**PROJECT ENGINEER RESPONSIBILITY:** This is a general specification guide, intended to be used by experienced construction professionals, in conjunction with good construction practice and professional judgment. This guide is to aid in the creation of a complete building specification that is to be fully reviewed and edited by the engineer. Sections of this guide should be included, edited, or omitted based on the requirements of a specific project. It is the responsibility of both the specifier and the purchaser to determine if a product or system is suitable for its intended use. Neither Owens Corning, nor any of its subsidiary or affiliated companies, assume any responsibility for the content of this specification guide relative to actual projects and specifically disclaim any and all liability for any errors or omissions in design, detail, structural capability, attachment details, shop drawings or other construction related details, whether based upon the information provided by Owens Corning or otherwise.

SECTION 07 21 16

THERMAL BLANKET INSULATION

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes: Provide glass fiber blanket thermal insulation for exterior envelope assemblies.
          2. Related Sections:

Section 07 21 13, Foam Board Insulation.

Section 07 22 16, Roof Board Insulation.

Section 09 81 16, Acoustic Blanket Insulation.

* + - 1. References
         1. Materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use:

American Society for Testing of Materials (ASTM):

ASTM C423 Test Method for Sound Absorption and the Sound Absorption Coefficient by the Reverberation Room Method.

ASTM C518 Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter.

ASTM C553 Standard Specification for Mineral Fiber Blanket and Felt Insulations.

ASTM C612 Standard Specification for Mineral Fiber Block and Board Thermal Insulation.

ASTM C665 Specification for Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

ASTM C1136 Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation.

ASTM C1320 Standard Practice for Installation of Mineral Fiber Batt and Blanket Thermal Insulation for Light Frame Construction.

ASTM E84 Test Method for Surface Burning Characteristics of Building Materials.

ASTM E96 Test Method for Water Vapor Transmission of Materials.

ASTM E136 Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C.

* + - 1. Submittals
         1. Product Data: Submit product characteristics, performance criteria, and limitations, including installation instructions, for each type of product indicated.
         2. Sustainable Design: Submit manufacturer’s sustainable design certifications as specified.
      2. Delivery, Storage, and Handling
         1. Deliver materials in manufacturer’s original packaging.
         2. Store and protect products in accordance with manufacturer’s instructions. Store in a dry indoors location. Protect insulation materials from moisture and soiling.
         3. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.
         4. Do not install batt or blanket insulation that has been damaged or wet. Remove it from jobsite.

An exception may be allowed in cases where the contractor is able to demonstrate that wet insulation when fully dried out (either before installation or afterward following exposure to system operating temperatures) will provide installed performance that is equivalent in respects to new, completely dry insulation. In such cases, consult the insulation manufacturer for technical assistance.

1. PRODUCTS
   * + 1. MANUFACTURER
          1. Owens Corning Insulating Systems, LLC, Toledo, OH 43659; [www.owenscorning.com](http://www.owenscorning.com).
       2. Curtainwall Insulation (CW225)
          1. Type CW225: Unfaced or FRK (foil) faced glass fiber thermal insulation, complying with ASTM C 612, Type 1A and 1B.

Note to Specifier: Select from the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Thickness | Width | Length | R-value |
| 1" 25mm | 24" 609mm | 48" 1219mm | 4.3 |
| 1½" 38mm | 24" 609mm | 48" 1219mm | 6.5 |
| 2" 51mm | 24" 609mm | 48" 1219mm | 8.7 |
| 2½" 64mm | 24" 609mm | 48" 1219mm | 10.9 |
| 3" 76mm | 24" 609mm | 48" 1219mm | 13.0 |
| 3½" 89mm | 24" 609mm | 48" 1219mm | 15.2 |
| 4" 102mm | 24" 609mm | 48" 1219mm | 17.4 |

* + - * 1. Vapor Retarder Perm Rating: FRK facing Perms Maximum 0.02, ASTM E 96.
        2. Surface Burning Characteristics: ASTM E 84.

Unfaced Insulation, Maximum flame spread: 20, Maximum smoke developed: 20.

FRK faced Insulation, Maximum flame spread: 25, Maximum smoke developed: 50.

* + - * 1. Noise Reduction Coefficient: ASTM C 423 on a Type E 405 mounting.

Unfaced 2" NRC 1.00.

FRK faced 2" NRC 0.80.

* + - * 1. Dimensional Stability: Linear shrinkage less than 0.1%.
      1. THERMAL Insulation (700 Series)
         1. Type 701: Unfaced glass fiber thermal insulation complying with ASTM C 553, Type III and ASTM C 665, Type I.
         2. Type 711: Unfaced glass fiber thermal insulation complying with ASTM C 553, Type III and ASTM C 665, Type I.
         3. Type 703: Unfaced, FRK (foil) faced and ASJ (white) faced glass fiber thermal insulation complying with ASTM C 612, Type 1A and 1B.
         4. Type 705: Unfaced, FRK faced and ASJ faced glass fiber thermal insulation complying with ASTM C 612, Type 1A and 1B.

Note to Specifier: Select from the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Thickness | Width | Length | R-value |
| Type 701 |  |  |  |
| 1” 25mm | 24" 609mm | 48" 1219mm | 4.2 |
| 1½” 38mm | 24" 609mm | 48" 1219mm | 6.3 |
| 2” 51mm | 24" 609mm | 48" 1219mm | 8.3 |
| 2½” 64mm | 24" 609mm | 48" 1219mm | 10.4 |
| 3” 76mm | 24" 609mm | 48" 1219mm | 12.5 |
| 3½” 89mm | 24" 609mm | 48" 1219mm | 14.6 |
| 4” 102mm | 24" 609mm | 48" 1219mm | 16.7 |
| 1” 25mm | 24" 609mm | 48" 1219mm | 4.0 |
| 1½” 38mm | 24" 609mm | 48" 1219mm | 6.0 |
| Type 711 |  |  |  |
| 2” 51mm | 24" 609mm | 48" 1219mm | 8.0 |
| 2½” 64mm | 24" 609mm | 48" 1219mm | 10.0 |
| 3” 76mm | 24" 609mm | 48" 1219mm | 12.0 |
| 4” 102mm | 24" 609mm | 48" 1219mm | 16.0 |
| Type 703 |  |  |  |
| 1” 25mm | 24" 609mm | 48" 1219mm | 4.3 |
| 1½” 38mm | 24" 609mm | 48" 1219mm | 6.5 |
| 2” 51mm | 24" 609mm | 48" 1219mm | 8.7 |
| 2½” 64mm | 24" 609mm | 48" 1219mm | 10.9 |
| Type 705 |  |  |  |
| 3” 76mm | 24" 609mm | 48" 1219mm | 13.0 |
| 3½” 89mm | 24" 609mm | 48" 1219mm | 15.2 |
| 4” 102mm | 24" 609mm | 48" 1219mm | 17.4 |

* + - * 1. Vapor Retarder Perm Rating: ASTM C 1136.

FRK (foil) facing Perms Maximum 0.02

ASJ (white) facing Perms Maximum 0.02

* + - * 1. Surface Burning Characteristics: ASTM E 84.

Note to Specifier: Select from the following table:

|  |  |  |
| --- | --- | --- |
| Type | Flame Spread | Smoke Developed |
| 701 Unfaced | 20 | 20 |
| 711 Unfaced | 20 | 20 |
| 703 Unfaced | 15 | 0 |
| 703 ASJ-faced | 25 | 50 |
| 703 FRK-faced | 25 | 50 |
| 705 Unfaced | 15 | 0 |
| 705 ASJ-faced | 25 | 50 |
| 705 FRK-faced | 25 | 50 |

* + - * 1. Noise Reduction Coefficient: ASTM C 423 on a Type A mounting.

Note to Specifier: Select from the following table:

|  |  |  |
| --- | --- | --- |
| Type | Thickness | NRC |
| Type701/711 Unfaced |  |  |
|  | 1” 25mm | 0.70 |
|  | 2” 51mm | 0.90 |
|  | 3” 76mm | 1.15 |
| Type 703 Unfaced |  |  |
|  | 1” 25mm | 0.70 |
|  | 2” 51mm | 1.00 |
|  | 3” 76mm | 1.10 |
| Type 705 Unfaced |  |  |
|  | 1” 25mm | 0.65 |
|  | 2” 51mm | 0.95 |
|  | 3” 76mm | 1.10 |
| Type 703 FRK-faced |  |  |
|  | 1” 25mm | 0.65 |
|  | 2” 51mm | 0.75 |
| Type705 FRK-faced |  |  |
|  | 1” 25mm | 0.55 |
|  | 2” 51mm | 0.60 |
| Type 703 ASJ-faced |  |  |
|  | 1” 25mm | 0.65 |
|  | 2” 51mm | 0.75 |
| Type 705 ASJ-faced |  |  |
|  | 1” 25mm | 0.50 |
|  | 2” 51mm | 0.65 |

* + - * 1. Dimensional Stability: Linear shrinkage less than 0.1%
      1. Flame Spread 25 Insulation
         1. Type: FRK (foil) and PSK (white) faced glass fiber thermal insulation complying with ASTM C 665, Type III for FRK (foil) and Type II for PSK (white), Class A.
         2. Insulation, at Metal Framing:

Note to Specifier: Select from the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Thickness | Width | Length | R-value (per ASTM C 518) |
| 3½"89mm | 16" 406mm - 24" 609mm | 96" 2438mm | 11.0 |
| 3½"89mm | 16" 406mm - 24" 609mm | 96" 2438mm | 13.0 |
| 6¼"159mm | 16" 406mm - 24" 609mm | 96" 2438mm | 19.0 |

* + - * 1. Insulation, at Wood Framing:

Note to Specifier: Select from the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Thickness | Width | Length | R- value (per ASTM C 518) |
| 3½"89mm | 15" 381mm - 23" 584mm | 93" 2362mm | 11.0 |
| 3½"89mm | 15" 381mm - 23" 584mm | 93" 2362mm | 13.0 |
| 6¼"159mm | 15" 381mm - 23" 584mm | 93" 2362mm | 19.0 |

* + - * 1. Special Application Insulation:

Note to Specifier: Select from the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Thickness | Width | Length | R- value (per ASTM C 518) |
| 9½"241mm | 16" 406mm - 24" 609mm | 48" 1219mm | 30.0 |
| 6¼"159mm | 48" 1219mm | 40'12.19m | 19.0 |
| 3½"89mm | 48" 1219mm | 72'21.95m | 11.0 |

* + - * 1. Vapor Retarder Perm Rating: ASTM E 96.

FRK facing Perms Maximum 0.10

PSK facing Perms Maximum 0.10

* + - * 1. Surface Burning Characteristics for FRK and PSK faced product: ASTM E 84.

Maximum flame spread: 25,

Maximum smoke developed: 50.

* + - * 1. Combustion Characteristics: Classified non-combustible by model building codes. Not required to be covered. May be left exposed.
        2. Dimensional Stability: Linear shrinkage less than 0.1%
      1. Thermal Batt Insulation
         1. Type: Unfaced glass fiber thermal insulation complying with ASTM C 665, Type I and ASTM E 136.
         2. Type: Kraft faced glass fiber insulation complying with ASTM C 665, Type II, Class C.
         3. Type: Foil faced glass fiber thermal insulation complying with ASTM C 665, Type III, Class B and C.
         4. Insulation, at Metal Framing:

Note to Specifier: Select from the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Thickness | Width | Length | R-value (per ASTM C518) |
| 3½"89mm | 16" 406mm - 24" 609mm | 96" 2438mm | 11.0 |
| 3½"89mm | 16" 406mm - 24" 609mm | 96" 2438mm | 13.0 |
| 6¼"159mm | 16" 406mm - 24" 609mm | 96" 2438mm | 19.0 |

* + - * 1. Insulation, at Wood Framing:

Note to Specifier: Select from the following table:

|  |  |  |  |
| --- | --- | --- | --- |
| Thickness | Width | Length | R- value (per ASTM C518) |
| 3½"89mm | 15" 381mm - 23" 584mm | 93" 2362mm | 11.0 |
| 3½"89mm | 15" 381mm - 23" 584mm | 93" 2362mm | 13.0 |
| 3½"89mm | 15" 381mm - 23" 584mm | 93" 2362mm | 15.0 |
| 6¼"159mm | 15" 381mm - 23" 584mm | 93" 2362mm | 19.0 |
| 5½"139mm | 15" 381mm - 23" 584mm | 93" 2362mm | 21.0 |

* + - * 1. Vapor Retarder Perm Rating: ASTM E 96.

Foil Facing: 0.50 max. perms.

Kraft Facing: 1.00 max. perms.

* + - * 1. Surface Burning Characteristics: ASTM E 84.

Unfaced Insulation: Maximum flame spread: 10, Maximum smoke developed: 10

Foil Faced Insulation: Maximum flame spread: 75, Maximum smoke developed: 150

Kraft-Faced Insulation: Maximum flame spread: Not Rated Maximum smoke Developed: Not Rated

Note to Specifier: Kraft and standard foil facings on this insulation will burn and must not be left exposed. The facing must be installed in substantial contact with the unexposed surface of the ceiling, wall or floor finish. Protect facing from any open flame or heat source.

* + - * 1. Combustion Characteristics: Unfaced insulation passes ASTM E 136 test.
        2. Dimensional Stability: Linear shrinkage less than 0.1%
      1. MISCELLANEOUS Materials
         1. Provide materials, not specifically described but required for a complete and proper installation of the work in this section.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine the areas and conditions under which work of this section will be installed. Verify that adjacent materials are dry and ready to receive insulation. Verify mechanical and electrical services within walls have been tested and inspected.
          2. Provide written report listing conditions detrimental to performance of work in this section. Do not proceed with installation until unsatisfactory conditions have been corrected.
       2. Installation, General
          1. Comply with manufacturer's installation instructions and ASTM C1320.

Note to Specifier: Do not use unfaced insulation in exposed applications where there is potential for skin contact and irritation.

Note to Specifier: Kraft and standard foil facings will burn and must not be left exposed. The facing must be installed in substantial contact with the unexposed surface of the ceiling, wall or floor finish. Protect facing from any open flame or heat source.

* + - * 1. Mechanical Fasteners: Curtainwall, 700 Series, Flame Spread 25 and Thermal Batts Insulation. Apply insulation directly to the interior surface of the exterior wall with appropriate spindle or prong type anchors.

Fasten anchors to wall by welding the pin to metal and then impale the insulation, or by using pre attached heads and welding them through the insulation.

Fasten anchors to wall with adhesive. Follow manufacturer's recommendations for surface preparation and adhesive pattern.

Impale insulation on anchor and secure with washer. Select pin lengths to ensure tight fit. Protect pin tips where subject to human contact. See manufacturer's diagram for impaling pin pattern.

* + - * 1. Adhesive Fastening: Curtainwall and 700 Series Insulation. Apply insulation with adhesives. Follow adhesive manufacturer's recommendations for surface preparation and adhesive pattern.
        2. Furring Strips: Thermal Batts, Flame Spread 25 and 700 Series Insulation

Install insulation between furring strips, hat channels, or Z shaped furring in areas where finish surface will be applied.

Contact the furring strip manufacturer for recommendations on the appropriate fastener system to use.

* + - * 1. Between Metal Studs: Thermal Batts and Flame Spread 25 Insulation. Friction fit insulation between studs after cover material has been installed on one side of the cavity. When unfaced insulation is used, and in applications without a cover material or where the stud depth is larger than the insulation thickness, use wire or metal straps to hold insulation in place. When faced insulation is used, the attachment flanges may be taped to the face of metal stud prior to applying the interior finish.

Provide supplementary support to hold the product in place until finish surface is applied when insulation is installed in heights over 8 feet.

* + - * 1. Between Wood Studs: Thermal Batts and Flame Spread 25 Insulation. Friction fit unfaced insulation between studs after cover material has been installed on one side of the cavity. When unfaced insulation is used, and in applications without a cover material, use wire or metal straps to hold insulation in place. When faced insulation is used staple attachment flanges to face or side of stud every 8 to 12 inches to prevent gaps along the edge of the vapor retarding facing.
      1. Installation, Vapor Retarders

Note to Specifier: Evaluate the requirements of each project before making decisions about the use and placement of vapor retarders.

* + - * 1. Maintain vapor retarder integrity by tightly abutting adjacent insulation. Repair punctures or tears in vapor retarder facing by taping. Follow tape manufacturer's application recommendations.
      1. Protection
         1. Protect insulation from damage and from becoming wet before, during and after installation.

END OF SECTION

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