MINERAL WOOL INSULATION

Guide Specification Section 07 21 00
Mineral Wool Insulation

SPECIFIER'S 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 project architect or engineer of record. 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 00
MINERAL WOOL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Mineral wool insulation for the following applications.
1. Thermal and acoustical insulation.
2. Rainscreen/cavity wall continuous insulation.
3. Multi-purpose thermal and acoustical insulation product used where fire-rated assembly is not required.
4. Acoustical insulation for fire-rated interior partition walls and ceilings, unfaced.
5. Perimeter fire-containment systems.
6. Fire-resistant joint systems in between rated assemblies.
7. Firestopping of through penetrations in rated assemblies.
B. Related Sections:
1. Section 07 21 16 - Glass Fiber Batt Insulation.
2. Section 07 21 18 - Glass Fiber Blanket Insulation.
3. Section 09 81 16 - Acoustic Blanket Insulation

1.3 SUBMITTALS

A. Submit product characteristics, performance criteria, and limitations, including installation instructions.
B. Sustainable Design: Submit manufacturer's sustainable design certifications as specified with each product.

1.4 QUALITY ASSURANCE

A. Mock-Up: If requested, provide a mock-up of materials proposed for use for review of workmanship. Accepted mock-ups may remain in place.
B. Preconstruction Meeting: Convene a minimum of two weeks prior to commencing work of this section. Agenda shall include materials proposed for use, sequence of construction and coordination with installation of adjacent and covering materials.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to the job site in original packages, containers, or bundles bearing the brand

name and manufacturer's identification.

B. Storage: Store materials in dry locations with adequate ventilation, free from water, and in such a manner to permit easy access for inspection and handling.

C. Handling: Handle using procedures recommended by the manufacturer for materials and personnel.

1.6 WARRANTY

A. Warranty: Provide manufacturer's standard limited warranty against manufacturing defects.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis-of-Design Manufacturer: Thermafiber, Inc. (an Owens Corning® company), One Owens Corning Parkway, Toledo, OH 43659. Toll free 888-834-2371, Fax 260-563-8979, or www.owenscorning.com.

2.2 THERMAL AND ACOUSTICAL INSULATION

A. Product: Thermafiber® FireSpan® 90 insulation.

1. Formaldehyde-Free (FF) Option.

    a. GREENGUARD Gold Certified.

    b. UL Validated Formaldehyde-Free.

    c. Declare Label is Living Building Challenge Red-list Approved.

2. R-Value: 4.3 per inch.

3. Facing: Unfaced.

4. Facing: Foil-Faced.

5. Density: 8.0 pcf (nominal).

6. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced, maximum Flame Spread 0 and Smoke Developed 0; Foil-Faced, maximum Flame Spread 25 and Smoke Developed 0.

7. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

8. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

9. Post-Consumer Recycled Content: 0%.

10. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

11. Published Health Product Declaration (HPD).

12. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.

B. Product: Thermafiber® FireSpan® 40 insulation.

1. Formaldehyde-Free (FF) Option.

    a. GREENGUARD Gold Certified.

    b. UL Validated Formaldehyde-Free.

    c. Declare Label is Living Building Challenge Red-list Approved.

2. R-Value: 4.3 per inch.

3. Facing: Unfaced.

4. Facing: Foil-Faced.

5. Density: 4.0 pcf (nominal).

6. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced, maximum Flame Spread 0 and Smoke Developed 0; Foil-Faced, maximum Flame Spread 25 and Smoke Developed 0.

7. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

8. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

9. Post-Consumer Recycled Content: 0%.

10. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

11. Published Health Product Declaration (HPD).

12. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.

C. Product: Thermafiber® Fire & Sound Guard® Plus batt insulation.*

1. Formaldehyde-Free (FF) Option.

    a. GREENGUARD Gold Certified.

    b. UL Validated Formaldehyde-Free.

    c. Declare Label is Living Building Challenge Red-list Approved.

2. Facing: Unfaced

3. R-Value: R-10, R-13, R-15, R-21, R-23, R-24, R30 as applicable.

4. Surface Burning Characteristics: Tested in accordance with ASTM E84; Flame Spread 0 and Smoke Developed 0.

5. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

6. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

7. Post-Consumer Recycled Content: 0%.

8. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

9. Published Health Product Declaration (HPD).

   *Thermafiber® Fire & Sound Guard® Plus replaced Thermafiber® UltraBatt™ and Thermafiber® Fire & Sound Guard®

D. Product: Thermafiber® SAFB™ (Sound Attenuation Fire Blanket); unfaced.

1. Formaldehyde-Free (FF) Option.

    a. GREENGUARD Gold Certified.

    b. UL Validated Formaldehyde-Free.

    c. Declare Label is Living Building Challenge Red-list Approved.

2. Density, 1-Inch Thick: 4 pcf nominal.

3. Density, Greater Than 1-Inch Thick: 2.5 pcf, nominal.

4. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.

5. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced: Flame Spread 0 and Smoke Developed 0

6. Corrosivity: Non-corrosive, when tested in accordance with ASTM C665.

7. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

8. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

9. Post-Consumer Recycled Content: 0%.

10. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

11. Published Health Product Declaration (HPD).

2.3 RAIN SCREEN/CAVITY WALL CONTINUOUS INSULATION

A. Product: Thermafiber® RainBarrier® 45, semi-rigid mineral wool insulation board that is water-repellent, non-combustible per ASTM E136, and meets ASTM C612 Type IVB.

1. R-value: 4.3 per inch.

2. Facing: Unfaced.

3. Density: 4.5 pcf (actual).

4. Moisture-Resistance: Absorption of less than 0.03% by volume when tested in accordance with ASTM C1104.

5. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced: Flame Spread 0 and Smoke Developed 0.

6. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

7. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

8. Post-Consumer Recycled Content: 0%.

9. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

10. Health Product Declaration (HPD).

11. Declare Label is Living Building Challenge Red-list Approved.

12. Hardware: RainBarrier® Clip, insulation retaining clip, for securing RainBarrier® continuous insulation to exterior substrate; recommended by manufacturer as compatible with multiple types of masonry and façade tie systems.

13. Hardware: Impasse® Hangers and Impasse® Locking Washers used to secure RainBarrier® continuous insulation directly to Z-Furring channels.

B. Product: Thermafiber® RainBarrier® HD, semi-rigid mineral wool insulation board that is water-repellent, non-combustible per ASTM E136, and meets ASTM C612 Type IVB.

1. R-value: 4.3 per inch.

2. Facing: Unfaced.

3. Density: 6.0 pcf (actual).

4. Moisture-Resistance: Absorption of less than 0.03% by volume when tested in accordance with ASTM C1104.

5. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced: Flame Spread 0 and Smoke Developed 0.

6. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

7. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

8. Post-Consumer Recycled Content: 0%.

9. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

10. Published Health Product Declaration (HPD).

11. Declare Label is Living Building Challenge Red-list Approved.

12. Hardware: RainBarrier® Clip, insulation retaining clip, for securing RainBarrier® continuous insulation to exterior substrate; recommended by manufacturer as compatible with multiple types of masonry and façade tie systems.

13. Hardware: Impasse® Hangers and Impasse® Locking Washers used to secure RainBarrier® continuous insulation directly to Z-Furring channels.

C. Product: Thermafiber® RainBarrier® Dark™ 45, semi-rigid mineral wool insulation board that is water-repellent, non-combustible per ASTM E136, and meets ASTM C612 Type IVB.

1. R-value: 4.3 per inch.

2. Facing: Black fiberglass facing.

3. Density: 4.5 pcf (actual).

4. Moisture-Resistance: Absorption of less than 0.03% by volume when tested in accordance with ASTM C1104.

5. Surface Burning Characteristics: Tested in accordance with ASTM E84. Black fiberglass faced: Flame Spread 25 and Smoke Developed 15.

6. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

7. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

8. Post-Consumer Recycled Content: 0%.

9. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

10. Published Health Product Declaration (HPD).

11. Declare Label is Living Building Challenge Red-list Approved.

12. Hardware: RainBarrier® Clip, insulation retaining clip, for securing RainBarrier® continuous insulation to exterior substrate; recommended by manufacturer as compatible with multiple types of masonry and façade tie systems.

13. Hardware: Impasse® Hangers and Impasse® Locking Washers used to secure RainBarrier® continuous insulation directly to Z-Furring channels.

D. Product: Thermafiber® RainBarrier® Dark™ HD, semi-rigid mineral wool insulation board that is water-repellent, non-combustible per ASTM E136, and meets ASTM C612 Type IVB.

1. R-value: 4.3 per inch.

2. Facing: Black fiberglass facing.

3. Density: 6.0 pcf (actual).

4. Moisture-Resistance: Absorption of less than 0.03% by volume when tested in accordance with ASTM C1104.

5. Surface Burning Characteristics: Tested in accordance with ASTM E84. Black fiberglass faced: Flame Spread 25 and Smoke Developed 15.

6. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

7. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

8. Post-Consumer Recycled Content: 0%.

9. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

10. Published Health Product Declaration (HPD).

11. Declare Label is Living Building Challenge Red-list Approved.

12. Hardware: RainBarrier® Clip, insulation retaining clip, for securing RainBarrier® continuous insulation to

exterior substrate; recommended by manufacturer as compatible with multiple types of masonry and façade tie systems.

13. Hardware: Impasse® Hangers and Impasse® Locking Washers used to secure RainBarrier® continuous insulation directly to Z-Furring channels.

E. Product: Thermafiber® RainBarrier® ci High Compressive (80), rigid, high-compressive strength board that is water -repellent, non-combustible per ASTM E136, and meets ASTM C 612 Type IVB.

1. R-Value: 4.2 per inch.
2. Facing: Unfaced.
3. Compressive Strength: 475 lbs./sq.ft. at 10% compression.
4. Moisture-Resistance: Absorption of less than 0.05% by volume when tested in accordance with ASTM C1104.
5. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.
6. Fiber Type: Standard fiber; 70% pre-consumer recycled content.
7. Post-Consumer Recycled Content: 0%.
8. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.
9. Published Health Product Declaration (HPD).
10. Declare Label is Living Building Challenge Red-list Approved.
11. Hardware: RainBarrier® Clip, insulation retaining clip, for securing RainBarrier® continuous insulation to exterior substrate; recommended by manufacturer as compatible with multiple types of masonry and façade tie systems.
12. Hardware: Impasse® Hangers and Impasse® Locking Washers used to secure RainBarrier® continuous insulation directly to Z-Furring channels.

F. Product: Thermafiber® RainBarrier® ci High Compressive Plus (110), rigid, high-compressive strength board that is water-repellent, non-combustible per ASTM E136, and meets ASTM C 612 Type IVB.

1. R-value: 4.2 per inch.
2. Facing: Unfaced.
3. Compressive Strength: 720 lbs./sq.ft. at 10% compression.
4. Moisture-Resistance: Absorption of less than 0.05% by volume when tested in accordance with ASTM C1104.
5. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.
6. Fiber Type: Standard fiber; 70% pre-consumer recycled content.
7. Post-Consumer Recycled Content: 0%.
8. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.
9. Published Health Product Declaration (HPD).
10. Declare Label is Living Building Challenge Red-list Approved.
11. Hardware: RainBarrier® Clip, insulation retaining clip, for securing RainBarrier® continuous insulation to exterior substrate; recommended by manufacturer as compatible with multiple types of masonry and façade tie systems.
12. Hardware: Impasse® Hangers and Impasse® Locking Washers used to secure RainBarrier® continuous insulation directly to Z-Furring channels.

G. Product: Thermafiber® RainBarrier® ci High Compressive Max, rigid, high-compressive strength board that is

water-repellent, non-combustible per ASTM E136, and meets ASTM C 612 Type IVB.

1. R-Value: 4.2 per inch.
2. Facing: Unfaced.
3. Compressive Strength: 1,296 lbs./ft^2 at 10% compression.
4. Moisture-Resistance: Absorption of less than 0.05% by volume when tested in accordance with ASTM C1104.
5. Surface Burning Characteristics: Tested in accordance with ASTM E84, Unfaced Flame Spread 0 and Smoke Developed 0.
6. Surface Burning Characteristics: Tested in accordance with CAN/ULC S102, Unfaced Flame Spread 0 and Smoke Developed 5.
7. Corrosivity: Non-corrosive, when tested in accordance with ASTM C665.
8. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.
9. Fiber Type: Standard fiber; 70% pre-consumer recycled content.
10. Post-Consumer Recycled Content: 0%.
11. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.
12. Published Health Product Declaration (HPD).
13. Declare Label is Living Building Challenge Red-list Approved.
14. Hardware: RainBarrier® Clip, insulation retaining clip, for securing RainBarrier® continuous insulation to exterior substrate; recommended by manufacturer as compatible with multiple types of masonry and façade tie systems.
15. Hardware: Impasse® Hangers and Impasse® Locking Washers used to secure RainBarrier® continuous insulation directly to Z-Furring channels.

2.4   MULTI-PURPOSE THERMAL AND ACOUSTICAL INSULATION PRODUCT USED WHERE FIRE-RATED ASSEMBLY IS NOT REQUIRED

A. Product: Thermafiber® VersaBoard®, semi-rigid mineral wool insulation board that is water-repellent and non-combustible as tested to ASTM E136.

1. Facing: Unfaced.
2. Facing: ASJ facing.
3. Facing: Black mat.
4. Facing: Aluminum FSP
5. Facing: White Aluminum FSP
6. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced, Flame Spread 0 and Smoke Developed 0. FSP, Flame Spread 25 and Smoke Developed 0.
7. Moisture-Resistance: Absorption of less than 0.03% by volume, when tested in accordance with ASTM C1104.
8. Corrosivity: Non-corrosive, when tested in accordance with ASTM C665.
9. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.
10. Fiber Type: Standard fiber; 70% pre-consumer recycled content.
11. Post-Consumer Recycled Content: 0%.
12. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

13. Published Health Product Declaration (HPD).

B. Product: Thermafiber® VersaBoard® 35, complies with ASTM C612 Type IA, II, III, and IVA.

   1. R-Value: 4.2 per inch.
   2. Density: 3.5 pcf (actual).

C. Product: Thermafiber® VersaBoard® 40, complies with ASTM C612 Types IA, IB, II, III, and IVA.

   1. R-Value: 4.3 per inch.
   2. Density: 4.0 pcf (actual).

D. Product: Thermafiber® VersaBoard® 60, complies with ASTM C612 Types IA, IB, II, III, IVA, and IVB.

   1. R-Value: 4.3 per inch.
   2. Density: 6.0 pcf (actual).

E. Product: Thermafiber® VersaBoard® 80, complies with ASTM C612 Types IA, IB, II, III, IVA, and IVB.

   1. R-Value: 4.3 per inch.
   2. Density: 8.0 pcf (actual).

2.5 ACOUSTICAL INSULATION FOR FIRE-RATED INTERIOR PARTITION WALLS AND FLOOR/CEILINGS, UNFACED

A. Product: Thermafiber® SAFB™ (Sound Attenuation Fire Blanket)

   1. Formaldehyde-Free (FF) Option.
      a. GREENGUARD Gold Certified.
      b. UL Validated Formaldehyde-Free.
      c. Declare and is Living Building Challenge compliant.
   2. Density, 1-Inch Thick: 4.0 pcf, nominal.
   3. Density, Thicker Than 1 Inch: 2.5 pcf, nominal.
   4. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.
   5. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.
   6. Fiber Type: Standard fiber; 70% pre-consumer recycled content.
   7. Post-Consumer Recycled Content: 0%.
   8. UL® Certified Environmental Product Declaration in accordance with ISO 14025.
   9. Published Health Product Declaration (HPD).

B. Product: Thermafiber® Creased SAFB™ (Sound Attenuation Fire Blanket)

   1. Formaldehyde-Free (FF) Option.
      a. GREENGUARD Gold Certified.
      b. UL Validated Formaldehyde-Free.
      c. Declare Label is Living Building Challenge Red-list Approved.
   2. Density: 2.5 pcf, nominal.
   3. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced, Flame Spread 0 and Smoke Developed 0.
   4. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.

5. Corrosivity: Non-corrosive, when tested in accordance with ASTM C665.

6. Fiber Type: EPA Choice fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

7. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

8. Post-Consumer Recycled Content: 0%.

9. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

10. Published Health Product Declaration (HPD).

2.6 PERIMETER FIRE CONTAINMENT SYSTEMS

A. General: Provide where indicated for joints between the perimeter edge of fire-resistance-rated floor assemblies and non-fire-resistance-rated exterior curtain walls.

1. Provide a perimeter fire-containment system with the fire test response characteristics indicated, as determined by testing identical systems per the Underwriters Laboratories (UL®) or Intertek® Laboratories, per ASTM E 2307. If no tested system exists, an engineering judgment provided by the manufacturer, third-party testing lab, or fire protection engineering firm that follows guidelines established by the International Firestop Council must accompany the design.

2. For non-fire-resistance-rated floor assemblies, add an approved material or assembly for retarding the passage of flames and hot gasses.

B. Curtain Wall Insulation:

1. Product: Thermafiber® FireSpan® 90 insulation; density of 8 pcf (nominal).

   a. Formaldehyde-Free (FF) Option.

      • GREENGUARD Gold Certified.

      • UL Validated Formaldehyde-Free.

      • Declare Label is Living Building Challenge Red-list Approved.

2. Product: Thermafiber® FireSpan® 40 insulation; density of 4.0 pcf (nominal).

   a. Formaldehyde-Free (FF) Option.

      • GREENGUARD Gold Certified.

      • UL Validated Formaldehyde-Free.

      • Declare Label is Living Building Challenge Red-list Approved.

3. Product: Thermafiber® FireLedge® Fabrication Board insulation; density of 8 pcf (nominal).

4. Minimum Thickness and Density as noted in tested and listed design.

5. R-Value: 4.3 per inch.

6. Facing: Unfaced.

7. Facing: Foil-Faced.

8. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced, maximum Flame Spread 0 and Smoke Developed 0; Foil-Faced, maximum Flame Spread 25 and Smoke Developed 0.

9. Corrosivity: Non-corrosive, when tested in accordance with ASTM C665.

10. Fiber Type: EPA Choice Fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

11. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

12. Post-Consumer Recycled Content: 0%.

13. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

14. Published Health Product Declaration (HPD).

15. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.

C. Safing Insulation:

1. Product: Thermafiber® Safing insulation. Designated Type SAF in UL® Fire-Resistance Directory.

    a. Formaldehyde-Free (FF) Option.

        • GREENGUARD Gold Certified.

        • UL Validated Formaldehyde-Free.

        • Declare Label is Living Building Challenge Red-list Approved.

2. R-Value: 4.3 per inch.

3. Facing: Unfaced.

4. Facing: Foil-Faced.

5. Density: 4.0 pcf (actual).

6. Density: 6.0 pcf (actual).

7. Minimum Thickness and Density as noted in tested and listed design.

8. Surface Burning Characteristics: Tested in accordance with ASTM E84. Unfaced, maximum Flame Spread 0 and Smoke Developed 0; Foil-Faced, maximum Flame Spread 25 and Smoke Developed 0.

9. Corrosivity: Non-corrosive, when tested in accordance with ASTM C665.

10. Fiber Type: EPA Choice Fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

11. Fiber Type: Standard fiber; 70% pre-consumer recycled content.

12. Post-Consumer Recycled Content: 0%.

13. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

14. Published Health Product Declaration (HPD).

15. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.

D. Safing Clips: Z-shaped galvanized steel clips formed from 1-inch-wide strips of 20-gauge galvanized steel; 3 inches high with 2-inch and 3-inch upper and lower horizontal legs. Use where required by specific UL® or Intertek® design listings.

E. Hardware: Thermafiber® Impasse® hardware for attaching curtain wall insulation or other mechanical fasteners as approved by the tested and listed system per ASTM E2307.

F. Mullion Covers: Thermafiber® FireSpan® 90 insulation for protection of vertical mullions. Refer to specific UL® or Intertek® designs for size of mullion covers.

G. Hardware: Thermafiber® Spiral Anchors are used to secure mullion covers.

H. Hardware: Thermafiber® Mullion Cover Brackets are an alternative method for securing mullion covers.

I. Backer/Reinforcement Member: Thermafiber® Impasse® T-bar or galvanized steel channel or angle (see specific listing for appropriate gauge of steel) approved by the perimeter fire-containment system manufacturer. Place horizontally at the safe-off line to support the curtain wall insulation to prevent bowing of curtain wall insulation caused by compression fitting of the Safing insulation. See specific listed design for system requirements.

J. Smoke Barrier: Smoke sealant as listed in the appropriate tested and listed assembly per ASTM E2307.

K. Vapor Retarder Tape: Compatible with specified facer and comparable perm rating. For taping insulation joints and repairing tears.

2.7   FIRE-RESISTANT JOINT SYSTEMS IN BETWEEN RATED ASSEMBLIES

A.   Insulation for Joint Forming Material:

1.   Product for Fire-Rated Construction Joints: Thermafiber® Safing insulation – Type SAF Forming Material.

2.   Formaldehyde-Free (FF) Option.

a.   GREENGUARD Gold Certified.

b.   UL Validated Formaldehyde-Free.

c.   Declare Label is Living Building Challenge Red-list Approved.

3.   Product for Head-of-Wall Applications: Thermafiber® TopStop® insulation.

4.   Facing: Unfaced.

5.   Surface Burning Characteristics: Flame Spread 0 and Smoke Developed 0; tested in accordance with ASTM E84.

6.   Tested in accordance with UL 2079.

7.   Corrosivity: Non-corrosive, when tested in accordance with ASTM C665.

8.   Fiber Type: Standard fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

9.   Post-Consumer Recycled Content: 0%.

10. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

11. Published Health Product Declaration (HPD).

12. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.

B.   Smoke Barrier Sealant: Smoke sealant as listed in the appropriate fire-tested assembly.

2.8   FIRESTOPPING OF THROUGH PENETRATIONS IN RATED ASSEMBLIES

A.   Safing Insulation – Type SAF Forming Material:

1.   Product: Thermafiber® Safing insulation; unfaced.

2.   Formaldehyde-Free (FF) Option.

a.   GREENGUARD Gold Certified.

b.   UL Validated Formaldehyde-Free.

c.   Declare Label is Living Building Challenge Red-list Approved.

3.   Density: 4.0 pcf (actual).

4.   Density: 6.0 pcf (actual).

5.   Minimum Thickness and Density as noted in tested and listed design, per ASTM E814 or UL 1479.

6.   Surface Burning Characteristics: Flame Spread 0 and Smoke Developed 0; tested in accordance with ASTM E84.

7.   Tested in accordance with ASTM E814 or UL 1479.

8.   Corrosivity: Non-corrosive, when tested in accordance with ASTM C665.

9.   Fiber Type: Standard fiber; minimum 75% pre-consumer recycled content; complies with EPA Preference Program.

10. Post-Consumer Recycled Content: 0%.

11. UL® Certified Environmental Product Declaration (EPD) in accordance with ISO 14025.

12. Published Health Product Declaration (HPD).

13. This product qualifies under the Department of Homeland Security SAFETY Act designation, which provides commercial building professions and building owners liability protection in the event of a domestic act of terrorism.

B. Smoke Barrier Sealant: Smoke sealant as listed in the appropriate fire-tested assembly.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the areas and conditions under which work of this section will be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install insulation in accordance with approved submittals, manufacturer's written recommendations and guidelines.

B. Install insulation to maintain continuity of thermal protection to building elements and spaces.

C. Comply with tested and listed systems.

D. Install products in proper relationship with each other and adjacent construction, and as follows:
   1. Backer Reinforcement Members for Perimeter Fire Containment System:
      a. Install backer reinforcement member in accordance with the UL® or Intertek® listed and tested system, per ASTM E2307.
      b. Install Thermafiber® Impasse® T-bar or an approved light steel angle or channels (see specific listing for appropriate gauge of steel), placed horizontally at the safing line, attached to the vertical mullions, either within the insulation at a horizontal splice, or behind the insulation and mechanically attached to vertical mullions.
      c. Install to prevent the bowing of the curtain wall insulation due to the compression fit of the safing insulation.
   2. Curtain Wall Insulation:
      a. Install curtain wall insulation in accordance with the UL® or Intertek® listed system and manufacturer's instructions.
      b. Install backer reinforcement assembly in accordance with the UL® or Intertek® listed and tested design. Not applicable when the Thermafiber® No Backer Bar™ system is specified.
      c. Fasten insulation in place with mechanical fasteners within the mullions and transoms (spandrel area), spaced at intervals recommended by the UL® or Intertek® listed and tested assembly to hold insulation securely in place without touching the exterior wall. One-inch air space must be maintained.
      d. Provide Thermafiber® Impasse® Hangers or mechanical fasteners as approved by architect and manufacturer.
      e. Comply with specific listed and tested assemblies per ASTM E2307 for mechanical fastener requirements.
   3. Safing Insulation – Type SAF Forming Material:
      a. Install safing insulation of proper size in safe-off area between curtain wall insulation and floor slab as prescribed by the UL® or Intertek® listed and tested assembly per ASTM E2307. Safing insulation direction and compression, as well as the absence of safing Z-clips, are prescribed by the UL® or Intertek® listed and tested assembly.
      b. Install safing insulation of proper density, thickness, depth, compression, and orientation into perimeter joint, construction joints (head-of-wall, floor-to-floor, floor-to-wall, etc.) as prescribed by the UL® or Intertek® or other third-party testing laboratory listed and tested assembly.
      c. Install safing insulation of proper density, thickness, and compression into poke-throughs and penetrations as prescribed by the UL® or Intertek® listed and tested assembly.
   4. Smoke Barrier System:

       a. Utilize foil-faced Thermafiber® FireSpan® curtain wall Insulation with Thermafiber® Safing insulation.

       b. Apply approved smoke sealant in accordance with the third-party laboratory tested and listed assembly.

       c. Install safing insulation of proper density, thickness, compression, and orientation as prescribed by the third-party laboratory listed and tested assembly.

       d. Install safing insulation of proper density, thickness, and compression into poke-throughs and penetrations as prescribed by the tested assembly.

5. Vapor Retarders:

       a. Seal all seams in curtain wall insulation or exterior wall insulation with vapor retarder tape.

       b. Application of vapor retarder must be directed by the architect or engineer of record.

       c. For continuous vapor barrier, repair all tears in insulation foil-facing with vapor retarder tape.

3.3   PROTECTION

A. Protect installed products 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.

<p align="center">End of Section 07 21 00</p>