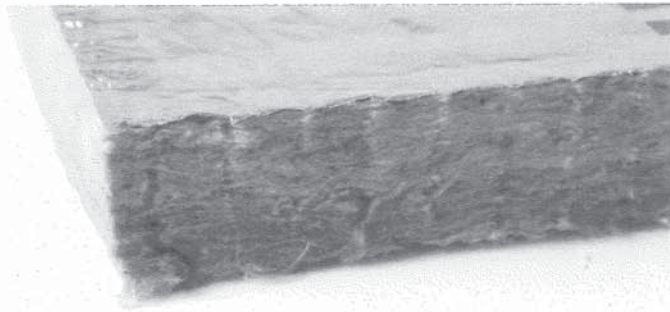




Thermafiber® FireSpan® 90

~~& FireSpan® 40~~

Mineral Wool Insulation



Description

Thermafiber® FireSpan® products are designed to provide enhanced fire protection in curtain wall and perimeter fire containment systems. These products are non-combustible, moisture-resistant, non-corrosive, non-deteriorating, mildew-resistant and vermin-resistant. Its natural dark color provides shadowing in glass spandrels. FireSpan® 40 & 90 insulations provide thermal insulation, fire containment, enhanced acoustical performance, and vapor control in many different UL and Intertek (formerly OPL) listed fire containment assemblies of 1, 2, and 3-hr ratings.

Standards, Codes Compliance

ASTM C 665	Type I, III (Class A, Category 1)
ASTM C 612	FireSpan® 40 Type IA, IB, II, III, IVA
ASTM C 612	FireSpan® 90 Type IA, IB, II, III, IVA
ASTM E 136	Non-combustible as defined per NFPA Standard 220
CAN/ULC S114	Complies
ASTM E 96	Unfaced, 50 Perms as tested
ASTM E 96	Foil Faced, 0.02 Perms as tested
ASTM C 1104	Sorption less than 1% by volume
ASTM C 356	Linear Shrinkage <2% @ 1200° F (650° C)
ASTM C 356	Flame Spread 0, Smoke Developed 0

Curtain wall products are approved by: New York City Board of Standards & Appeals – (under BSA 214-73-SM & accepted by MEA-209-82, Vol. II). Also, MEA-189-93-M and MEA-190-93-M.

Product Options

FireSpan® 40, 2" or greater thickness, is available with a vapor retarding foil facing.

FireSpan® 90, 1" or greater thickness, is available with a vapor retarding foil facing.

Recycled Content Options^{1,2}:

EPA Choice Fiber
(US Government Buildings) Minimum 75%

Standard Fiber 70%

1. Recycled content options other than standard must be specified at time of order.

Technical Data

	Nominal Density	"k" @ 75° [24°C] BTU.in/hr .sq. ft. °F	"R" value per inch of thickness***	Tested to ASTM E 84			
				Tested to ASTM C 518		Unfaced	
				Flame Spread	Smoke Developed	Flame Spread	Smoke Developed
FireSpan® 40	4.0 pcf	0.23	4.3	0	0	25	0
FireSpan® 90	8.0 pcf	0.23	4.3	0	0	25	0

***R = thickness divided by 'k'

Perimeter Fire Containment Tests Per ASTM E 2307

FireSpan® insulation is the insulation for perimeter fire containment. Thermafiber, Inc. has performed decades of testing in all of the containment systems listed below.

- Aluminum Spandrel Curtain Wall Fire Containment
- Steel Stud-Framed/Gypsum Sheathing Curtain Wall Fire Containment
- Glass Spandrel Curtain Wall Fire Containment
- Granite Spandrel Curtain Wall Fire Containment
- Precast Concrete Spandrel

For more complete test information, see UL® and Intertek® (formerly OPL) Directories. For a full listing of containment systems visit www.thermafiber.com and click on Fire Rated Assemblies.

For additional job specific details and accessory materials necessary to complete the Perimeter Fire Containment System, please refer to UL® design listing.³

³ Underwriters Laboratories (UL) Designs, Fire Resistance Directory, UL, 333 Pfingsten Road, Northbrook, IL 60062.

See Owens Corning publication "Enclosure Solutions Perimeter Fire Containment System E2307 Curtain Wall Technical Bulletin" (Pub. No. 10020920) for more information.

Installation

FireSpan® products should be mechanically attached to horizontal and vertical mullions with architect approved insulation fasteners. Reinforce FireSpan® insulation on the outer insulation surface at the saffing line. Typical reinforcement members include hat channels, "L" angles, and "T" bars. Thermafiber Inc.'s patented Impasse® system is designed to quickly and easily mechanically attach FireSpan® insulation to curtain wall systems.

Availability

	Thickness*	Widths**	Lengths**
FireSpan® 40	2" - 7"	24", 36", 72"	48", 60", 72"
FireSpan® 90	1" - 7"	24", 36", 72"	48", 60", 72"
Tolerances	+1/4", - 1/8"	± 1/8"	+3/4", - 1/4"

* Thicknesses are available in 1/2" increments. ** Custom sizes are available upon request.

Thermafiber Insolutions®

Thermafiber Insolutions® offers industry leading technical and engineering assistance to architects, specifiers, and contractors. These services include CAD drawings, engineering judgments, LEED® Credit Information, and product recommendations. Contact our technical services department at 1-888-834-2371 or email ThermafiberInsolutions@owenscorning.com.

Features

- Exceptional performance in Perimeter Fire Containment Systems
- Provides fire containment in rated assemblies
- Fire resistant to temperatures above 2,000°F (1,093°C)
- Helps conserve energy, reduce greenhouse gas emissions
- Mold-resistant
- Enhances acoustical performance
- Natural dark color provides shadowing in glass spandrels
- Minimum 70% recycled content²
- Contributes to credits in several green building programs such as LEED[®] and Green Globes[®]

Environmental and Sustainability

Owens Corning is a worldwide leader in building material systems, insulation and composite solutions, delivering a broad range of high quality products and services. Owens Corning is committed to driving sustainability by delivering solutions, transforming markets and enhancing lives. More information can be found at www.owenscorning.com.

Notes

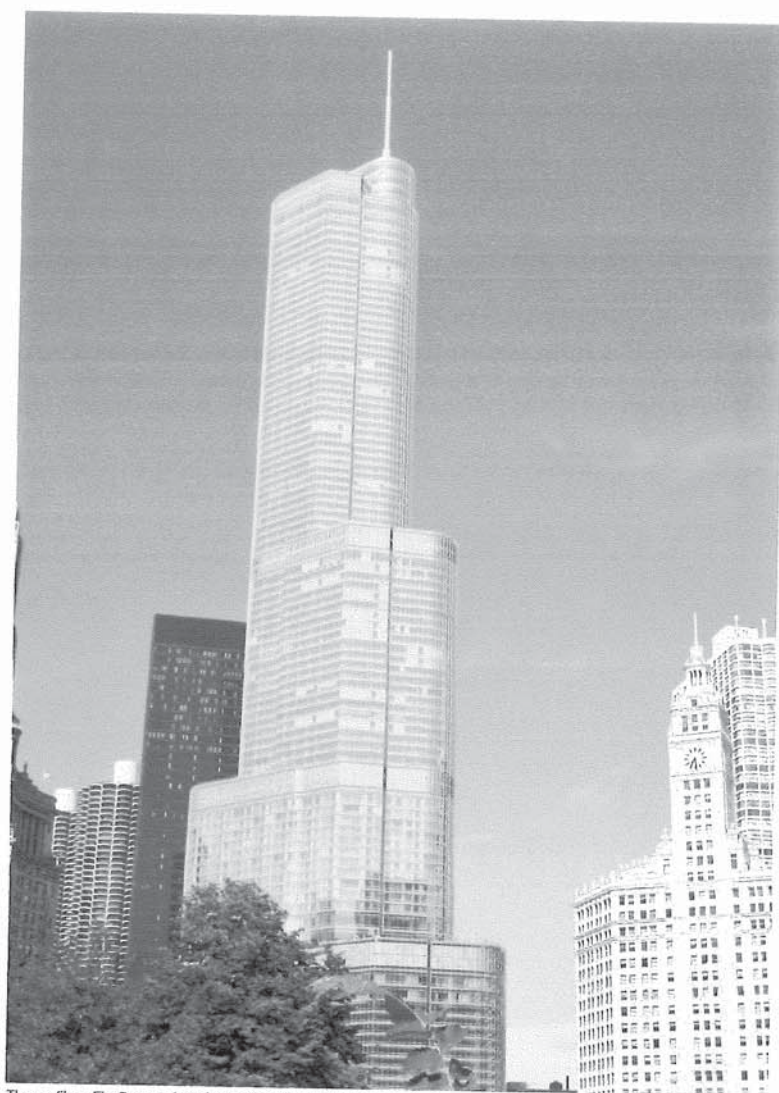
For additional information refer to the Safe Use Instruction Sheet (SUIS) found in the SDS Database via <http://sds.owenscorning.com>.

Submittal Approvals

Job Name _____

Contractor _____

Date _____



Thermafiber® FireSpan® mineral wool insulation provides the critical components of the perimeter fire containment system in the Trump International Hotel and Tower in Chicago, IL.



Made in the USA

Certifications and Sustainable Features

- ²Verified by ICC-ES to contain a minimum of 70% recycled content. See ICC-ES Evaluation Report VAR-1025 at icc-es.org.
- Environmental Product Declaration (EPD) has been certified by UL Environment. For more information visit ul.com/epd.
- Material Health Certificate from Cradle to Cradle Products Innovation Institute. For more information visit c2ccertified.org.



Thermafiber

Disclaimer of Liability

Thermafiber, Inc. 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. Thermafiber, Inc. liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing within thirty (30) days from date it was or reasonably should have been discovered.

LEED[®] is a registered trademark of the U.S. Green Building Council.
Green Globes[®] is a registered trademark of Green Building Initiative, Inc.
UL and the UL logo are trademarks of UL LLC.

INTERTEK and the Intertek logo are registered trademarks of Intertek Group plc.

Thermafiber, Inc.
ONE OWENS CORNING PARKWAY
TOLEDO, OHIO, USA 43659

888-TFIBER1 [834-2371]
www.thermafiber.com

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THERMAFIBER® Safing™ Insulation

UL- and OPL-labeled* safing insulation for firestops and fire-containment systems

- Firestop product for curtain wall fire and smoke containment systems, floor and wall penetrations, and head-of-wall construction joints.
- Fire resistant and noncombustible.
- Economical; installs quickly and easily.
- Aids sound control in many assemblies.
- Available in unfaced felt (plain) or with a tough scrim-reinforced foil facing (FSP).
- Durable; nondeteriorating and noncorrosive.

S.A.F.

Description

THERMAFIBER® Safing Insulation is a mineral-wool-type insulation that resists temperatures up to 2,000 °F (1,093 °C), thus offering superior fire protection in a wide variety of fire-rated applications. It is a UL- and OPL-labeled product especially intended for tested UL and OPL Designs, as well as many other fire- and smoke-tested assemblies. This product is noncombustible per Standard NFPA 220 when tested in accordance with ASTM E 136, and moisture-resistant, noncorrosive, nondeteriorating, mildew-proof and vermin-proof. It permits dry construction for all-year-round work. Also, THERMAFIBER® Safing Insulation is available plain, or with scrim-reinforced foil facing (FSP) that serves as a vapor retarder and/or smoke barrier.

THERMAFIBER® Safing Insulation is compatible with both THERMAFIBER® Curtain Wall CW Insulations and THERMAFIBER® FIRESpan™ Insulations.

Perimeter Fire Containment, Penetrations and Construction Joints

THERMAFIBER® Safing Insulation is a key element in a wide variety of fire-tested construction assemblies. It is used with THERMAFIBER® Curtain Wall and FIRESpan™ Insulations in applications to contain both fire and smoke to the area of origin. For mid- and high-rise buildings, especially, that means that 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 the fire spread is through and up the exterior curtain wall system. THERMAFIBER® Safing Insulation is also used in conjunction with various fill, void or cavity materials, such as sealants and caulks, in wall and floor penetration (poke-through) applications, as well as in head-of-wall construction joints.

It is important to note that one of the most valuable yet misunderstood applications of THERMAFIBER® Safing Insulation is its use in exterior curtain wall assemblies to safe-off the opening between concrete floor slabs and the curtain wall assemblies. Many people still believe the myth that all thermal insulations are the same when used in the curtain wall spandrel panels as long as THERMAFIBER® Safing Insulation is used in the assembly. **(This is simply not true).** Actual fire tests have proven that low-melt-point insulations, such as fiberglass types, will disintegrate quickly once exposed to fire, leaving the curtain wall unprotected. Then, as the now-unprotected curtain wall disintegrates or falls away, the safing insulation will no longer be supported, and the fire will spread to the floor(s) above. Effective perimeter fire containment can only be achieved when a fire-compatible product with the ability to resist high temperatures (such as THERMAFIBER® Curtain Wall Insulations or THERMAFIBER® FIRESpan™ Insulations) is used in conjunction with the THERMAFIBER® Safing Insulation, acting together as a system. (See TF871 and TF686 for additional information).

Installation

Perimeter Installation

In curtain wall fire-containment applications, THERMAFIBER® Safing Insulation fills the void between the slab edge and the curtain wall insulation to contain fire. Foil-faced insulation impedes the passage of smoke and noxious gases. Install THERMAFIBER® Safing Insulation, of proper width (2" to 8" max. opening), in safe-off area (foil side up, if required) between THERMAFIBER® FIRESpan™ or CW Curtain Wall Insulation and floor slabs, on safing "Z" clips spaced as required, 24" or 12" o.c. maximum, leaving no voids. Install safing wider than opening to ensure compression fit. See specific test description for proper installation details. Install proper topping material, such as THERMAFIBER® SMOKE SEAL Compound, FIRECODE Compound or FIRE BARRIER Spray, as indicated in the specific test description or architectural specification.

Penetration Application

THERMAFIBER® Safing Insulation provides a noncombustible, fire-resistant forming/packing material for many types of penetrations in walls and floor/ceilings. In all poke-through penetrations, clean substrate of dirt, dust, grease, oil, efflorescence, loose material or other matter. With a serrated knife, cut THERMAFIBER® Safing Insulation slightly wider than the opening. Compress and tightly fit the minimum thickness and density of insulation required (per system specification) completely around penetrant. For floor slab openings, compress or install THERMAFIBER® Safing Insulation according to details indicated in the specific test description or architectural specification to seal completely around cables, ducts, piping or other utilities.

Construction Joint Application

THERMAFIBER® Safing Insulation is also used as a forming material in head-of-wall construction joints. It is compressed and slid into joint openings to completely fill the gap between the top of the wall and the steel deck.

* UL is an abbreviation for Underwriters Laboratories Inc.; OPL is an abbreviation for Omega Point Laboratories, Inc.

Technical Data

Surface Burning Characteristics (According to ASTM E 84)	Product Designation Safing, Regular (Unfaced) Safing (Foil-Faced)	Flame Spread 15 25	Smoke Developed 0 0
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Products have a class A interior finish rating per NFPA 101, life safety code.

Product Density	Approximate Density Tolerance—pcf ⁽¹⁾				Minimum Thickness	Application Method
	Product Designation	Density	Tacoma	Wabash		
	Safing	4.0	±0.5	-0.5 +1.0	1"	safing clips or compression fit
	Safing	6.0	±0.75	-0.75 +2.0	1-1/2"	safing clips or compression fit
	Safing	8.0	±1.0	-1.0 +2.0	1"	safing clips or compression fit

(1) On packaging weight basis.

Thermal Conductivity and Thermal Resistance (according to ASTM C518)	Product Designation	Density	"k" @ 75 °F (24 °C) BTU · in./hr. · sq. ft. · °F	"R"⁽¹⁾ value for insulation only
	Safing	4.0 pcf	0.25	"R" = 4.0 per inch of thickness.
	Safing	6.0 pcf	0.24	"R" = 4.16 per inch of thickness.
	Safing	8.0 pcf	0.23	"R" = 4.3 per inch of thickness.

(1) R = thickness divided by "k."

Product Data

Standards Compliance	THERMAFIBER® Safing Insulation meets the following: ASTM C 665 - Federal Specification HH-I-521F—Safing insulation as Types I and III, Class A, Category 1. ASTM C 612-00 - Federal Specification HH-I-558B—Safing insulation as Types IA, IB and II. ASTM E 136 - Rated noncombustible as defined by NFPA Standard 220 when tested according to ASTM E 136. ASTM E 814 or UL 1479 - Safing insulation used in conjunction with SMOKE SEAL Compound, FIRECODE Compound, FIRE BARRIER Spray, or other approved material. UL 2079 - Safing insulation used in conjunction with various fill, void or cavity materials, such as sealants and caulks. ASTM C 553 - THERMAFIBER® Insulations absorb less than 1% moisture by weight and volume. Safing insulation products are approved by: New York City Board of Standards & Appeals —619-48-SM & 39-74-SM.
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Composition and Materials	THERMAFIBER® Blankets are a mineral fiber material manufactured from slag, a by-product of iron ore reduction, and naturally occurring rock.
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Warranty	System performance following substitution of materials or compromise in assembly design cannot be certified and may result in failure of fire performance under certain conditions. Products and systems provided by Thermafiber LLC are warranted to be free from defects in material workmanship. Contact Thermafiber LLC for complete warranty details.
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Storage	Store in a cool, dry place.
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Submittal Approvals:

Job Name	WEBER
Contractor	Rebel/Firestoppers
Date	

Trademarks
THERMAFIBER, FIRESAN and THE NAME IN MINERAL WOOL are trademarks of Thermafiber LLC. SMOKE SEAL and FIRECODE are trademarks of United States Gypsum Company. FIRE BARRIER Spray name is jointly held by Thermafiber LLC and 3M Fire Protection Products.

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

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.

Safety First!
Follow good safety and industrial hygiene practices while handling and installing 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.

Health Aspects
Information about health aspects of using THERMAFIBER® Curtain Wall Insulation products are thoroughly explained in INT279, "Summary of Health & Safety Assessment & Recommended Work Practices" Booklet and INT117, "Health & Safety Assessment & Recommended Work Practices, Second Edition" (complete report).



3711 West Mill Street
Wabash, IN 46992-8687
1-888-TFIBER1 (834-2371)
<http://www.thermafiber.com>

THERMAFIBER, INC.
3711 MILL STREET
WABASH, INDIANA 46992
260.563.2111



Thermafiber- Technical Bulletin

Total Volatile Organic Compounds (TVOC) and Formaldehyde

Thermafiber Insulation products have been evaluated by an independent testing laboratory for emissions of total volatile organic compounds (TVOC), individual volatile organic compounds (IVOC), formaldehyde and other aldehydes using a product evaluation test protocol following requirements of ASTM Standard D 5116 and CAEEC 225 Section 01350 protocol (1,2).

Results of the evaluation showed Thermafiber products to meet the California purchase specifications for TVOC and general chemical emissions. Formaldehyde concentration of Thermafiber Insulation at 12 ppb meets or exceeds the California standard of 20 ppb max. for formaldehyde concentration.



MATERIAL SAFETY DATA SHEET THERMAFIBER® BONDED PRODUCTS

Thermafiber Inc.
3711 W. Mill Street Extended
Wabash, Indiana 46992

Page 1 of 2
Phone (260) 563-2111
Version Date: May 30, 2003
MSDS NO. 00001, Version 4

SECTION I PRODUCT IDENTIFICATION

PRODUCT(S): THERMAFIBER® Bonded Products

®Trademark of Thermafiber Inc.

SYNONYM: Insulation

CHEMICAL FAMILY: Slag wool

SECTION II INGREDIENTS

MATERIAL	WT%	ACGIH TLV (mg/m³)	OSHA REL (mg/m³)	CAS NUMBER
Slag wool fiber¹	>95	10(T)/3(R)	15(T)/5(R)	65997-17-3
Phenolic resin	<5	(NE)	(NE)	9003-35-4

If laminated, contains the following adhesive:

Vinyl alcohol polymer	<1	(NE)	(NE)	9002-89-5
(T) - Total	(R) - Respirable	(NE) - Not Established		

¹OSHA and ACGIH recommended exposure level is 1 fiber/cc and NIOSH recommended exposure level is 3 fibers/cc. This material is slag wool. Other generic terms that are used or have been used to classify this material include mineral wool, stone wool, man-made mineral fiber (MMMF), and man-made vitreous fiber (MMVF). A more recent generic term that has appeared in the literature to describe these glass-like materials is synthetic vitreous fiber (SVF).

SECTION III HAZARD IDENTIFICATION

POTENTIAL HEALTH EFFECTS:

ACUTE: The products are composed of mineral wool in a bound matrix. When these are cut or trimmed, especially with power tools, the resulting dust may cause transitory mechanical irritation to skin, eyes or respiratory tract.

EYES: Direct contact with eye can cause mechanical irritation.

SKIN: This material (in wet state or as dust) is not chemically harmful if it gets on the skin and is not immediately washed off. However direct contact of dust and mineral wool fibers with skin can cause skin irritation (mechanical) and itchiness.

INHALATION: Inhalation of dust can cause nose, throat, lungs and upper respiratory tract irritation. Persons exposed to dust may be forced to leave area because of nuisance conditions such as coughing, sneezing and nasal irritation.

INGESTION: No known effects.

CHRONIC: Persons with chronic or systemic skin or eye disease should use precautions and wear all personal protective equipment when working with this product.

SECTION IV FIRST AID MEASURES

EYES: In case of contact, immediately flush thoroughly with copious amounts of water occasionally lifting the lower and upper lids (to remove particulates). Get medical attention immediately. Contact lenses should not be worn when working with this product.

SKIN: Skin contact is not a chemical hazard. Mechanical action of fibers on skin can cause itchiness. Irritation of skin may occur with prolonged and repeated contact. Rinse with cool water, followed by washing with soap and warm water. A commercially available skin cream or lotion may be helpful to treat dry skin areas. Wash hands before eating or using restroom.

INHALATION: If exposed to excessive levels of dust, leave area of dust exposure and remain away until coughing and other symptoms

subside. Other measures are usually not necessary, however if conditions warrant, get medical attention.

INGESTION: No harmful or chronic effects expected. No specific recommendation. If gastric disturbance occurs, call physician.

TARGET ORGANS: Eyes, skin, lungs and respiratory system.

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED: Pre-existing upper respiratory and lung disease such as, but not limited to, bronchitis, emphysema and asthma.

PRIMARY ROUTES OF ENTRY: Inhalation, eyes and skin contact. Note to physician: This product is a mechanical irritant, and is not expected to produce any chronic health effects from acute exposures. Treatment should be directed toward removing the source of irritation with symptomatic treatment as necessary.

SECTION V FIRE FIGHTING MEASURES

The products are non-combustible and do not pose a fire hazard. However, packaging material may burn.

Extinguishing Media: Carbon dioxide (CO₂), water, water fog, foam, dry chemical

Special Fire Fighting Procedures: No special procedures are expected to be necessary for this product. Normal fire fighting procedures should be followed to avoid inhalation of smoke and gases.

Unusual Fire and Explosion Hazards: None.

Special Fire Fighting Protective Equipment: Observe normal fire fighting procedures.

Flash Point (Method Used): Not applicable.

Upper and lower flammable limits in air: Not applicable.

Autoignition temperature: Not applicable.

Hazardous Combustion Products: Carbon dioxide, carbon monoxide and trace gases.

SECTION VI ACCIDENTAL RELEASE MEASURES

CONTAINMENT: Not necessary. Treat as inert material.

CLEAN UP: Pick up large pieces. Use gloves to avoid skin irritation. Vacuum dust, preferably with an industrial vacuum cleaner with high efficiency air filter. If sweeping is necessary, use dust suppressant such as water. Do not dry sweep dust accumulation or use compressed air for clean up. These procedures will help minimize potential exposures.

DISPOSAL: Dispose in sanitary landfill in accordance with local, state and federal requirements.

SECTION VII HANDLING AND STORAGE

HANDLING: Use protective equipment to avoid irritation as described in Section 8.

STORAGE: Warehouse storage should be in accordance with manufacturer's recommendations. Material should be kept dry and protected from the elements.

SECTION VIII EXPOSURE CONTROL/PERSONAL PROTECTION

ENGINEERING CONTROLS: Provide general ventilation and local exhaust ventilation to meet TLV requirements of individual ingredients (see Section 2) and to control dusting conditions.

If cutting or trimming with power equipment, dust collectors and local ventilation should be used.

Avoid unnecessary exposure to dust and handle with care. Keep work area clean of dust and fibers by using an industrial vacuum cleaner with high efficiency filter or wetting down area with water. Never use compressed air and avoid dry sweeping.

EYE PROTECTION: Wear safety glasses with sideshields or goggles to avoid eye irritation.

RESPIRATORY PROTECTION: Wear a NIOSH/MSHA-approved dust respirator in poorly ventilated areas, where local exhaust is not feasible, if TLV is exceeded, and/or when dusty conditions exist. Avoid prolonged and repeated breathing of dust.

OTHER CLOTHING: Wear tight fitting goggles and gloves when dusty conditions exist. Wear long-sleeved, loose fitting clothing at the

neck and wrists and minimize skin contact. Wash work clothing separately from other clothing. Rinse washer thoroughly after use.

SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance and Odor:** Tan or off yellow in color with low odor
- **Physical State:** Solid
- **Boiling Point:** Not applicable
- **Freezing Point:** Not applicable
- **Melting Point:** 2100° F (1150° C)
- **Specific Gravity (H₂O=1):** Not applicable
- **Solubility in Water:** Insoluble
- **pH Range:** Not applicable
- **Vapor Pressure:** Not applicable
- **Evaporation Rate (in-Butyl Acetate=1):** Not applicable
- **Percent Volatile:** Not applicable
- **Volatile Organic Compounds:** Not applicable

SECTION X CHEMICAL STABILITY

STABILITY: Stable

REACTIVITY: Not reactive

INCOMPATIBILITY: Acids (gives off H₂S under certain acidic conditions)

HAZARDOUS POLYMERIZATION: Will not occur

HAZARDOUS DECOMPOSITION: Oxides of carbon and smoke would be produced at high temperatures with thermal decomposition.

SECTION XI TOXICOLOGICAL INFORMATION

ACUTE DATA:

SLAG WOOL FIBER (65997-17-3)

Oral LD₅₀RAT: Not determined

Dermal LD₅₀RAT: Not determined

Skin Irritation: Mechanical Irritant

Eye Irritation: Mechanical Irritant

Contact with mineral wool fibers may cause temporary eye and skin irritation (mechanical). When products are handled continually, the skin irritation generally diminishes.

Chronic Data: Inhalation: In October 2001, the International Agency for Research on Cancer (IARC) classified mineral wool fibers (rock or slag) as Group 3 (not classifiable as to carcinogenicity to humans).

SECTION XII ECOLOGICAL INFORMATION

This product is not expected to have an adverse effect on the ecology.

SECTION XIII DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of material in accordance with federal, state, and local regulations. Wastes are not hazardous as defined by the Resource Conservation and Recovery Act (RCRA; 40 CFR 261).

WASTE NUMBERS: No EPA Waste Numbers are applicable for this product's components.

SECTION XIV TRANSPORT INFORMATION

U.S. DOT INFORMATION: Not a hazardous material per DOT shipping requirements. Not classified or regulated.

SECTION XV REGULATORY INFORMATION

CANADIAN REGULATIONS:

WHMIS: D2B

All components of this product are included in the Canadian Domestic Substances List (DSL) or the Canadian Non-Domestic Substances List (NDSL).

USA REGULATIONS:

All ingredients of this product are included in the U.S. Environmental Protection Agency's Toxic Substances Control Act Chemical Substance Inventory.

CARCINOGENICITY CLASSIFICATION OF INGREDIENTS:

Material	IARC	NTP
Man Made Vitreous	Group 3	None

In October 2001, the International Agency for Research on Cancer (IARC) classified mineral wool fibers (rock or slag) as **Group 3 (not classifiable as to carcinogenicity to humans)**. IARC noted specifically: "no evidence of increased risks of lung cancer or mesothelioma (cancer of the lining of the body cavities) from occupational exposures during manufacture of these materials, and inadequate evidence overall of any cancer risk." This was a reversal of the IARC finding in 1987 of a Group 2B designation (possibly carcinogenic to humans) based on earlier studies in which animals were injected with large quantities of slag wool fibers.

SECTION XVI OTHER INFORMATION

INFORMATION FOR HANDLING AND IDENTIFICATION OF CHEMICAL HAZARDS

NFPA Ratings: Health: 0 Fire: 0 Reactivity: 0 Other: N/A
HMIS Ratings: Health: 0 Fire: 0 Reactivity: 0

Personal Protection: Use eye and skin protection. Use NIOSH/MSHA approved respiratory protection when necessary.

0 = Minimal Hazard 1 = Slight Hazard 2 = Moderate Hazard

3 = Serious Hazard 4 = Severe Hazard

Δ CAUTION:

Dust exposure can cause temporary eye, skin and respiratory tract irritation. Avoid creating dust and install in well ventilated area. Cut and trim with razor knife or hand saw to minimize dust levels. Using power tools for cutting will generate high dust levels. Power tools should be equipped with dust collection system. Use NIOSH/MSHA approved dust respirator. Avoid dust contact with eyes and skin. Wear eye protection and long-sleeve, loose fitting clothing closed at the neck and wrists. Wash work clothing separately from other clothing. Rinse washer thoroughly.

KEEP OUT OF REACH OF CHILDREN THIS PRODUCT CONTAINS NO ASBESTOS

FIRST AID: For skin irritation, rinse skin with cool water, followed by washing with soap and warm water. For eye irritation, flush eyes thoroughly with water for 15 minutes. If irritation continues, or product is swallowed, consult a physician. Additional product safety information is available on the Thermafiber web site, www.thermafiber.com or by calling (260) 563-2111.

Key/Legend

ACGIH	American Conference of Government Industrial Hygienists
CAS	Chemical Abstracts Service (Registry Number)
DOT	United States Department of Transportation
EPA	United States Environmental Protection Agency
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety & Health
NTP	National Toxicology Program
OSHA	Occupational Health and Safety Administration
PEL	Permissible Exposure Limit
TLV	Threshold Limit Value

THERMAFIBER, INC.
3711 MILL STREET
WABASH, INDIANA 46992
260.563.2111

January 3, 2017



Attn: Robert Mann

Customer: Rebel Inc.

RE: **Thermafiber product qualifications for LEED® project**

PROJECT & LOCATION:
Webster - 63119

We have received your request for information regarding Thermafiber products as they relate to LEED credits for recycle content, manufacturing location and distance from manufacturer and raw material suppliers to the project site. Please find the following information you have requested.

Recycled Content:

Your Thermafiber FireSpan® products will contain 70% pre-consumer and 0% post consumer recycled material.

Manufacturer's Location:

Thermafiber insulation products are manufactured by Thermafiber, Inc. located in Wabash, IN.

Distance from Thermafiber's manufacturing location to the project site:

The distance from Thermafiber, located in Wabash, IN, to your project site is approximately 285.3 miles.

Distance from raw material suppliers to project site:

In regards to the name and address of our raw material suppliers. For proprietary reasons, Thermafiber is not allowed to disclose the name and location of our raw material vendors. We can however, provide information regarding whether our suppliers are within a 500 mile radius of the project site.

100% of the resources used to make standard fiber FireSpan® are extracted within 500 miles of your project site.

We trust this meets your needs. If you have any further questions, please feel free to contact Angie Ogino Technical Services Leader at 260.569.8229 or Richard Reuss, Technical Services Engineer at 260.563.0465.

Sincerely

Angela M. Ogino
Technical Services Leader

Richard Reuss
Technical Services Engineer

A handwritten signature in cursive script, appearing to read 'Angela M. Ogino'.

A handwritten signature in cursive script, appearing to read 'Richard Reuss'.



Thermafiber® Mineral Wool Insulation – Faced

ISSUED TO Owens Corning Sales, LLC

STANDARD 3.1

EXPIRES 8 September 2017

LEAD ASSESSMENT BODY

MBDC

ASSESSED APPLICATIONS

Manufacture, Installation, Use as insulation, Collection, Recycling, Landfilling, Incineration

PRODUCTS COVERED

Thermafiber® Mineral Wool Insulation – Faced

Includes all available facing materials

PRODUCT OPTIMIZATION SUMMARY

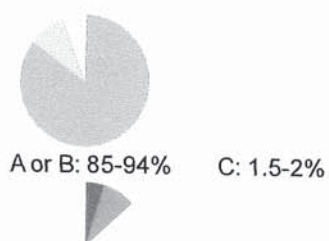
- ☒ *Cradle to Cradle Certified™* Banned List compliant
- ☒ Material Health optimization strategy developed
- ☐ No exposure from carcinogens, mutagens, or reproductive toxicants
- ☐ Meets VOC emissions testing requirements
- ☐ Product is fully optimized - does not contain any GREY or x-assessed chemicals
- ☐ Process chemicals have been identified and none are GREY or x-assessed

PERCENTAGE OF
HOMOGENEOUS MATERIALS
ASSESSED BY WEIGHT

100%

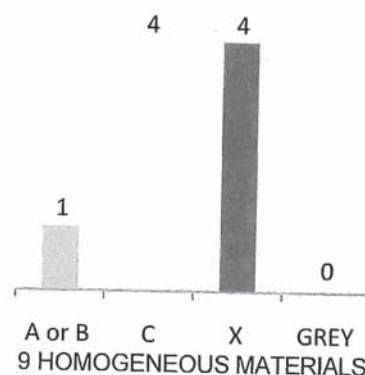
Inventory threshold for chemicals in each
material = 100 ppm

ASSESSMENT RATINGS
BY WEIGHT



% HOMOGENEOUS MATERIALS

PRODUCT
OPTIMIZATION



Material Health Certificate Guide

The Material Health Certificate is awarded to products assessed against the requirements in the Material Health category of the *Cradle to Cradle Certified™* Product Standard. The Material Health achievement level (Basic, Bronze, Silver, Gold, or Platinum) is shown in the certificate's upper right corner. A Material Health Certificate does not indicate that a product is *Cradle to Cradle Certified™*, which requires assessment against all five Standard categories.

The *Cradle to Cradle Certified™* Material Health Assessment Methodology is a contextual assessment based on chemical hazard identification and qualitative exposure considerations during a product's final manufacture, use, and end-of-use. The exposure assessment is highly simplified and more conservative compared to a conventional, quantitative risk assessment.

Definitions of Administrative Fields

Field	Definition
Issued To	Company that sells the assessed product(s).
Assessed By	Accredited Assessment Body responsible for conducting the product assessment.
Expires	Date the certificate expires. Certificate renewal is required biennially.
Standard	Version of the Standard (Material Health subsection only) the product was assessed against.
Assessed Scenarios	Use and end-of-use scenarios that the assessor considered in the exposure portion of the Material Health assessment. Assessment results are only valid for these scenarios.
Products Covered	Products included in the scope of the certificate. Certificates may cover multiple product variations.

Definitions of Product Optimization Summary Fields

Cradle to Cradle Certified™ Banned List compliant

The product's materials are not known to contain chemicals on the Banned Lists of Chemicals above permitted thresholds.

Material Health optimization strategy developed

Plan developed to phase out x-assessed chemicals and assess GREY content.

No exposure from carcinogens, mutagens, or reproductive toxicants

Assessed materials do not contain carcinogens, mutagens, or reproductive toxicants with plausible exposure routes.

Meets VOC emissions testing requirements

The product meets the volatile organic compound (VOC) emissions testing requirements described in the Standard.

Does not contain any GREY or x-assessed chemicals; product is fully optimized

The product's materials contain chemicals with only a, b, or c risk ratings (no GREY or x). (Note: In the *Cradle to Cradle Certified™* Material Health Assessment Methodology, chemicals in each material are assigned a, b, c, x, or GREY risk ratings. Each material is then assigned an A, B, C, X, or GREY final assessment rating based on the risk ratings of its constituent chemicals. The following table explains the rating system.)

a or b (A or B)	Optimal
c (C)	Moderately problematic, but acceptable for use
x (X)	Highly problematic; targeted for phase out
GREY	Considered unassessed due to unknown identity or lack of toxicity information

Process chemicals have been identified and none are GREY or x-assessed

All process chemicals have been assessed and received an a, b, or c risk rating (no x-assessed or GREY).

Percentage Assessed by Weight

For single-material products, the cumulative percentage of assessed chemicals (a, b, c, and x). For other products, the cumulative percentage of assessed materials (A, B, C, and X). When a certificate represents a group of products, a percent range is shown.

Assessment Ratings by Weight

For single-material products, the percentage of a or b (shown in green), c (shown in yellow), and x (shown in red) assessed chemicals. For other products, the percentage of A or B (shown in green), C (shown in yellow), and X (shown in red) assessed materials. When a certificate represents a group of products, percent ranges are shown.

Product Optimization

Number of materials (or chemical substances for single-material products and multi-material product groups with uncountable color variations) assigned each assessment rating.

THERMAFIBER, INC.
3711 MILL STREET
WABASH, INDIANA 46992
260.563.2111



Thermafiber- Technical Bulletin

Total Volatile Organic Compounds (TVOC) and Formaldehyde

Thermafiber Insulation products have been evaluated by an independent testing laboratory for emissions of total volatile organic compounds (TVOC), individual volatile organic compounds (IVOC), formaldehyde and other aldehydes using a product evaluation test protocol following requirements of ASTM Standard D 5116 and CAEEC 225 Section 01350 protocol (1,2).

Results of the evaluation showed Thermafiber products to meet the California purchase specifications for TVOC and general chemical emissions. Formaldehyde concentration of Thermafiber Insulation at 12 ppb meets or exceeds the California standard of 20 ppb max. for formaldehyde concentration.

duplicate page

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

WEBSTER UNIVERSITY ISB	
PROJECT NAME	
8274 BIG BEND BLVD	
ADDRESS	
NUMBER	
WEBSTER UNIVERSITY	
OWNER	
CANNON DESIGN	
ARCHITECT / ENGINEER	
DEVIN D GATES	
SUBMITTED BY	
078446-002	
CONTRACTOR / CM SUBMITTAL NO.	CANNON DESIGN SUBMITTAL NO.
	078446
DRAWING / DETAIL REFERENCE	SPECIFICATION SECTION / PARAGRAPH
MANUFACTURER / SUPPLIER	ITEM / PRODUCT ID
REQUIRED DATE	PRIORITY
	CRITICAL

ITEM BEING SUBMITTED (check only one)

- | | | |
|---|--|--|
| ☐ Shop Drawings | ☐ Certification / Qualifications | ☐ Coordination Drawing |
| ☐ Samples (____ copies) | ☐ Record Documents | ☐ Calculations |
| ☐ LEED Submittal | ☒ Product Data | ☐ Schedules |
| ☐ Other _____ | | ☐ O&M Manuals |

ITEM BEING SUBMITTED FOR (check only one)

- ☒ Action ☐ Information Only ☐ Record

REMARKS OR DEVIATIONS

For use at static locations only. A separate submittal will be forwarded for dynamic locations. See attached plan for locations.

CONTRACTOR / CM CERTIFICATION (SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)



PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

By:

Devin D. Gates

To be completed by Reviewer

07 8446-002 REV004
CANNON DESIGN SUBMITTAL NUMBER
1/27/17
RECEIVED DATE

- ☐ A. No Exceptions Taken
No further review of submittal is required.
- ☒ B. Make Corrections Noted
Incorporate corrections in work; resubmission is not required.
- ☐ C. Revise and Resubmit
Revise as noted, and resubmit for review.
- ☐ D. Rejected
Submittal is not in compliance with Contract Documents; provide new submittal.
- ☐ E. For Record / Information Only
Submittal was reviewed for Record / Information purposes only.
- ☐ F. Not Required for Review
Submittal is not required by Contract Documents and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

A/E COMMENTS

☐ See attached sheet(s) for additional comments

1) Provide separate submittal for fire-resistive joint assembly or engineering judgment for dynamic condition.

2) Provide Identification post-installation per specification 078446-002, 3.4, A.

DEVIN D GATES

REVIEWED BY

1/26/17

DATE

Kelvin Patel

REVIEWED BY

Digitally signed by Kelvin Patel
DN: C=US, E=kpatel@cannondesign.com, O=Cannon Design,
OU=Architect, CN=Kelvin Patel
Date: 2017.02.03 14:27:27 -0600

02/03/17

DATE