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- For Additional Products  
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**Introduction to THERMAFIBER® Products**

THERMAFIBER Insulations offer **superior fire protection** through the ability of our **mineral fibers** to resist temperatures up to 2,000 °F (1,093 °C). By contrast, glass fiber insulations begin to disintegrate at about 1,050 °F (565 °C).

**Advantages**

- Noncombustible— per Standards NFPA 220, ASTM E136
- Impedes smoke passage— with foil facing and SMOKE SEAL Compound
- Dry construction— can be installed all-year round
- Nonasbestos
- Moisture-resistant— adsorbs less than one percent moisture
- Noncorrosive, nondeteriorating, mildew-proof and vermin-proof— stays in place without problems
- Durable— provides long-term retention of insulating values

**Product Uses**

**Commercial Insulations**— Exterior wall insulation reduces heat transmission, saves energy and improves occupant comfort (see page 10 for more information).

**Sound and Fire Control**— Enhances sound attenuation and fire protection in partitions and floor-ceiling assemblies (see pages 8-9 for more information).

**Curtain Wall Fire/Smoke Containment**— Contains fire and impedes smoke between floors at the slab edge/curtain wall interface in addition to providing insulation for the exterior walls to conserve energy. (These curtain wall insulations are further described on pages 2-7).

**Green Building Material**— Recycled content of Thermafiber products exceeds EPA requirements of 75% for building insulation with 85% the typical level of recovered materials.

**THERMAFIBER Curtain Wall Insulations and Accessories**

Designed for use in curtain wall assemblies, these products provide key features for fire-containment applications:

- Proven history of performance for more than 30 years
- Requires positive mechanical attachment for aluminum-framed systems
- Optional dark colored or black-mat faced product for backing glass spandrel panels

**Regular Curtain Wall or FIRESPAN Insulation**



Regular Curtain Wall or FIRESPAN Insulation comes as semi-rigid blankets of unfaced felt for backing spandrel panels of opaque material where no vapor retarder is needed, or covering structural mullions as required in the curtain wall checklists on page 4.

**FSP Curtain Wall or FIRESPAN Insulation**



FSP Curtain Wall or FIRESPAN Insulation is the same as regular curtain wall insulation with a tough scrim-reinforced foil facing that serves as a vapor retarder. The facing also adds durability for field installation.

**Dark Curtain Wall or FIRESPAN Insulation**

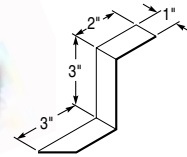


Dark Curtain Wall or FIRESPAN Insulation is similar to regular curtain wall insulation except it has a darker color for backing dark-colored glass spandrel panels. Using dark insulation instead of light insulation improves the look of the assembly. Because the combined effects of color and shading can be unpredictable, a full-scale mock-up of the insulated spandrel is required to ensure desired appearance.

**THERMAFIBER Safing Insulation and Safing Impaling "Z" Clips**



This product is designed to be compatible with THERMAFIBER Curtain Wall or FIRESPAN Insulation in perimeter applications, but is also used in penetration safe-off applications and other fire-protection assemblies.



**SMOKE SEAL™ Compound and FIRECODE Compound**



These products are caulking (SMOKE SEAL Compound) and mortar-type (FIRECODE Compound) fire/smoke stop materials used as topping over THERMAFIBER Safing Insulation in various applications.



**On The Cover**

**Top Photo:**

Four Times Square, New York, New York  
Architect: Fox & Fowle Architects, P.C.  
Products: THERMAFIBER® CW90 Curtain Wall Insulation; THERMAFIBER® Safing Insulation; THERMAFIBER® SMOKE SEAL™ Compound

**Middle Photo:**

The Promenade, Atlanta, Georgia  
Architect: Thompson, Ventulett, Stainback & Associates  
Products: THERMAFIBER® Curtain Wall and THERMAFIBER® Safing Insulation

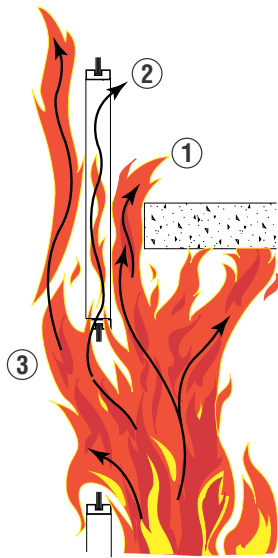
**Bottom Photo:**

San Francisco Civic Center Complex, San Francisco, CA  
Architect: Skidmore, Owings & Merrill LLP  
Owner: San Francisco State Building Authority  
Products: THERMAFIBER® Firespan Insulation, THERMAFIBER® Safing Insulation, FIRECODE® Compound, THERMAFIBER® Sound Attenuation Fire Blankets

**Why do you need “fire containment”?**

The first priority in building safety is containment of both fire and smoke to the area of origin. For mid- and high-rise buildings, fire and smoke must be prevented from spreading to the next floor. Since the floor assembly is typically a fire-rated system, a possible route for fire spread is through and up the exterior curtain wall system, which is frequently overlooked. In order to protect this weak point, the exterior curtain wall system must (1) eliminate the “flue opening” between the floor slab and spandrel panel, and (2) provide a fire containment barrier that causes the flames exiting the vision area on one floor to be diverted and cooled so that they are less likely to ignite combustibles on the floor above.

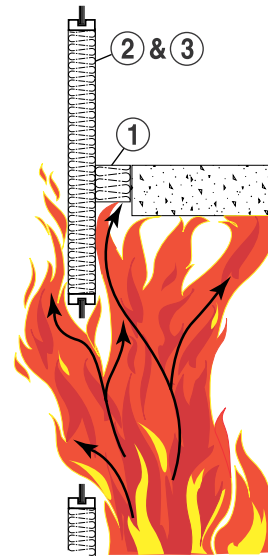
Thermafiber Life-Safety Fire Containment Systems protect perimeters by combining Thermafiber Safing Insulation, Thermafiber Curtain Wall or FireSpan Insulation and Thermafiber Smoke Seal or Firecode Compound. Note: These products are designed to complement each other in an assembly and shouldn't be combined with products having different fire-containment values.



**Spread of fire (unprotected)**

**In an unprotected curtain wall, or in one protected with low-melt glass fiber insulation, there are three ways in which fire can spread from floor to floor.**

1. Through the space between the slab edge and the curtain wall.
2. Through the window head mullion and then up through the cavity of the curtain wall.
3. Out through the broken vision glass and back in through the curtain wall.



**Thermafiber Fire Containment (protected)**

**Thermafiber Life-Safety Fire Containment Products compartmentalize fire, preventing it from spreading from the floor of origin up to the floor above by:**

1. Filling the slab-edge/curtain wall gap with Thermafiber Safing Insulation
2. Protecting the vertical mullions
3. Providing a vertical barrier to fire using Thermafiber Curtain Wall or FireSpan Insulation

**Code Requirements**

All model building codes in the U.S.A. require that the gap at the slab edge/curtain wall interface be treated to maintain the same fire integrity as the floor-ceiling. The Thermafiber Life-Safety Fire Containment Systems have been independently tested by Underwriters Laboratories and Omega Point Laboratories and accepted or recognized (ICBO ER-2331, California State Fire Marshal, OSHPD) as maintaining fire containment from floor to floor.

**How the Thermafiber System Works**

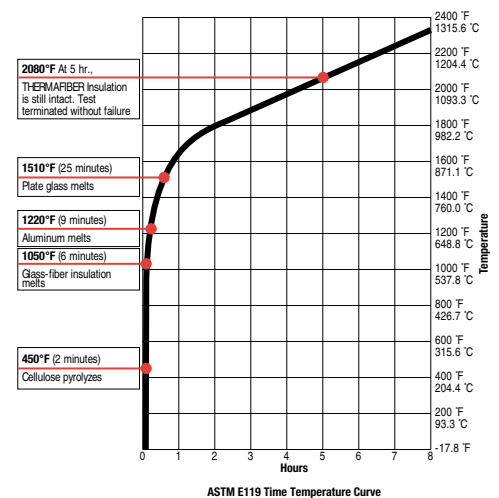
Thermafiber Curtain Wall and Safing Insulations have effectively stopped fire for many years. However, experience has shown smoke to be often more life-threatening than fire.

The Thermafiber Life-Safety Fire Containment Systems for perimeter protection combines foil-faced insulation with a specially designed fire and smoke resistant sealant to form an effective barrier to the passage of smoke as well as fire. At slab perimeters, Thermafiber Smoke Seal, Firecode Compound, or other approved smoke sealant is used to seal the Thermafiber Safing Insulation to both the foil facing of Thermafiber Curtain Wall or FireSpan Insulation and the floor slab. This seal completely bridges the top of the opening between the slab and the curtain wall, effectively eliminating the passage of fire and smoke through this area.

See specific system for details on the approved smoke sealant.

**Why Thermafiber Insulation products can perform in fire**

Controlled in accordance with ASTM E119 time-temperature relationship shows superior fire characteristics of Thermafiber Insulation products. (See Graph)

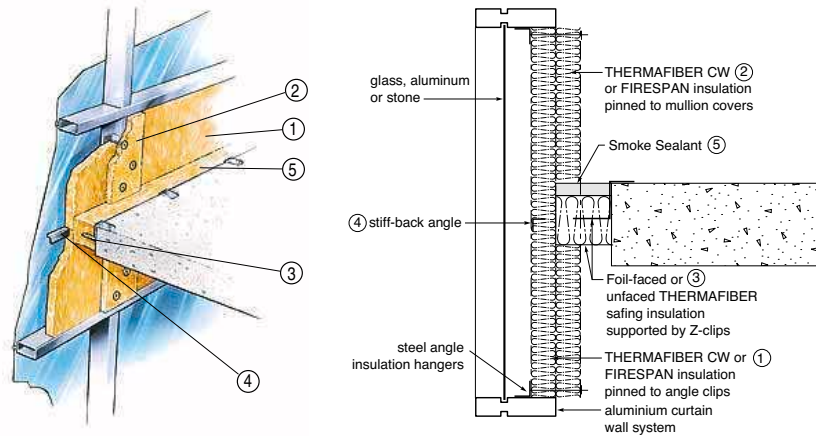


**THERMAFIBER Fire Containment Curtain Wall System—Design Criteria**

**Aluminum-Framed  
Curtain Wall Systems—  
Design Criteria**

The following checklist contains important details that must be included in a THERMAFIBER Fire Containment System used in an aluminum-framed curtain wall system with aluminum, glass or stone spandrel panels. (See specific test design for details.)

1. THERMAFIBER Curtain Wall (CW) or FIRESPAN Insulation is mechanically attached to mullions and transoms using impaling pins, screws or other positive mechanical attachment.
2. Exposed aluminum mullions must be protected with THERMAFIBER Curtain Wall (CW) or FIRESPAN Insulation mullion covers. (See specific test design for details.)
3. THERMAFIBER Safing insulation is compression fit (minimum 1/2" wider than opening) (see specific test design for details) into safe-off area (2"-8") and supported with safing "Z" clips (optional in some designs).
4. A light steel angle or channel is placed horizontally at the safing line, attached to vertical mullions— either within the insulation at a horizontal splice, or behind the insulation and attached to vertical mullions. This detail prevents bowing of curtain wall insulation due to the compression fit of the safing insulation.
5. To further resist passage of smoke, systems that do not include FIRECODE Compound or other approved smoke sealant should utilize foil-faced THERMAFIBER Safing Insulation (flush with the top of the slab) and be perimeter-caulked with THERMAFIBER SMOKE SEAL Compound; or utilize a 1/2" fill of THERMAFIBER SMOKE SEAL Compound over the Foil-Faced THERMAFIBER Safing Insulation (recessed 1/2" from the top of the slab).

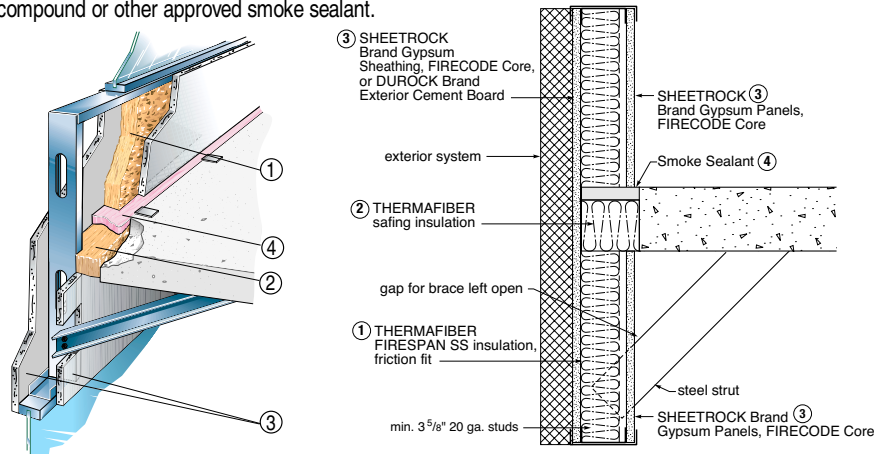


**Steel Stud-Framed Curtain Wall Systems—Design Criteria**

**Steel Stud-Framed  
Curtain Wall Systems—  
Design Criteria**

The following checklist contains important details that must be included in a THERMAFIBER Fire Containment System used in an steel stud-framed curtain wall system. (See specific test design for details.)

1. THERMAFIBER FIRESPAN SS Insulation is friction-fit between the steel studs.
2. THERMAFIBER Safing insulation is compression fit (minimum 1/2" wider than opening) (see specific test design for details) into safe-off area (2"-8") and supported with safing "Z" clips, 24" o.c. maximum (optional in some designs).
3. SHEETROCK® Brand Gypsum Sheathing, FIRECODE® Core, or DUROCK Brand Cement Board, is screw-attached to the exterior face of the studs. SHEETROCK® Brand Gypsum Panels, FIRECODE Core, is screw-attached to the interior face of the studs. See specific test design for other approved Gypsum Board manufacturers.
4. FIRECODE compound or other approved smoke sealant.



**Selector—Curtain Wall Fire Containment**

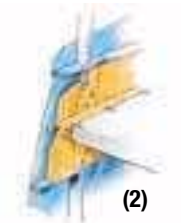
Traditional fire testing procedures are designed to evaluate a specific element (wall, beam or floor-ceiling) independently. However, in curtain wall fires, the simultaneous attack of fire and smoke on several construction elements dictates the need for a method to evaluate the independent elements of a fire-containment system as a whole. Thermafiber Inc. is actively participating on a technical committee with the American Society of Testing Materials (ASTM) to develop a standard test method for determining the fire-endurance of different curtain wall fire-containment assemblies. Underwriters Laboratories (UL) and Omega Point Laboratories (OPL), testing with the Intermediate-Scale, Multi-Story Test Apparatus, have tested and listed Thermafiber in over 50 curtain wall systems in their *Fire Resistance Directory* under a new classification titled "Perimeter Fire Containment Systems." These UL and OPL-Classified systems, along with tests witnessed by UL and other independent parties, are noted in the selector below. Note: Low-melt-point insulations cannot be substituted for THERMAFIBER Insulations in any tested assembly. It is imperative that THERMAFIBER Curtain Wall or FIRESPAN Insulations and THERMAFIBER Safing Insulation be used together to achieve fire containment.

Curtain Wall Systems

**Glass Spandrel  
Curtain Wall Fire  
Containment**



(2)



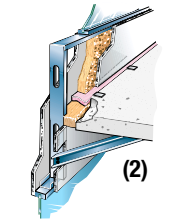
(2)

**Aluminum Spandrel  
Curtain Wall Fire  
Containment**







(2)

**Gypsum Sheathing  
Curtain Wall Fire  
Containment**



(2)

Fire Rating	Fire-rated Construction Detail & Physical Description & Test No. System Reference
<b>2 hr. Fire Integrity Rating</b> <b>45 min. Insulation Rating<sup>(1)</sup></b> <b>UL Des. No. CW-S-2001</b> 	Heat-strengthened opaque glass, 1/4" thick, secured to aluminum mullions with aluminum retainers—2" THERMAFIBER FIRESPAN Foil-Faced Insulation recessed between vertical mullions, attached to mullions with sheet metal shields on 4-1/2" long impaling pins located in each corner and spaced 12" o.c. max. around perimeter— pins swaged to nominal 2"x2"x2" steel members screw-attached to mullions— mullions covered with 8" wide strips of nominal 2" THERMAFIBER FIRESPAN Foil-Faced Insulation— covers centered over mullions and transoms and impaled on same pins used to secure curtain wall insulation— secured with clinch shields— 1-1/2"x1-1/2" 20-gauge angle installed to stiffen curtain wall insulation between vertical mullions at safing joint— end of stiff back angle screwed to vertical mullions— safe-off area sealed with 4" THERMAFIBER Safing Insulation <sup>(2)</sup> on safing clips at 12" o.c. max.— safing topped with 1" thick FIRECODE Compound. <b>For more information on this system, request publication IW942 from Thermafiber Inc.</b>
<b>2 hr.</b> 	Heat-strengthened glass spandrel panel, 1/4" thick, secured to aluminum mullions at 5' o.c. with pressure plates— recessed 2" THERMAFIBER FIRESPAN Insulation attached over impaling pins with sheet metal shields 12" o.c. to 2"x2"x2" steel members screw attached to mullions— mullions covered with 6" wide, 1" thick THERMAFIBER FIRESPAN Insulation impaled 12" o.c. on same pins supporting 2" THERMAFIBER FIRESPAN Insulation— 1"x1"x22 ga. steel angle spanning horizontally embedded in 2" THERMAFIBER FIRESPAN Insulation at horizontal splice of blankets— safe-off area between furnace and assembly was sealed with 4" thick UL-labeled THERMAFIBER SAFING Insulation with safing clips— UL Report Dated 9-30-94. <b>For more information on this system, request publication IW902 from Thermafiber Inc.</b>
<b>2 hr. Fire Integrity Rating</b> <b>45 min. Insulation Rating<sup>(1)</sup></b> <b>UL Des CW-S-2002</b> 	Aluminum spandrel panels secured to aluminum mullions. Foil-Faced THERMAFIBER FIRESPAN Insulation, 2" thick, installed between mullions, attached over impaling pins mounted on 2" x 2" x 2" steel members screw-attached to mullions. Inside face of mullions covered with 2" thick strips of foil-faced THERMAFIBER FIRESPAN Insulation. Curtain wall insulation and mullion covers held in place on impaling pins by clinch shields. THERMAFIBER Safing Insulation <sup>(2)</sup> , 4" thick, fit between the concrete floor and curtain wall insulation, recessed 1" below the top surface of concrete floor, and impaled on "Z"-shaped safing clips 12" o.c. Stiff back steel channel, installed behind curtain wall insulation to provide lateral support. FIRECODE Compound applied over safing insulation at a thickness of 1". <b>For more information on this system, request publication IW916 from Thermafiber Inc.</b>
<b>2 hr. Fire Integrity Rating</b> <b>45 min. Insulation Rating<sup>(1)</sup></b> <b>UL Des. CW-S-1001</b> 	SHEETROCK brand FIRECODE Gypsum Sheathing, 5/8" thick, or DUROCK Brand Cement Board, 1/2" or 5/8" thick, screw-attached to exterior side of min. 3-5/8" 20-ga. steel stud framing— 3" THERMAFIBER FIRESPAN SS Insulation in stud cavity— SHEETROCK Brand FIRECODE Gypsum Panels, 5/8" thick, screw-attached to interior side of the 3-5/8" 20 ga. framing— 4" thick THERMAFIBER Safing Insulation <sup>(2)</sup> (ICBO ES Report EP-2331 requires foil-faced safing insulation) between edge of concrete slab and gypsum sheathing, compression fit and secured with safing clips, .12" o.c.— 1" thick FIRECODE Compound topping over safing insulation. <b>For more information on this system, request publication IW911 from Thermafiber Inc.</b>

Notes:

- (1) The Insulation Rating is a means of rating the protection provided by a curtain wall system against heat transfer through the safe-off area; it is measured as the time it takes for the temperature to rise 325° F on the unexposed surface.
- (2) Note that curtain wall and safing insulations may be required to be foil-faced under certain test or performance conditions; insulations are shown without foil here for clarity.

See next page for more designs.

Installing the correct perimeter fire containment design is essential to life and property safety. Many fire rated assembly installations require the approval of a third party evaluation service. The following curtain wall fire containment systems have been evaluated and approved by these accredited laboratories: Omega Point Laboratories, Inc. (OPL) and Underwriters Laboratories, Inc. (UL). Thermafiber FIRESpan™, FIRESpan SS and Safing Insulation are UL and OPL classified fire containment products intended for use in the following rated assemblies.

**Curtain Wall Fire Containment Systems**

Fire-rated Construction	System	UL Assemblies	Fire-rating	OPL Assemblies	Fire-rating
Glass Spandrel - Aluminum Framed	Dynamic	CW-D-2001 <sup>1</sup> CW-D-2008 <sup>1</sup> CW-D-2011 <sup>1</sup>	1-1/2 & 2 hr.	CEJ 133P <sup>2</sup> CEJ 204P <sup>2</sup> CEJ 173P <sup>2</sup> CEJ 216P <sup>2</sup> CEJ 154P <sup>2</sup> CEJ 222P <sup>2</sup> CEJ 161P <sup>2</sup> CEJ 246P <sup>2</sup> CEJ 203P <sup>2</sup> CEJ 257P <sup>2</sup>	2 hr.
	Static	CW-S-2001 <sup>4</sup>	2 hr.	CEJ 145P <sup>2</sup>	2-1/2 hr.
		CW-S-2003 <sup>1</sup> CW-S-2021 <sup>1</sup> CW-S-2034 <sup>1</sup>	1-1/2 & 2 hr.		
Glass Spandrel - Steel Framed	Dynamic			CEJ 136P <sup>2</sup> CEJ 166P <sup>2</sup> CEJ 138P <sup>2</sup> CEJ 210P <sup>2</sup> CEJ 178P <sup>2</sup> CEJ 212P <sup>2</sup> CEJ 176P <sup>2</sup> CEJ 228P <sup>2</sup> CEJ 164P <sup>2</sup> CEJ 230P <sup>2</sup>	2 hr.
Aluminum Spandrel - Aluminum Framed	Dynamic	CW-D-2002 <sup>1</sup> CW-D-2009 <sup>1</sup> CW-D-2012 <sup>1</sup>	1-1/2 & 2 hr.	CEJ 139P <sup>2</sup> CEJ 209P <sup>2</sup> CEJ 179P <sup>2</sup> CEJ 227P <sup>2</sup> CEJ 167P <sup>2</sup>	2 hr.
	Static	CW-S-2002 <sup>4</sup>	2 hr.		
		CW-S-2006 <sup>1</sup> CW-S-2022 <sup>1</sup> CW-S-2035 <sup>1</sup>	1-1/2 & 2 hr.		
Aluminum Spandrel - Steel Framed	Dynamic			CEJ 135P <sup>2</sup> CEJ 165P <sup>2</sup> CEJ 137P <sup>2</sup> CEJ 211P <sup>2</sup> CEJ 175P <sup>2</sup> CEJ 213P <sup>2</sup> CEJ 177P <sup>2</sup> CEJ 229P <sup>2</sup> CEJ 163P <sup>2</sup> CEJ 231P <sup>2</sup>	2 hr.
Granite Spandrel - Aluminum Framed	Dynamic	CW-D-2003 <sup>1</sup> CW-D-2010 <sup>1</sup> CW-D-2013 <sup>1</sup>	1-1/2 & 2 hr.		
	Static	CW-S-2008 <sup>1</sup> CW-S-2023 <sup>1</sup> CW-S-2036 <sup>1</sup>	1-1/2 & 2 hr.		
Concrete Spandrel - Tilt-Up Panels	Dynamic	CW-D-1001 <sup>3</sup> CW-D-2005 <sup>1</sup> CW-D-2006 <sup>1</sup>	2 hr.	CEJ 130P <sup>2</sup> CEJ 170P <sup>2</sup>	2 hr.
	Static	CW-S-1007 <sup>3</sup> CW-S-2014 <sup>4</sup> CW-S-2025 <sup>1</sup>	2 hr.		
Concrete Spandrel - Aluminum Framed	Dynamic			CEJ 141P <sup>2</sup> CEJ 169P <sup>2</sup> CEJ 181P <sup>2</sup> CEJ 207P <sup>2</sup> CEJ 153P <sup>2</sup> CEJ 225P <sup>2</sup> CEJ 155P <sup>2</sup> CEJ 256P <sup>2</sup>	2 hr.
Concrete Spandrel - Steel Framed	Dynamic			CEJ 134P <sup>2</sup> CEJ 174P <sup>2</sup>	2 hr.
Gypsum Sheathing - Steel Framed	Dynamic			CEJ 193P <sup>2</sup> CEJ 258P <sup>2</sup> CEJ 234P <sup>2</sup>	1 hr.
				CEJ 131P <sup>2</sup> CEJ 259P <sup>2</sup> CEJ 238P <sup>2</sup> CEJ 260P <sup>2</sup> CEJ 239P <sup>2</sup> CEJ 261P <sup>2</sup> CEJ 240P <sup>2</sup> CEJ 262P <sup>2</sup> CEJ 241P <sup>2</sup> CEJ 263P <sup>2</sup> CEJ 242P <sup>2</sup> CEJ 264P <sup>2</sup> CEJ 243P <sup>2</sup> CEJ 265P <sup>2</sup>	2 hr.
	Static	CW-S-1001 <sup>4</sup> CW-S-1002 <sup>1</sup> CW-S-1003 <sup>1</sup>	2 hr.		
Steel Spandrel - Aluminum Framed	Dynamic			CEJ 140P <sup>2</sup> CEJ 208P <sup>2</sup> CEJ 180P <sup>2</sup> CEJ 226P <sup>2</sup> CEJ 168P <sup>2</sup>	2 hr.
Steel Spandrel - Steel Framed	Dynamic			CEJ 132P <sup>2</sup> CEJ 182P <sup>2</sup> CEJ 171P <sup>2</sup> CEJ 196P <sup>2</sup> CEJ 172P <sup>2</sup> CEJ 219P <sup>2</sup> CEJ 160P <sup>2</sup> CEJ 237P <sup>2</sup>	2 hr.

Note: 3M Fire Barrier Spray and 3M Fire Dam Spray are equivalent smoke sealants. Both sealants are interchangeable in any systems specifying 3M smoke sealants.

- <sup>1</sup> Smoke Sealant Manufacturer, STI
- <sup>2</sup> Smoke Sealant Manufacturer, 3M
- <sup>3</sup> Smoke Sealant Manufacturer, Hilti
- <sup>4</sup> Smoke Sealant Manufacturer, United States Gypsum Co.
- <sup>5</sup> Smoke Sealant Manufacturer, Johns Manville
- <sup>6</sup> Smoke Sealant Manufacturer, Grace Construction Products
- <sup>7</sup> Smoke Sealant Manufacturer, TREMCO, Inc.
- <sup>8</sup> Smoke Sealant Manufacturer, Passive Fire Protection Partners
- <sup>9</sup> Smoke Sealant Manufacturer, Nelson Firestop Products

Details of the UL and OPL assemblies can be requested by contacting Thermafiber, Inc. at 888-834-2371. Details can also be viewed on OPL's web site at [www.opl.com](http://www.opl.com) or UL's web site at [www.ul.com](http://www.ul.com).

To view OPL's assemblies from their web site, click on *Listing & Labeling*, choose *Directory*, scroll down and click on *Online Directory*, scroll down to the heading "Download or View Designs by Design Number", click on the down arrow and select the design number, i.e.: CEJ 133P. Lastly, click on the Go button. The design should appear in pdf format.

To view UL's assemblies from their web site, click *Online Tools on UL's home page*, then click *Online Certification Directory*, then on *UL File Number*. Enter the system number- i.e: CW-S-2001, then click the *Search* button. Clicking on - i.e.: *XHDG.CW-S-2001* opens the design file.

Thermafiber Curtain Wall Insulations; CW 40, CW 70 and CW 90 in combination with Thermafiber Safing Insulation also provide superior fire protection in perimeter fire containment systems. Thermafiber Curtain Wall Insulation has proven its fire performance capabilities in many different fire containment assemblies with 1, 2 and 3 hour ratings as outlined in the following tested systems:

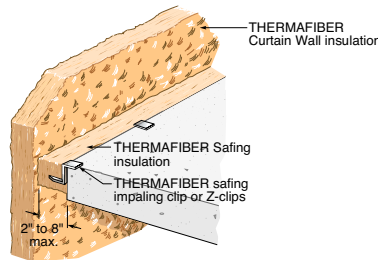
**Curtain Wall Fire Containment Systems**

Fire-rated Construction	System	Design #	Fire-rating
Glass Spandrel	Static	CEG 4-2-81	3 hr.
		CEG 12-20-89 CEG 1-16-90' WJE 72481	2 hr.
		CEG 8-6-81 CEG 7-25-85	1 hr.
Aluminum Spandrel	Static	USG 10-18-71 WJE 72455	2 hr.
		USG 6-3-71	1 hr.
Granite Spandrel	Static	CEG 4-23-90	3 hr.
		CEG 10-6-81 CEG 1-15-90'	2 hr.
		CEG 7-27-81	1 hr.

<sup>1</sup> Thermafiber Smoke Seal Compound

**Safing Insulation Fire Containment<sup>(1)</sup>**

Fire Containment	Detail & Physical Description & Test No.
3 hr.	Spandrel panel containing CW insulation — safe-off area sealed with 4" thick THERMAFIBER Safing Insulation— <b>WJE 3-3-72 and USG 11-30-71</b>



Notes:  
(1) This is a test designed to demonstrate the performance of THERMAFIBER Safing Insulation in a curtain wall application. Tests are identified as WJE 3-3-72 and USG 11-30-71.

**Performance of Uninsulated Panels**

THERMAFIBER fire-tested an unprotected granite panel curtain wall system in February 1989 to determine whether stone panels need fire protection to maintain their integrity in curtain wall assemblies:

- THERMAFIBER Safing Insulation alone (no CW insulation) was used to fill the void between the slab edge and the granite panel.
- At seven minutes into the ASTM E119 (ANSI/UL 263) time-temperature controlled test, cracks formed in the 3 cm thick granite panel, and went completely through the granite.
- Conclusion: Without the additional fire protection of curtain wall insulation, the granite panel system may fail.

**Performance of Low-Melt-Point Insulations**

A glass spandrel panel system was also fire tested. It was protected with glass fiber curtain wall insulation and THERMAFIBER Safing Insulation. The purpose of the test was to determine whether glass fiber insulations can be used for fire-containment in conjunction with THERMAFIBER Safing Insulation.

- At ten minutes into the ASTM E119 (ANSI/UL 263) time-temperature controlled test, the glass fiber insulation began to melt.
- At 21 minutes, 45 seconds, the glass spandrel shattered.
- When the glass shattered, the THERMAFIBER Safing Insulation fell out intact.
- Conclusion: Glass fiber insulations readily melt in fire, providing insufficient fire containment.

**Smoke Control**

After successfully developing systems to provide fire containment in curtain wall and penetration applications, Thermafiber addressed a second life-safety concern, smoke control. The company developed and tested smoke control systems for the following reasons:

- Smoke Inhalation causes 75% of all fire deaths.
- 65% of all fire deaths occur away from the fire room.
- There is no industry-accepted test method to evaluate the ability of a material or assembly to contain smoke, in perimeter fire containment systems.
- Contact a Thermafiber representative for more information on smoke control.

Safing

**Sound Attenuation Fire Blankets**

Thermafiber Sound Attenuation Fire Blankets (SAFB) are nominal 2.5-lb./cu. ft. (4 lb./cu. ft. for 1") density blankets specifically intended to be used for sound attenuation in walls and ceilings. They are highly effective in reducing sound transmission. They are provided in standard widths of 15", 16", 17", 24" and 25" by 48" length for installation between studs or joists. They are available in thicknesses of 1" to 6" (in 1/2" increments) to provide a variety of levels of sound attenuation. They are particularly useful in partitions requiring fire ratings and as overlayment for acoustical tile or panel ceilings to improve acoustics. Surface burning characteristics are flame spread 0, smoke developed 0.

**Sound Attenuation Fire Blanket Assemblies**

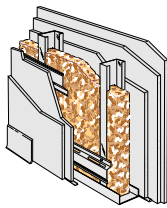
Depending on the particular assembly and application, partition STC ratings have been improved up to eleven points by installing Thermafiber SAFB in the stud cavity. The insulation also has been shown to improve MTC ratings for low-frequency sound attenuation, isolating sounds from machinery, mechanical equipment and music. Thermafiber SAFBs are superior to glass fiber in sound attenuation. In fact, low-density (< 1 lb./cu.ft.) glass fiber insulation requires greater thickness than standard Thermafiber SAFB to provide the same attenuation.

**Creased Thermafiber SAFB Assemblies**

These engineered assemblies offer the most economical drywall and veneer plaster sound systems in the 50 to 55 STC range. They are also fire-rated, making them ideal for party and corridor walls in hotels, motels, offices and multi-family dwellings. The Creased Thermafiber SAFB system is a patented insulation blanket assembly that is 1" wider than regular blankets. After the blanket is installed in the partition cavity, a 1" vertical slit is field-cut partially through the center of the blanket, allowing it to be creased. Compressing the extra width into the stud cavity buckles the center, exerting pressure against both studs and drywall. This pressure dampens sound vibrations and boosts the partition's STC rating. For example, a single-layer drywall partition with Creased Thermafiber SAFB has the same STC rating as an unbalanced drywall partition with standard SAFB.

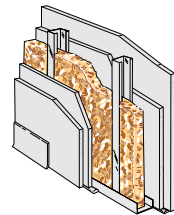
For further information about Thermafiber SAFB and Creased SAFB, request TF885, *Thermafiber Sound Attenuation Fire Blankets (SAFB)* available from Thermafiber Inc.

**61 STC\***



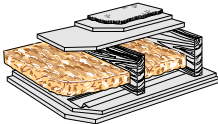
2-hr. partition, resilient channel—3" Thermafiber SAFB in stud cavity—1/2" gypsum wallboard Type C core—3-5/8" 20 ga studs 24" o.c.—RC-1 channel or equivalent one side, spaced 24" o.c. screw-att to studs—3 layers gypsum panels screw-att to studs, double layer screw-att to chan—joints stag and fin—perimeter caulked—**UL Des U419 or U455—RAL-TL-87-153**

**56 STC**



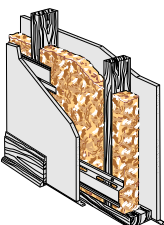
2-hr. partition, double-layer drywall—2" Thermafiber SAFB in stud cavity—2 layers 3/4" SHEETROCK Brand gypsum panels, ULTRACODE core, ea side—2-1/2" 25 ga steel studs 24" o.c.—panels screw att with joints stag and fin—**UL Des U419, U490-ULCW441 or SA-910907**

**59 STC/69 IIC\***



2-hr. ceiling—double-layer drywall—3" Thermafiber SAFB—floor of carpet/pad, 1-1/2" flooring 1/2" plywood—2 x 10 wd joists 16" o.c.—ceiling of 2 layers 5/8" gypsum wallboard Type C core, over RC-1 channels or equivalent 16" o.c.—**UL Des L541—RAL-TL90-40/RAL-IN-90-5**

**50 STC\***

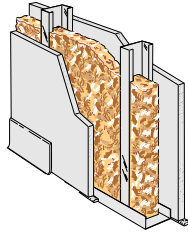


1-hr. partition—single-layer drywall, resilient channel—3" Thermafiber SAFB in stud cavity—5/8" gypsum wallboard Type C core—2 x 4 16" or 24" o.c.—RC-1 channel or equivalent one side, spaced 24" o.c.—panels app horiz & att to channels—end joints back-blocked with RC-1 channel with 1" Type S screws—opp side direct att with 1-1/4" Type W screws—joints fin—perimeter caulked—**UL Des U311 and ULC U311—BBN-760903**

\*STC values are based on Sheetrock® Brand gypsum panels, Firecode® C.

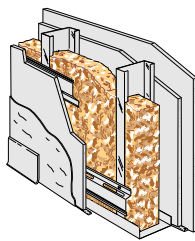


**50 STC**



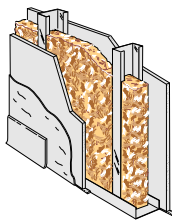
2-hr. partition, single-layer drywall—3" THERMAFIBER SAFB in stud cavity—3/4" SHEETROCK Brand gypsum Panels, ULTRACODE core, ea side—min. 3-1/2" 25 ga steel studs 24" o.c.—panels screw att—joints stag & fin—perimeter caulked—**UL Des U419 or U491 or ULC W440—USG-910617**

**58 STC\***



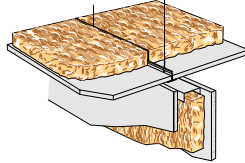
1-1/2-hr. unbalanced partition, resilient channel drywall—3" THERMAFIBER SAFB in stud cavity—1/2" gypsum wall-board Type C core—3-5/8" 20 ga studs 24" o.c.—RC-1 channels or equivalent one side spaced 24" o.c. screw-att to studs—2 layers gypsum panels screw-att to studs, 1 layer screw-att to channels—joints stag and fin—perimeter caulked—**UL U452—RAL-TL-83-215**

**51 STC\*\***



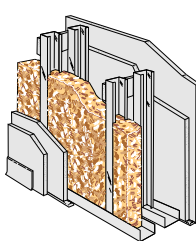
1-hr. partition, single-layer drywall, Creased—3" Creased THERMAFIBER SAFB in stud cavity—5/8" gypsum wall-board Type X—3-5/8" 25 ga steel studs 24" o.c.—panels screw att—joints stag & fin—perimeter caulked—**UL Des U419 or U465—RAL-TL-90-166, SA-860620**

**48 CAC**



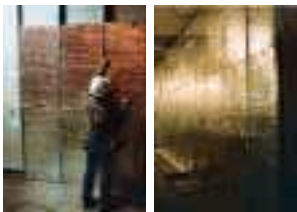
Class A ceiling—3" THERMAFIBER SAFB laid over ceiling, extending 4' each side of partition—AURATONE® 5/8" x 24" x 48" acoust clg panels in Susp Exp Grid Syst—contin over partn—**ASTM E84—Sound test USG-820406**

**57 STC\*\***



2-hr. partition, double-layer drywall chase wall—3-1/2" THERMAFIBER SAFB on one side in stud cavity—2 layers 5/8" gypsum wallboard Type X, ea side—1-5/8" 25 ga steel studs 24" o.c. in 2 rows spaced 6-1/4" apart—5/8" gypsum panel gussets or stl run braces spanning chase screw-att to studs—panels appl screw att—joints stag & fin—**UL Des U420—TL-76-156**

**FS-15 and FS-25 Blankets**



THERMAFIBER FS-15 Commercial Blankets are ideal for commercial wood- and steel-stud assemblies and exterior Z-furring. They are available in densities of 4-lb./cu. ft. (1" thickness) or 2.5-lb./cu. ft. (1-1/2" thickness and thicker), thicknesses of 1" to 6", standard widths of 16" and 24" and 48" long. When installed in exterior walls, they reduce heat transmission, saving energy and improving occupant comfort. Flame spread rating is 0, smoke developed 0.

THERMAFIBER FS-25 Commercial Blankets are intended for most exposed-insulation and vapor-control situations, such as floor/ceilings, walls or crawl spaces. They provide thermal and sound control properties and are also foil-faced with an FSP vapor retarder. They are available in 3-lb./cu. ft. density in thicknesses of 3" to 6", standard widths of 16" and 24" and 48" long. Flame spread rating is 25, smoke developed 0.

\*STC values are based on Sheetrock® Brand gypsum panels, Firecode® C.  
\*\*STC values are based on Sheetrock® Brand gypsum panels, Firecode®.

Sound Attenuation  
Fire Blanket (SAFB)

**Product Data**      **Standard Sizes & Dimensions**

Product Designation	Minimum Thickness	Maximum Thickness	Width <sup>(2)</sup>	Length <sup>(2)</sup>
CW 40 <sup>(1)</sup>	2"	6"	24"	36" 48" 60"
CW 70 <sup>(1)</sup>	1-1/2"	6"	24"	36" 48" 60"
CW 90 <sup>(1)</sup>	1"	5"	24"	36" 48" 60"
THERMAFIBER FIRESPAN <sup>(1)</sup>	1"	5"	24"	36" 48" 60"
THERMAFIBER FIRESPAN SS <sup>(1)</sup>	2"	6"	24"	36" 48" 60"
Safing <sup>(1)</sup>	1"	6"	24"	48"
SMOKE SEAL Compound	30 oz. cartridge, 5 gal. pails			
FIRECODE Compound	15 lb. bag; 3 qt. and 4.5 gal. pails			
SAFB <sup>(3)</sup>	1"	6"	16", 24"	48"
Creased SAFB <sup>(3)</sup>	3"	3"	15", 17", 25"	48"
FS-15	1"	6"	16", 24"	48"
FS-25	3"	6"	16", 24"	48"

Note: Dimension tolerances—width  $\pm 1/8"$ ; thickness  $-1/8" + 1/4"$ ; length  $-1/4" + 3/4"$  for all CW and FireSPAN products,  $\pm 1/2"$  for all other products.

(1) FSP aluminum-foil facing and dark color products are also available.

(2) Consult sales representative for additional sizes.

(3) SAFB density for 1" thickness is 4 pcf, all other thicknesses are 2.5 pcf.

**Product Density**

Product Designation	Actual Density—pcf	Approximate Density Tolerance—pcf <sup>(2)</sup>	Min. Thick.	Application Method
CW 40 <sup>(1)</sup>	4.0	-0.5 +1.0	2"	see tests for req'd. attachment
CW 70 <sup>(1)</sup>	6.0	-0.75 +2.0	1-1/2"	see tests for req'd. attachment
CW 90 <sup>(1)</sup>	8.0	-1.0 +2.0	1"	see tests for req'd. attachment
Safing	4.0	-0.5 +1.0	1"	see tests for req'd. attachment
1" SAFB	4.0	-0.5 +1.0	1"	friction fit between studs
All other SAFB	2.5	-0.5 +1.0	1-1/2"	friction fit between studs
1" FS-15	4.0	-0.5 +1.0	1"	friction fit between studs
All other FS-15	3.0	-0.5 +1.0	1-1/2"	friction fit between studs
FS-25	3.0	-0.5 +1.0	3"	friction fit between studs

(1) Applies to both standard color and dark color curtain wall insulation. (2) On package weight basis.

**Thermal Conductivity and Thermal Resistance (according to ASTM C518)**

Product Designation	"k" @75 °F btu · in./hr. · sq. ft. · °F	(24°C) For insulation only								
		R value per inch <sup>(2)</sup>	1-1/2" thick	2" thick	2-1/2" thick	3" thick	3-1/2" thick	4" thick	5-1/4" thick	6" thick
		R <sup>(2)</sup>	R	R	R	R	R	R	R	R
CW 40	0.24 <sup>(1)</sup>	4.2	—	8.3	10.4	12.5	14.6	16.7	—	25.0
CW 70	0.24 <sup>(1)</sup>	4.2	6.2	8.3	10.4	12.5	14.6	16.7	—	25.0
CW 90	0.24 <sup>(1)</sup>	4.2	6.3	8.3	10.4	12.5	14.6	16.7	—	—
FIRESPAN	0.24 <sup>(1)</sup>	4.2	—	8.3	—	12.5	—	16.7	—	—
FIRESPAN SS	0.24 <sup>(1)</sup>	4.2	—	8.3	10.4	12.5	14.76	16.7	—	25.0
Safing	0.24	4.2	—	—	—	—	—	16.7	—	—
1" SAFB	0.24	4.2	—	—	—	—	—	—	—	—
All other SAFB	0.27	3.7	5.6	7.4	9.3	11.1	13.0	14.8	—	22.2
1" FS-15	0.24	4.2	—	—	—	—	—	—	—	—
All other FS-15	0.26	3.8	5.8	7.7	9.6	11.5	13.5	15.4	20.2	23.1
FS-25	0.26	3.8	—	—	—	11.5	13.5	15.4	20.2	23.1

(1) Applies to both standard color and dark color curtain wall insulation.

(2) R = thickness ÷ k.

(3) U = 1 ÷ Total R.

**Surface Burning Characteristics (According to ASTM E84)**

Product Designation	Flame Spread	Smoke Developed
Unfaced - CW, Firespan, Safing, FS15, SAFB	0	0
Foil-Faced <sup>(1)</sup> - CW, Firespan, Safing, FS25	25	0
SMOKE SEAL Compound	0	0
FIRECODE Compound	0	0

All products have a class A interior finish rating per NFPA 101, life safety code. (1) Applies to both standard color and dark color products.

**Standards Compliance**
**ASTM C665**

Federal Specification HH-I-521F—

- Curtain Wall and FIRESPAN Insulation as Types I and III, Class A, Category 1 (0.02 perm, tested in accordance with ASTM E96 procedure)
- Safing Insulation as Types I and III, Class A, Category 1
- SAFB Blankets as Type I
- FS-15 Blankets as Type I
- FS-25 Blankets as Type III, Class A, Category 1

**ASTM C612**

Federal Specification HH-I-558B—

- Curtain Wall Insulation (all) and FIRESPAN Insulation (all) as Types 1A & 1B and 2 (0.02 perm, tested in accordance with ASTM E96 procedure)
- Curtain Wall Insulation (CW 70, CW 90) and FIRESPAN Insulation as Types 3 and 4 (0.02 perm, tested in accordance with ASTM E96 procedure)
- Safing Insulation as Types 1A & 1B and 2
- Sound Attenuation Fire Blankets as Type 1A

**ASTM E136** (rated noncombustible as defined by NFPA Standard 220 when tested according to ASTM E136)

- THERMAFIBER Safing Insulation
- THERMAFIBER Curtain Wall Insulation
- THERMAFIBER FIRESPAN and FIRESPAN SS Insulation
- THERMAFIBER Sound Attenuation Fire Blankets
- THERMAFIBER FS-15 and FS-25 Blankets

**ASTM E814 or UL 1479**

- Safing Insulation used in conjunction with SMOKE SEAL Compound or with FIRECODE Compound, or other approved material in through-penetration firestop systems.

**UL 2079**

- Safing Insulation used in conjunction with various fill, void or cavity materials such as sealants and caulks in construction joint systems.

**ASTM C553**

- THERMAFIBER Insulations adsorb less than 1% moisture by weight and volume

**Products are approved by:**

New York City Board of Standards &amp; Appeals

- Curtain Wall Insulation is approved by New York City Board of Standards & Appeals under BSA 214-73-SM, BSA 338-81-SM, BSA 782-81-SM, BSA 980-81-SM & accepted by MEA 209-82, Vol. II.
- FIRESPAN Curtain Wall Insulation, MEA 189-93-M, MEA 190-93-M, MEA 209-82, Vol. II; Safing Insulation BSA 39-74-SM, MEA 209-82, Vol. II.

**Good Design Practices**

- 1 Vapor Retarders**—In air conditioned buildings in localities where high humidity and temperatures predominate, consideration should be given to placing the vapor retarder on warm (outside) wall to prevent moisture condensation within the insulation. Actual placement of moisture barrier should be specified by a qualified professional engineer, based on local climatic conditions.
- 2 Ceilings**—Insulation should be carefully fitted around—not over—recessed light fixtures. Improperly covering fixtures with insulation causes heat to build up, possibly resulting in fire.
- 3 Glass Spandrels**—To prevent possible moisture problems and to minimize thermal build-up within the cavity, minimum 1" air space is required between glass spandrels and insulation behind them.
- 4 Exterior Walls**—Penetrations in exterior walls for windows, doors, outlets, HVAC, etc., must be sealed with sealant or tape. Foil tape also should be used with foil-faced product applications to close joints and repair damaged areas. Mechanical attachment of safing and curtain wall insulation is required to avoid dislodging because of air movement, particularly in furred exterior walls without sheathing or backing.
- 5 Test Data**—Thermafiber Inc. will provide data for published fire, sound and structural systems designed and constructed according to its published specifications. Tests were conducted on curtain wall assemblies fire-protected with these products to meet performance requirements specified by various agencies. System performance following any substitution of materials or compromise in assembly design cannot be certified and may result in failure under critical conditions.



**Commercial**

Thermal: *FS15, FS25, Curtain Wall, FireSpan, SAFB, PrivacyGuard, Safing*

Acoustical: *SAFB, PrivacyGuard, Curtain Wall*

Fire Protective: *Curtain Wall, Firespan, Safing, SAFB, FS15, FS25, Light Fixture Protection Kits*

**Other products available at Thermafiber:**



**Industrial**

Thermal: *Industrial Felt, Industrial Board, Industrial Blanket, Bulk Wool, FFF, Kfac 19, PrivacyGuard, Kfac SR, Maritime Insulation, Metal Mesh, BI Insulation, ThermaTex 1800, ThermaWrap 80, Quick-Cote Cement, Super Stik Cement*

Acoustical: *Industrial Felt, PrivacyGuard, Bulk Wool, ThermaTex 1800, ThermaWrap 80, BI Insulation, FFF*

Fire Protective: *Maritime Insulation*



**Residential**

Thermal: *Blowing Wool, Sidewall Spray, Foundation Wall Spray, PrivacyGuard*

Acoustical: *Blowing Wool, Sidewall Spray, PrivacyGuard*

Fire Protective: *Blowing Wool, Sidewall Spray*

**Additional Information**

**For Further Information**  
On these products, including nonstandard sizes, contact Thermafiber Inc.

**Thermafiber Inc.**  
**Sales Offices:**  
Phone: 888.THIBER1  
(or 834.2371)  
www.thermafiber.com

**Metric Specifications**  
Thermafiber Inc. will provide metric conversions on its products and systems to help specifiers match metric design sizes. In addition, products are available in metric dimensions.

**Trademarks**  
The following trademarks used herein are owned by Thermafiber Inc.: THE NAME IN MINERAL WOOL, THERMAFIBER and FIRESPAN. AURATONE, DUROCK, FIRECODE, IMPERIAL, RC-1, SMOKE SEAL, SHEETROCK and ULTRACODE are trademarks of United States Gypsum Company.

**Notice**  
We shall not be liable for incidental and consequential damages, directly or indirectly sustained, nor for any loss caused by application of these goods not in accordance with current printed instructions or for other than the intended use. Our liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to us within thirty (30) days from date it was or reasonably should have been discovered.

**Note**  
All products described here may not be available in all geographic markets. Consult your local sales office or representative for information.

For Health and safety information see Material Safety Data Sheet (MSDS) and North American Insulation Manufacturer's Association (NAIMA) Health and Safety Facts for Rock and Slagwool Insulation, Document #63.

**Safety First!**  
Follow good safety and industrial hygiene practices during handling and installing all products and systems. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read material safety data sheets and related literature on products before specification and/or installation.