factory molded male-female shiplap edges. The airstream surface is treated with an EPA registered, anti-microbial agent that prevents growth of mold, fungus or bacteria in accordance with ASTM C1071, G21.
 2. Compliance:
 - a. ASTM C 1136; Type II (FSK facing).
 - b. ASTM D5116.
 - c. ASTM G 21.
 - d. California Title 24.
 - e. Corps of Engineers Guide Specifications.
 - f. International Building Code.
 - g. International Mechanical Code.
 - h. NFPA 90A and 90B.
 - i. UL 181; Class 1.
 - j. City of New York MEA #497-90-M.
 - k. CAN/ULC S102-M88.
 - l. CAN/CGSB 51-GP-52M (facing).
 - m. CAN/CGSB 51.10-92.
 3. Surface Burning Characteristics: ASTM E 84, CAN/ULC S102-M88 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed. UL listed.



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4. Flexural Rigidity: Two stiffness values, EI-475 and EI-800. Flexural rigidity (EI) is the product of Young's modulus of elasticity (E) and moment of inertia (I) as determined in accordance with NAIMA AHS-100-96.
 5. Service Temperature: ASTM C 411, up to 250°F (121°C).
 6. Air Velocity: UL 181, maximum 5000 fpm (1524 mpm); tested to 12,500 fpm (3810 mpm).
 7. Internal Static Pressure: UL 181, maximum plus or minus 2 inches water (498 Pascals [Pa]).
 8. Water Vapor Transmission Rate: ASTM E 96, less than 0.02 perms.
 9. Water Vapor Sorption: ASTM C 1104, less than 5% by weight.
 10. Microbial Growth: ASTM G 21, UL 181, does not promote or support the growth of mold, fungi or bacteria.
 11. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- J. Fiberglass Pipe Insulation: ALLEY-K™ by Manson Insulation Products Ltd.
1. Material: Preformed insulation product composed of high quality glass fibers, bonded together with a thermosetting resin. The 36 inch pipe sections are available with or without the All Service Jacket (ASJ). Service vapor retarder jacket (ASJ) reinforced with glass fibers with a factory applied pressure sensitive self-sealing lap closure system (SSL). Butt strips are supplied.
 2. Compliance:
 - a. ASTM C 547, Type I.
 - b. ASTM C 795.
 - c. ASTM C585
 - d. MIL-I-24244C.
 - e. City of New York MEA 325-83-M.
 - f. NRC Reg Guide 1.36.
 - g. Jacketing, UL 723/ASTM E 84.
 - h. Jacketing, CGSB 51-GP-52M.
 - i. Jacketing, ASTM C 1136 Type I, II.
 - j. Jacketing, Water Vapor Permeance: ASTM E 96, 0.02 perms max.
 - k. Jacketing, TAPPI T803 (Beach Units) minimum rating of 50 units.
 3. Indoor Air Quality Certification: GREENGUARD Environmental Institute, GREENGUARD GOLD certified for superior indoor air quality performance.
 4. Linear Shrinkage: ASTM C 356, negligible.
 5. Temperature Limitation: ASTM C 411, up to 850°F (454°C).
 6. Microbial Growth: ASTM C 1338, does not promote or support the growth of mold.
 7. Alkalinity: ASTM C 871, less than 0.6% as Na₂O, pH between 7.5 and 12.0.
 8. Corrosiveness: ASTM C 665, no greater than sterile cotton.
 9. Water Vapor Sorption: ASTM C 1104, 0.2% or less by volume.
 10. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.



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- K. Fiberglass Pipe Insulation: AK-CLAD™ by Manson Insulation Products Ltd.
1. Material: Preformed insulation product composed of high quality glass fibers, bonded together with a thermosetting resin. AK-CLAD™ pipe insulation comes with factory applied 5-ply weather and abuse resistant jacketing with self-sealing lap. Butt strips are also supplied.
 2. Compliance:
 - a. ASTM C 547, Type I.
 - b. ASTM C 795.
 - c. MIL-I-24244C.
 - d. City of New York MEA 325-83-M.
 - e. NRC Reg Guide 1.36.
 - f. Jacketing, UL 723/ASTM E 84.
 - g. Jacketing, CGSB 51-GP-52M.
 - h. Jacketing, ASTM C 1136 Type I, II.
 - i. Jacketing, Water Vapor Permeance: ASTM E 96): 0 perms max.
 - j. Jacketing, TAPPI T803 (Beach Units) minimum rating of 50 units.
 3. Venture Clad Jacket and Tape Surface Burning Characteristics: UL/ULC Listed. Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with UL 723.
 4. Surface Temperature Range: Maximum temperature continuous use 300°F (149°C). Application temperature -10°F to 300°F (-23°C to 149°C).
 5. Water Vapor Permeability (ASTM E 96-05): Zero-perm.
 6. Puncture Resistance (ASTM D 1000): 35.4 kg, 189.3 N.
 7. Tear Strength (ASTM D 624): 4.3 lb., 19.4 N.
 8. Thickness: 14.5 mils (0.0145 inches).
 9. Tensile (PSTC-31): 68 lb./inch width, 306 N (31 kg)/25 mm.
 10. EUCB Requirements: Tested and certified to meet EUCB.
 11. Temperature Limitation (ASTM C 411): Up to 850°F (454°C).
 12. Alkalinity (ASTM C 871): Less than 0.6% as Na₂O. pH between 7.5 and 12.0.
 13. Corrosiveness (ASTM C 665): No greater than sterile cotton.
 14. Zero Permeability: Properly installed, AK-Clad jacket provides a zero perm vapor barrier.
 15. Sizes: Selected from manufacturer's standard and custom sizes; refer to the Drawings for project requirements.
- L. Fiberglass High Temperature Batt and Blanket Insulation: HIGH TEMPERATURE BATT and HD BLANKET by Manson Insulation Products Ltd.
1. Material: Semi-rigid thermal insulation (1.6 pcf, 25.6kg/m³), made from highly resilient, inorganic glass fibers, bonded by high-temperature thermosetting resin.
 2. Compliance:
 - a. ASTM C 795.
 - b. ASTM C 1139 replaces MIL-I-22023D, Type I Class 4 to Type I Grade 5, Type II Class 4 to Type II Grade 5.
 - c. MIL-I-24244C.



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- d. HH-I-558C Form B, Class 7, 8.
 - e. NRC Reg Guide 1.36.
 - f. CAN/ULC S102-M88.
3. Surface Burning Characteristics: ASTM E 84, CAN/ULC S102-M88 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed.
 4. Temperature Limitation: ASTM C 411, up to 1000°F (538 °C).
 5. Microbial Growth: ASTM C 1338, does not promote or support the growth of mold, will not rot, will not support vermin.
 6. Alkalinity: ASTM C 871, less than 0.6% as Na₂O; pH between 7.5 and 12.0.
 7. Corrosiveness: ASTM C 655, will not accelerate corrosion of steel. Complies to stress corrosion requirements of MIL-I-24244C.
 8. Water Vapor Sorption: ASTM C 1104, 0.1% or less by volume.
 9. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- M. Fiberglass High Temperature Blanket Insulation: HIGH TEMPERATURE BLANKET by Manson Insulation Products Ltd.
1. Material: Lightweight insulation blankets (1.1 pcf, 17.6kg/m³), made from highly resilient, inorganic glass fibers, and bonded by high-temperature thermosetting resin.
 2. Compliance:
 - a. ASTM C 795.
 - b. ASTM C 1139 replaces MIL-I-22023D, Type III.
 - c. MIL-I-24244C.
 - d. HH-I-558C Form B, Class 7, 8.
 - e. NRC Reg Guide 1.36.
 - f. City of New York MEA #364-83-M.
 - g. CAN/ULC S102-M88.
 3. Surface Burning Characteristics: ASTM E 84, CAN/ULC S102-M88 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed.
 4. Temperature Limitation: ASTM C 411, up to 1000°F (538°C).
 5. Microbial Growth: ASTM C 1338, does not promote or support the growth of mold, will not rot, will not support vermin.
 6. Alkalinity: ASTM C 871, less than 0.6% as Na₂O; pH between 7.5 and 12.0.
 7. Corrosiveness: ASTM C 655, will not accelerate corrosion of steel. Complies to stress corrosion requirements of MIL-I-24244C.
 8. Water Vapor Sorption: ASTM C 1104, 0.1% or less by volume.
 9. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- N. Fiberglass High Temperature Board Insulation: HIGH TEMPERATURE BOARD by Manson Insulation Products Ltd.
1. Material: Lightweight insulation (2.8 pcf, 44.9 kg/m³) made from inorganic glass fibers bonded with a high-temperature thermosetting resin.



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2. Compliance:
 - a. ASTM C 612, Type IA, Type IB, Type II - Category 1.
 - b. ASTM C 795.
 - c. ASTM C 1139 replaces MIL-I-22023D, Type III.
 - d. MIL-I-24244C.
 - e. HH-I-558C (Amend 3) Form A, Class 1, 2, 3.
 - f. NRC Reg Guide 1.36.
 - g. City of New York MEA #326-83-M.
 - h. CAN/ULC S102-M88.
 3. Surface Burning Characteristics: ASTM E 84, CAN/ULC S102-M88 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed.
 4. Temperature Limitation: ASTM C 411, up to 850°F (454°C).
 5. Microbial Growth: ASTM C 1338, does not promote or support the growth of mold.
 6. Alkalinity: ASTM C 871, less than 0.6% as Na₂O; pH between 7.5 and 12.0.
 7. Corrosiveness: ASTM C 655, will not accelerate corrosion of steel.
 8. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- O. Fiberglass High Temperature Panel Insulation: HIGH TEMPERATURE PANEL by Manson Insulation Products Ltd.
1. Material: Semi-rigid, thermal insulation board (2.4 pcf, 38.4 kg/m³) made from highly resilient, inorganic glass fibers bonded with a high-temperature, thermosetting resin.
 2. Compliance:
 - a. ASTM C 612, Type IA, Type IB, Type II - Category 1, Type III.
 - b. ASTM C 795.
 - c. MIL-I-24244C.
 - d. HH-I-558C Form A, Class 1, 3.
 - e. NRC Reg Guide 1.36.
 - f. ASTM C 1139 Type 1 Grade 5, Type II Grade 5.
 - g. City of New York MEA #362-83-M.
 - h. CAN/ULC S102-M88.
 3. Surface Burning Characteristics: ASTM E 84, CAN/ULC S102-M88 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed.
 4. Temperature Limitation: ASTM C 411, up to 1000°F (538°C).
 5. Microbial Growth: ASTM C 1338, does not promote or support the growth of mold.
 6. Alkalinity: ASTM C 871, less than 0.6% as Na₂O; pH between 7.5 and 12.0.
 7. Corrosiveness: ASTM C 655, will not accelerate corrosion of steel. Complies to stress corrosion requirements of ASTM C 795, MIL-I-24244C and NRC Reg. Guide 1.36.
 8. Water Vapor Sorption: ASTM C 1104, 0.1% or less by volume.
 9. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.



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- P. Fiberglass Acoustical Board Insulation: Akousti-Board Black by Manson Insulation Products Ltd.
1. Material: Rigid, acoustical insulation board. The base board has a black mat applied to provide a smooth finish.
 2. Compliance:
 - a. NFPA 255
 3. Surface Burning Characteristics: ASTM E 84 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed.
 4. Corrosiveness: ASTM C 655, will not accelerate corrosion of a steel panel compared to sterile cotton.
 5. Corrosion: ASTM C 1617, The corrosion rate in mils/yr will not exceed that of the 1 ppm chloride solution.
 6. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- Q. Fiberglass Thermal and Acoustical Blanket Insulation: Akousti-Shield by Manson Insulation Products Ltd.
1. Material: Flexible, thermal and acoustical insulation blanket with black mat facing adhered to one surface. It provides thermal and acoustical insulation while a smooth, tough surface resists damage during installation.
 2. Surface Burning Characteristics: ASTM E 84 and UL 723, does not exceed 25 Flame Spread, 50 Smoke Developed.
 3. Corrosiveness: ASTM C 655, will not accelerate corrosion of a steel panel compared to sterile cotton.
 4. Corrosion: ASTM C 1617, The corrosion rate in mils/yr will not exceed that of the 1 ppm chloride solution.
 5. Sizes: Selected from manufacturer's standard sizes; refer to the Drawings for project requirements.
- R. Installation Accessories: As recommended by manufacturer based on project conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements of Sections in which substrates and related work are specified and for other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION



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- A. Comply with insulation manufacturer's written instructions applicable to products and application indicated.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed at any time to ice, rain, and snow.

3.3 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION



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