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***FIRE PROTECTION WRAP SYSTEM FOR  
STRUCTURAL STEEL &  
OTHER USES***

*Description, Specification &  
Application Instruction Manual*



TECHNOLOGIES INC.

5 JAMES STREET • SOUTH HACKENSACK, NJ 07606

TEL: (201) 818-1616 • FAX: (210) 818-8775

Email: [nofire@nofire.net](mailto:nofire@nofire.net)

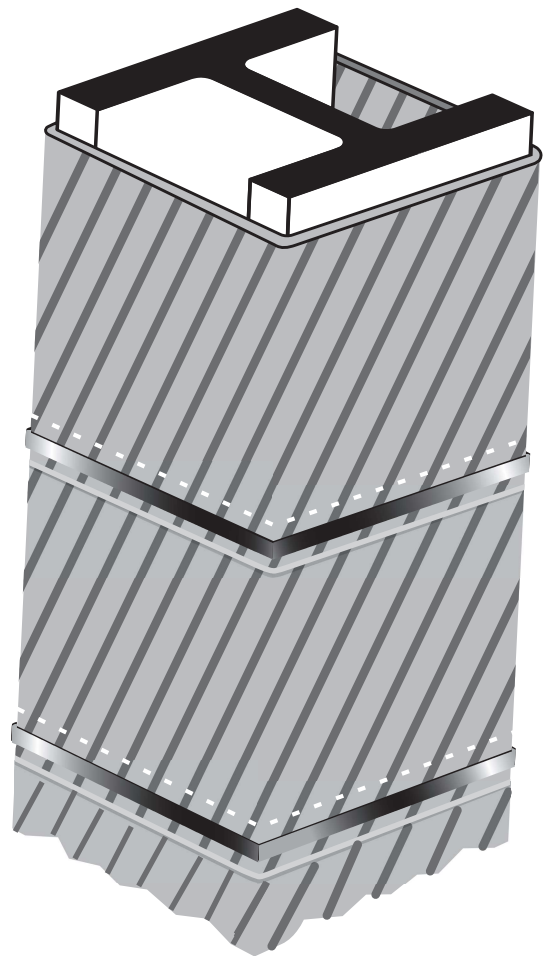
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# CONTENTS



- *Description / Advantages*
- *Four Easy Steps*
- *Installation Tools*
  - Banding Tools*
  - Steel Wire Specification*
  - Fastening Tool*
- *General Installation - Columns*
- *Detailed Installation*
  - Decks*
  - Column to Beam Transitions*
  - Column to Floor Transitions*
  - Hangers*
  - Pipes*
- *Underwriter's Laboratories (UL) Approval*
  - Design No X205*
- *Material Safety Data Sheet (MSDS)*



## **BARRIER DESCRIPTION**

S-Barrier is a new, patented (US patent #6,074,714), UL approved, low cost, dry, easy to install and environmentally safe fire protection system for structural steel.

S-Barrier is a wrap system that installs using simple wrap-and-tie techniques. It can be installed in a fraction of the time of spray-on systems, and requires very little space and access. It can be installed on columns adjacent to walls.

S-Barrier can be installed over any type of column, including steel, concrete and brick, and can be installed over old, worn out, or delaminated fire proofing without requiring expensive removal.

S-Barrier can be overcoated with decorative paint or wall covering materials to provide a decorative appearance for exposed applications.

## **BARRIER ADVANTAGES**

S-Barrier has numerous advantages in comparison to conventional structural steel fireproofing including:

1. Spray-on intumescent, 2. Spray-on or trowel-on mastics, 3. Spray-on cementitious, and  
4. Spray applied resistive materials (SFRM's):

- **No steel priming or special steel preparation required**
- **No spraying**
- **No hazardous materials**
- **No toxic gases, vapors or odors**
- **No fibrous materials**
- **No evacuation of work area required during application**
- **No heating of steel required (in winter months)**
- **No cracking or delamination over time with building movements and vibration**
- **No degradation of performance over time**
- **Completely dry application**
- **Can be used in clean rooms, hospitals, and schools**
- **Can be installed on all types of columns, including steel concrete or brick**
- **Can be installed over old, delaminated, worn out fire proofing without requiring expensive removal**
- **Durable and impact resistant**
- **Less expensive than spray-on intumescent coatings or trowel-on mastics**
- **Available for 1, 2, 3, and 4-hour applications**
- **Optional topcoating for exterior applications**



## **INSTALLS IN FOUR EASY STEPS**

**S BARRIER Wrap System (shown in Figure 1) is comprised of 3 layers - Blanket, Steel Foil, and Textile (NoFire coated woven fiberglass).**

### **Step 1. Illustrated in Figure 2:**

The 1/2" blanket is supplied in 2 foot wide by 100 foot long rolls (1" blanket is 2' x 50 foot long rolls).

Wrap the blanket around the column with the ends of the blanket butted as shown. Continue wrapping the columns along its height, in 2-foot sections, with simple butt joints between sections. The blanket may be held in place temporarily using masking tape.

### **Step 2. Illustrated in Figure 3:**

Wrap the steel foil around the blanket with the ends of the steel overlapping approximately 2 inches as shown. The seam of the steel foil should be staggered from the seam of the blanket as shown. The steel foil may be held in place temporarily using masking tape.

### **Step 3. Illustrated in Figure 4:**

Wrap the textile around the steel foil overlapping approximately 2 inches as shown. Textile overlapping seam can be on the opposite side of the column and steel seams as shown in Fig. 4 (Top View).

### **Step 4. Illustrated in Figure 5:**

Secure the assembly with steel bands on 12" centers using the banding tool supplied with each order.

### **Figure 6:**

Repeat Steps 1 - 5 for the adjacent section vertically. The Blanket Horizontal seams are Butt Joints similar to the vertical seams in Step 1. The steel and textile vertical seams are 2 inch overlapping the butt seams, as shown in Figure 6.

# **BARRIER** *INSTALLATION TOOLS*

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## **Banding Tools**

Note: Part nos. refer to Grainger Catalog numbers ([www.grainger.com](http://www.grainger.com)).

Tensioner Tool - Part no.#4DZR5; accomodates 3/8" -3/4" bands.

Clamping Tool - Part no. #4DZT4 double notched 3/4" sealer.

Crimping Clip - Part no. #3CTV4 open seal steel clip.

Steel Banding - 3/4" width, 0.020"- 0.025" thickness.

Tin snips.

## **Steel Wire**

Stainless steel tie wire type 410; 0.051" diameter (16 AWG); soft temper  
tensile strength, 70,000 psi.

Meets ASTM A580.

## **Fastening Tool**

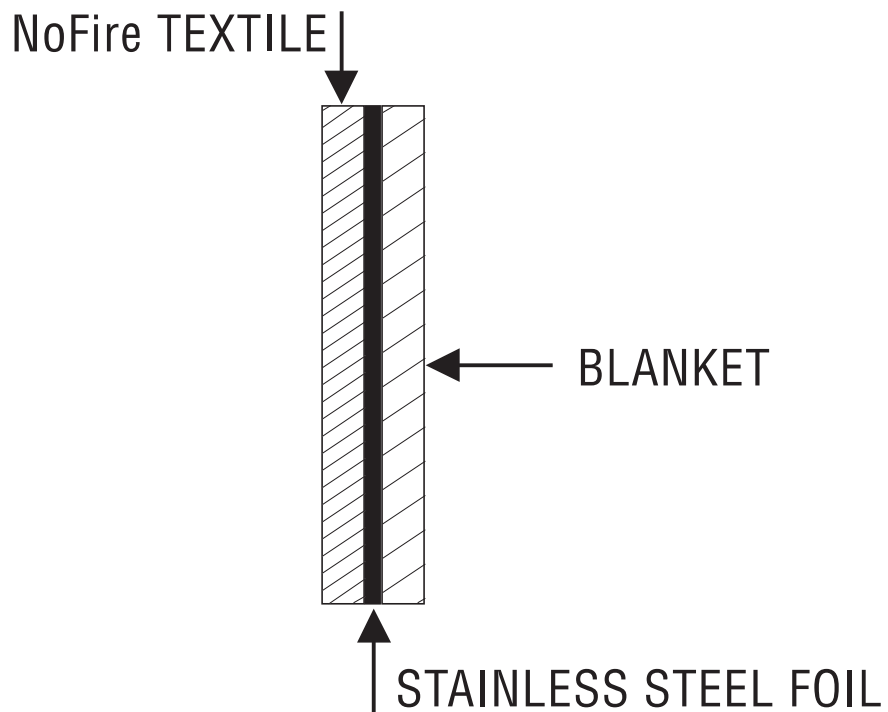
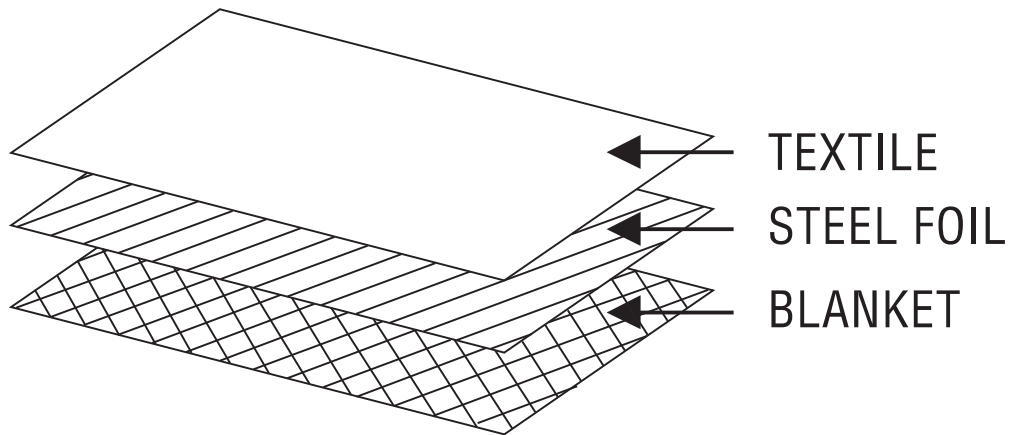
Hilti R4DW-X High Speed Heavy-Duty Pneumatic Fastening System,  
([www.us.hilti.com](http://www.us.hilti.com)). (requires compressed air source: 20.0 CFM at 175 psi).

Fasteners - Type X-U Universal knurled Shank Fasteners; 1-1/2" length.

# Figure 1.

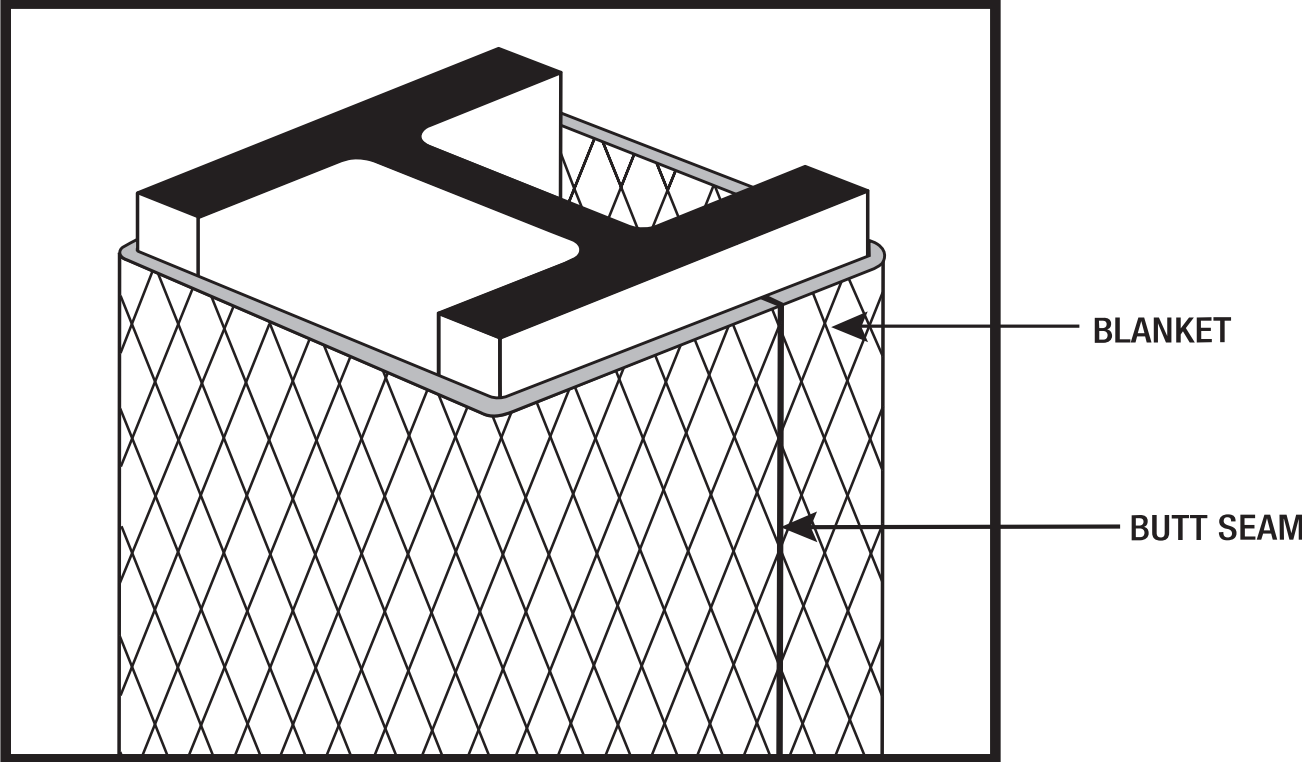
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## S-BARRIER WRAP SYSTEM



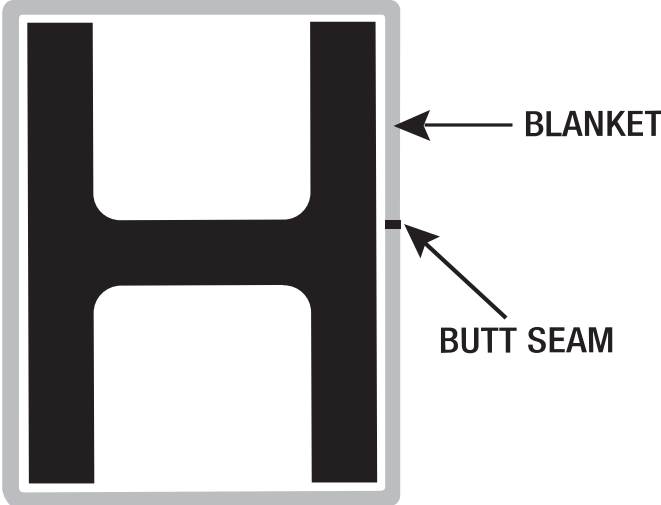
**Figure 2.**

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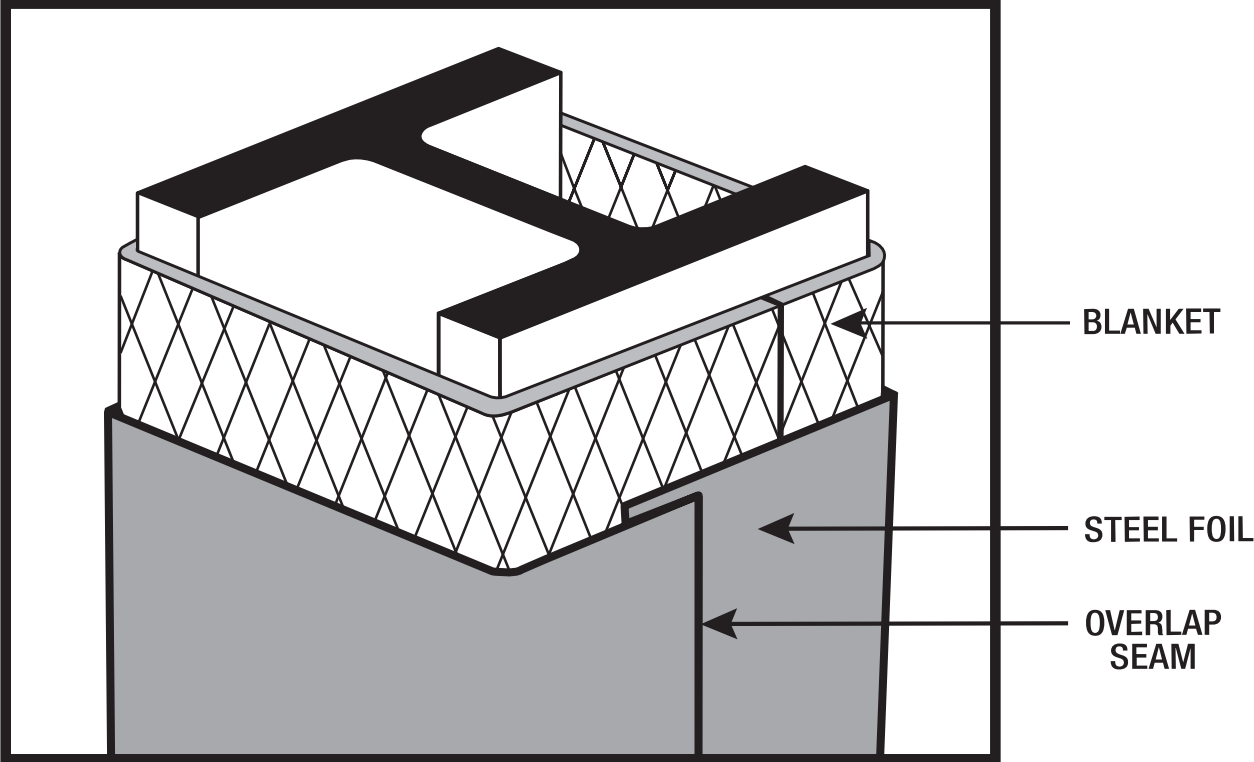
**1<sup>ST</sup> LAYER— BLANKET WITH BUTT SEAM**

**TOP VIEW**



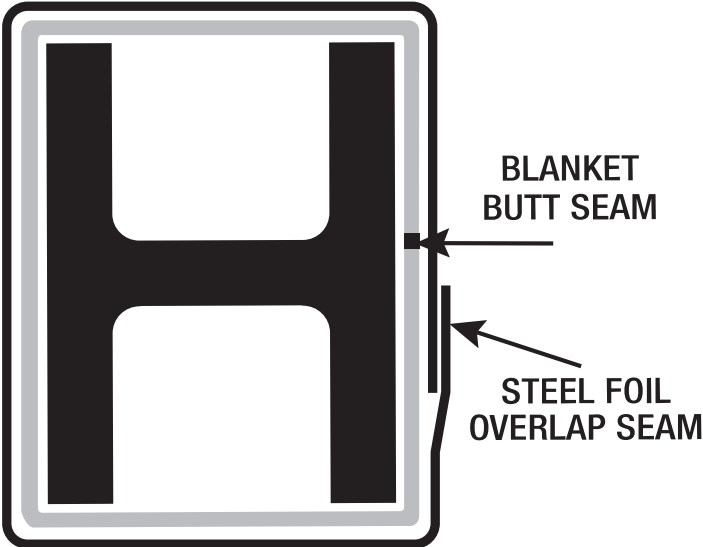
# Figure 3.

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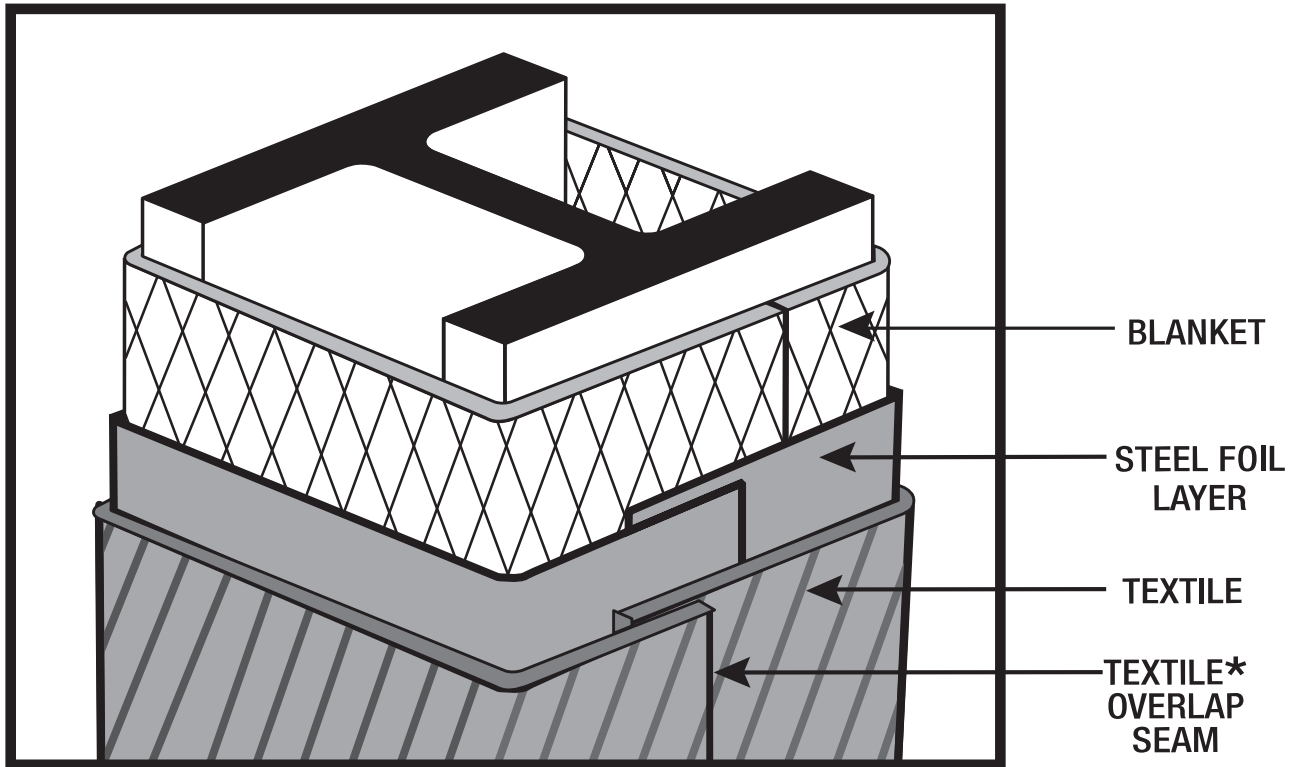
**2<sup>nd</sup> LAYER — STEEL FOIL WITH OVERLAP SEAM (OVER BLANKET)**

**TOP VIEW**

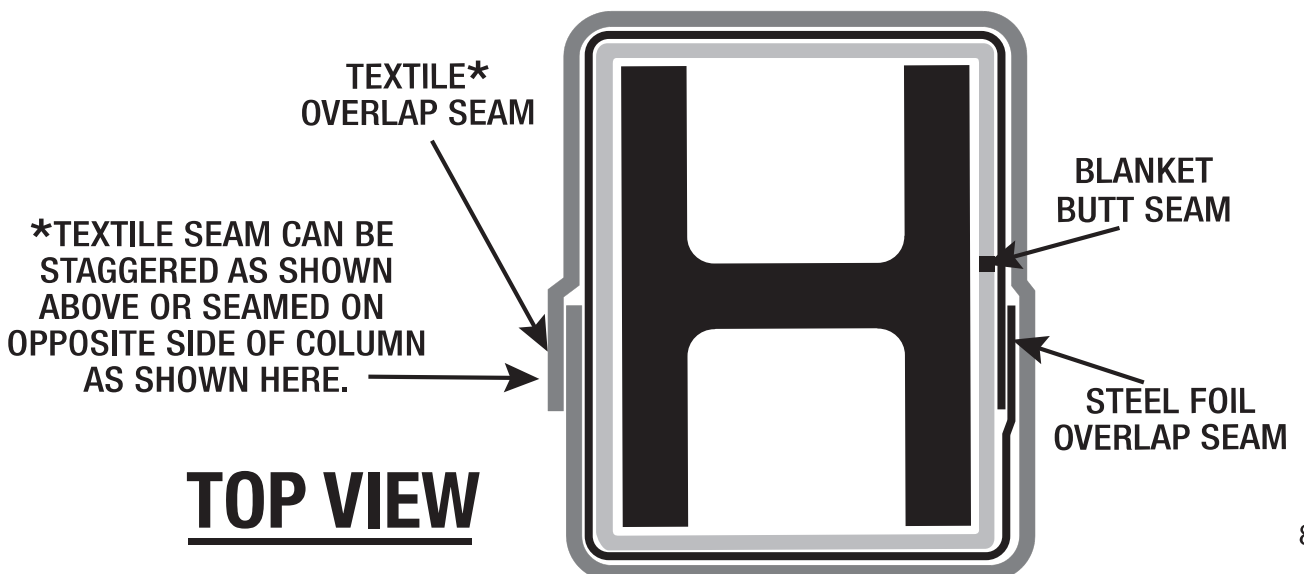




# Figure 4.

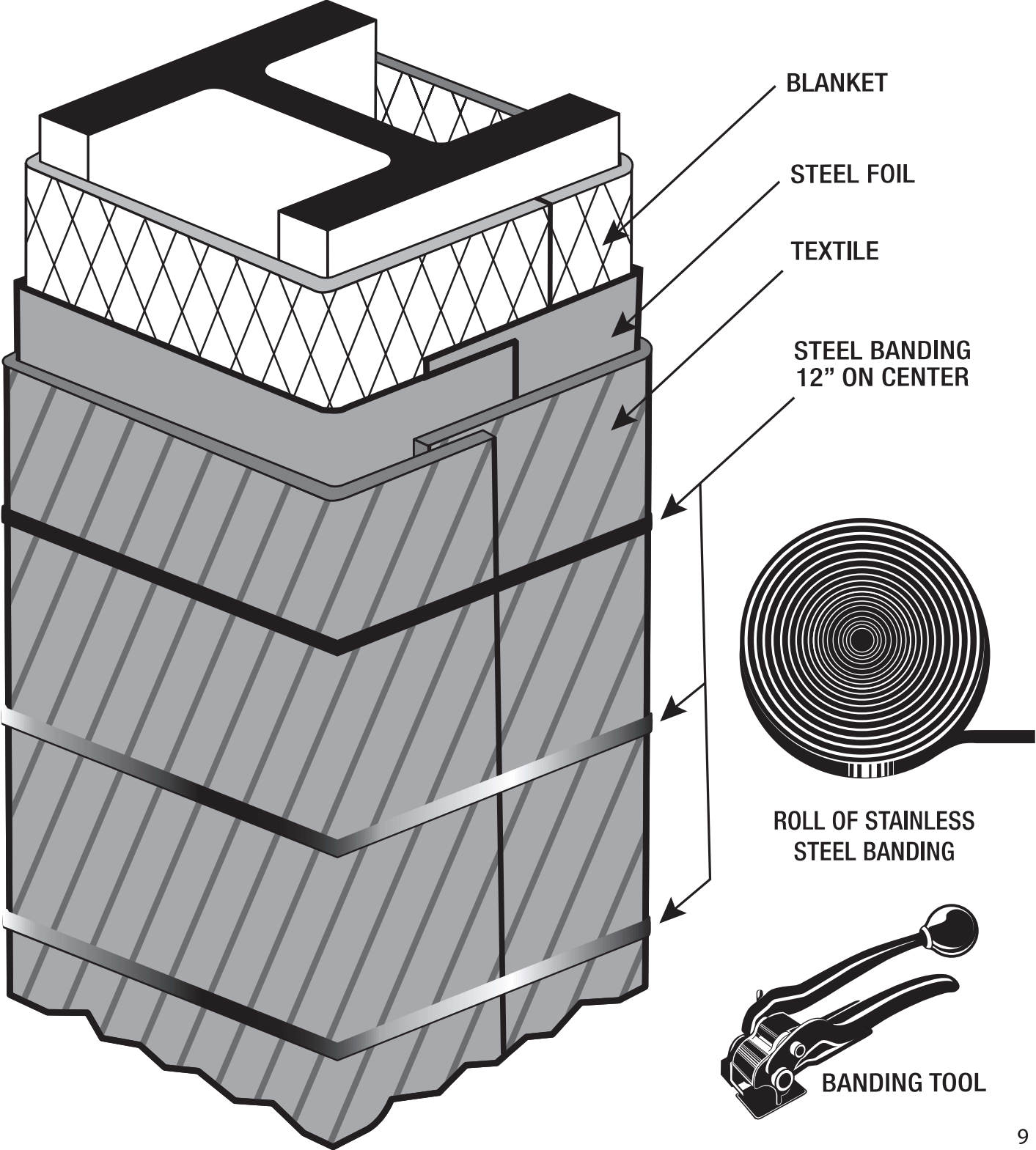


## **3<sup>RD</sup> LAYER — NOFIRE TEXTILE WITH OVERLAP SEAM (OVER STEEL FOIL)**



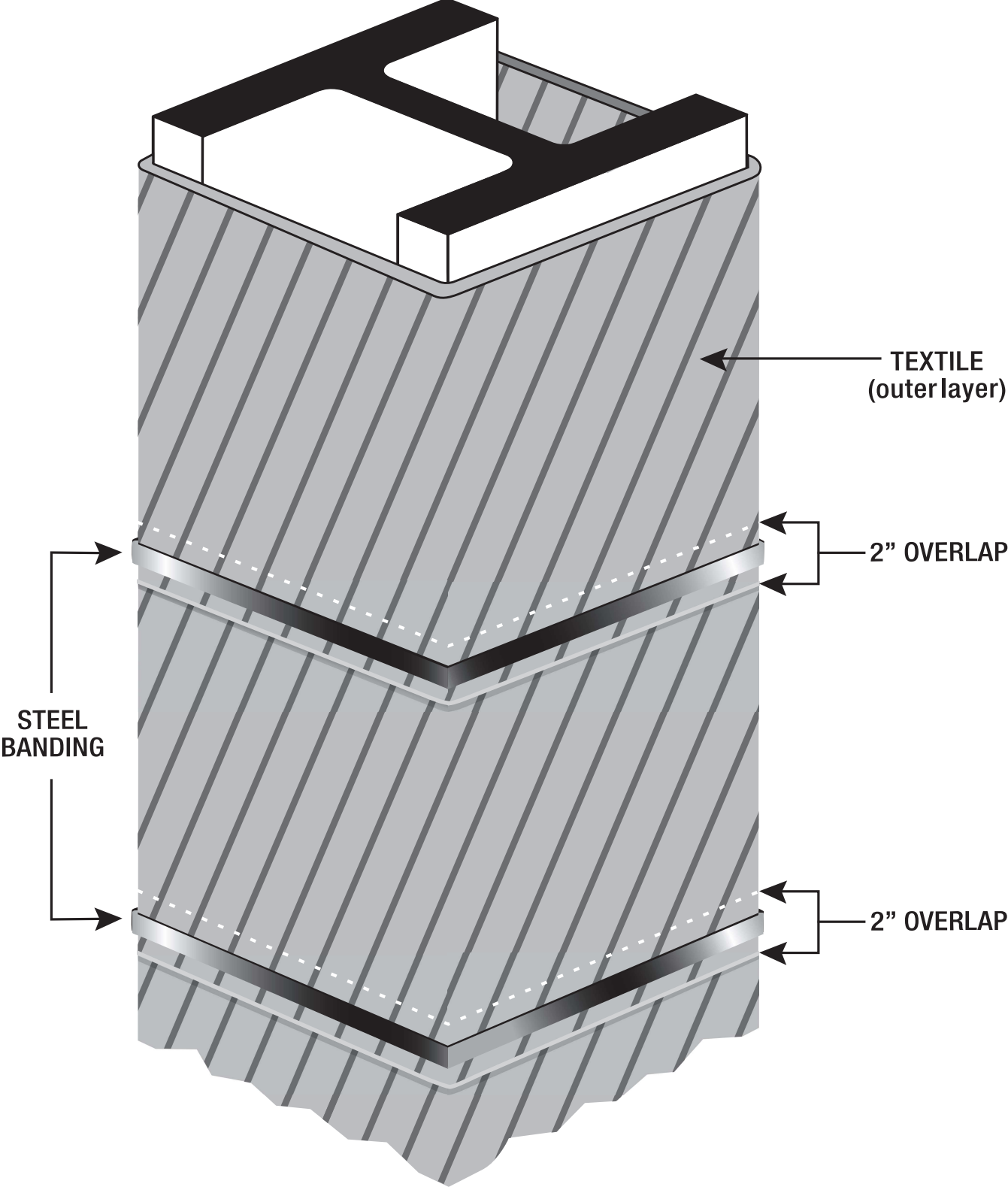
# Figure 5.

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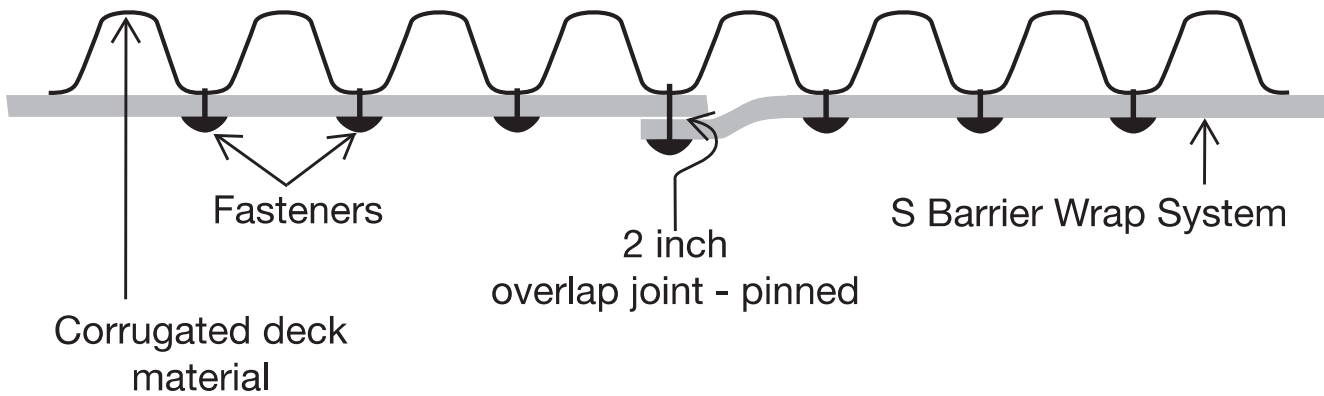
# Figure 6.

## HORIZONTAL OVERLAPPING

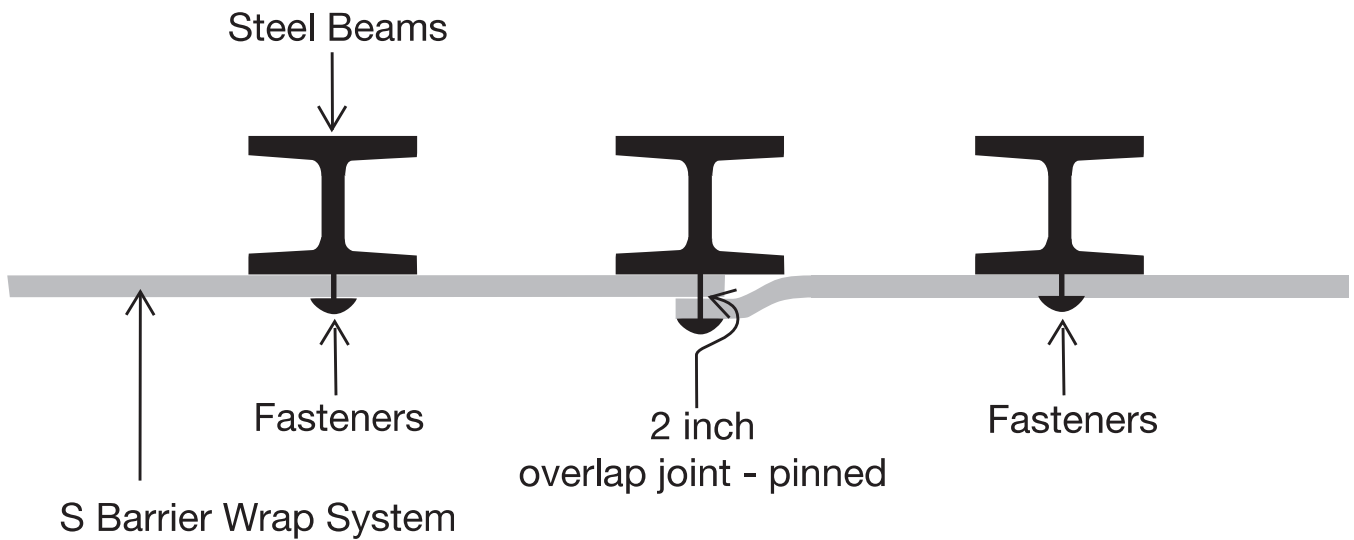


# Figure 7

## Deck Installation for corrugated steel or aluminum panels

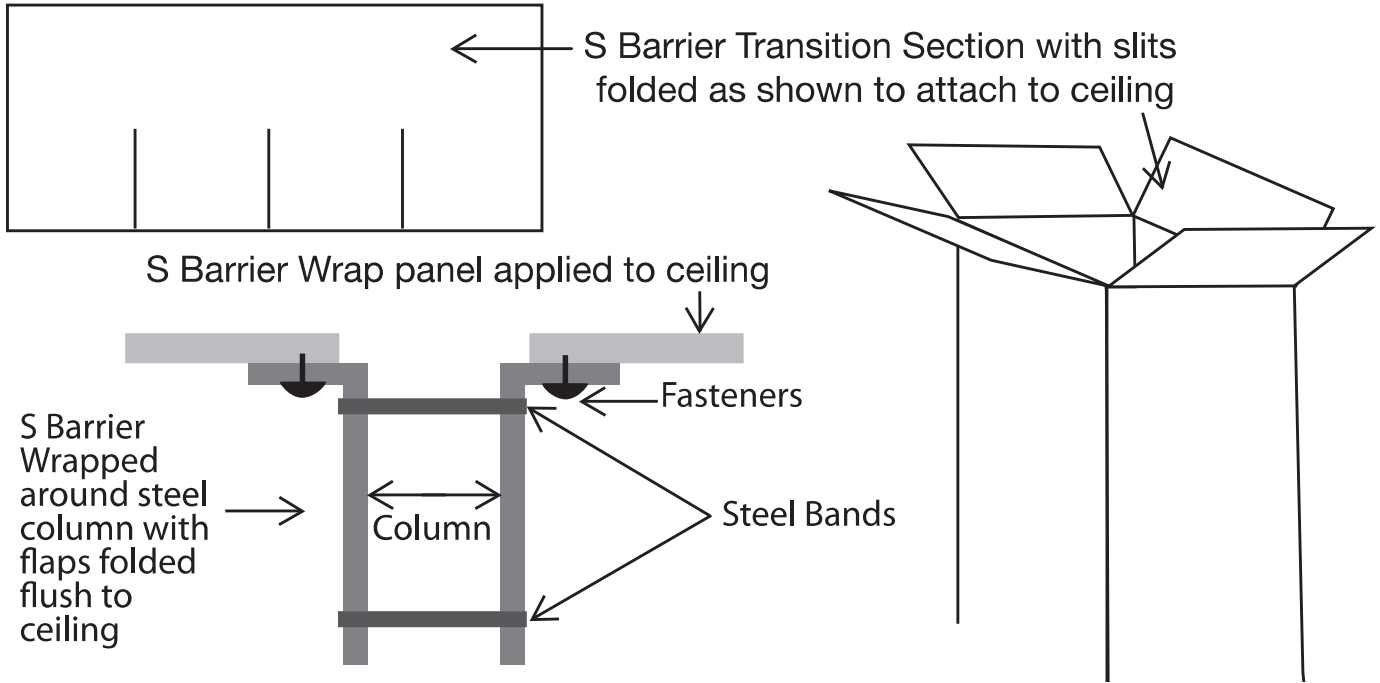


## Deck Installation for Column to Steel Beams

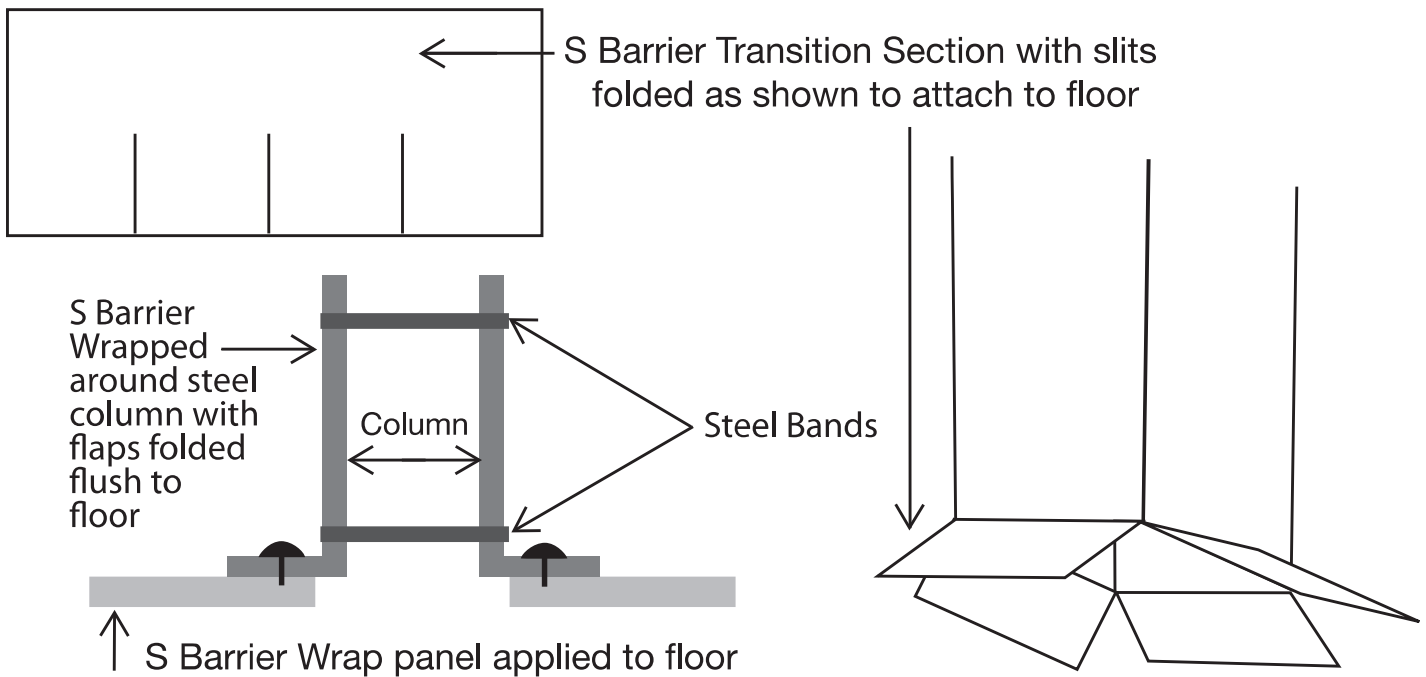


# Figures 8

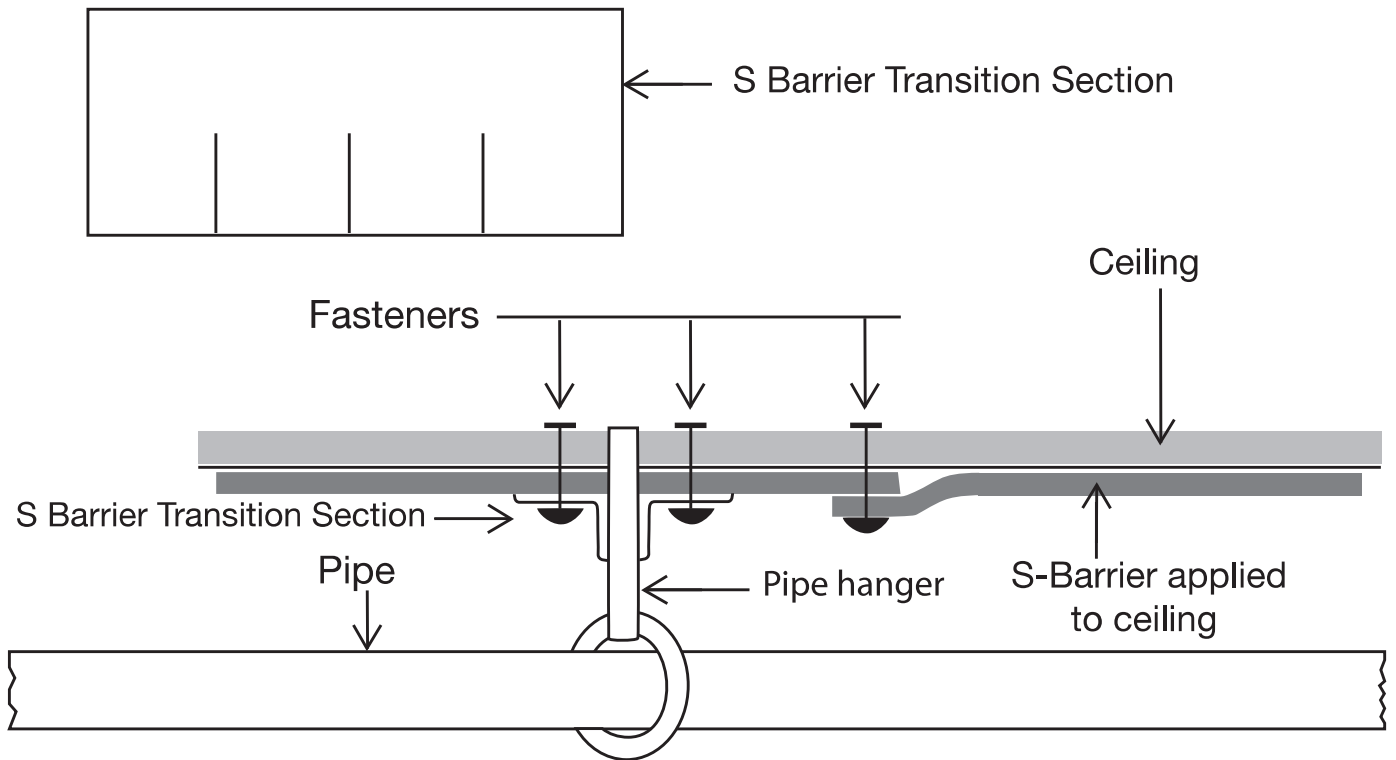
## Column to Beam Transition - Ceilings



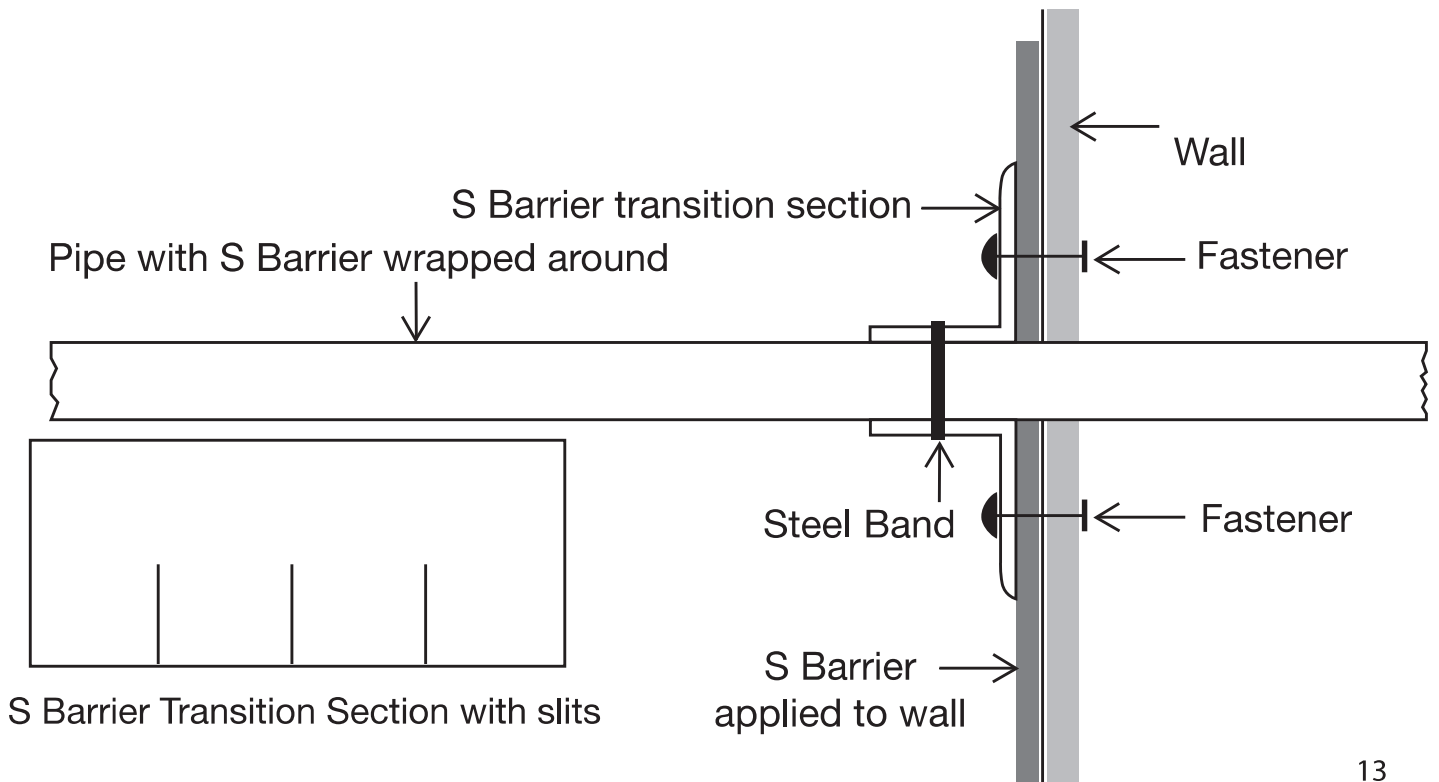
## Column to Beam Transition - Floors



# Figure 9 - Hangers/Pipes



# Figure 10 - Pipe Openings



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NO FIRE TECHNOLOGIES INC  
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 21 INDUSTRIAL AVE  
 UPPER SADDLE RIVER NJ 07458

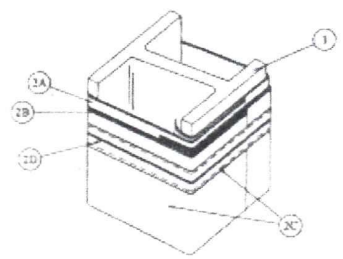
RE: Project Number(s) - R18955

Your most recent Certification is shown below. You may also view this information, or a portion of this information (depending on the product category), on UL's Online Certifications Directory at [www.ul.com/database](http://www.ul.com/database). Please review the text and contact the Conformity Assessment Services staff member who handled your project if revisions are required. For instructions on placing an order for this information in a 3 x 5-inch format, you may refer to the enclosed order form for UL Card Service.

BXUV  
 Fire Resistance Ratings - ANSI/UL 263

January 16, 2002

Design No. X205  
 Rating — 1, 1-1/2 and 2 Hr.



1. **Steel Column** — Min size of column summarized in table under item 2A.
2. **Mat Materials\*** — The column protection assembly consists of 1/2 in. or 1 in. thick ceramic blanket, sheet metal foil, and an intumescent jacket. The assembly shall be installed in accordance with detailed installation instructions manual supplied by the manufacturer of the **Mat Materials\***. The details of the column assembly are summarized below:
  - A. **Ceramic Blanket** — Flexible fabric identified as Fiberfrax, supplied in rolls. Density 8 lb/cuft. Installed by cutting to size and tightly wrapping around the column and itself such that a min 3 in. overlap is present along the vertical seam. The hourly rating of the column assembly is dependent upon the thickness of ceramic blanket as shown in the following table:  
 When 1/2 in. Ceramic Blanket is used:

Rating, Hr.	Min. W/D
1	0.59
1-1/2	1.02
2	1.50

When 1 in. of Ceramic Blanket is used:

Rating, Hr.	Min. W/D
1	0.50
1-1/2	0.69

Underwriters Laboratories Inc. s

Rating, Hr.  
2

Min. W/D  
1.07

When no Ceramic Blanket is used:

Rating, Hr.  
1

Min. W/D  
1.64

- B. **Sheet Metal Foil Tape** — Nom 0.003 in. thick sheet metal foil supplied in rolls. Used to secure the vertical and circumferential butt joints of the ceramic blanket (Item 2A).
- C. **Mat Materials\* — Intumescent Mat** — Flexible sheet material supplied in rolls. After completion of the sheet metal foil (Item 2B) intumescent mat installed by cutting to size and wrapping around the sheet metal foil. Horizontal butt joints are covered by nominal 4 inch wide piece of ceramic blanket (Item 2A) of the same thickness as the base layer. Ceramic blanket covered by nominal 5 inch wide strip of intumescent mat material.  
NO FIRE TECHNOLOGIES INC — Type S Barrier
- D. **Steel Wire Ties** — Stainless steel banding wire spaced 8 in. OC and along centerline of horizontal butt joints to secure intumescent mat.

\*Bearing the UL Classification Mark



## MATERIAL SAFETY DATA SHEET

**MANUFACTURER:** NOFIRE TECHNOLOGIES, INC.  
21 INDUSTRIAL AVENUE, UPPER SADDLE RIVER, NJ 07458  
**PRODUCT :** NOFIRE® S-BARRIER  
**GENERAL DESCRIPTION:** FIBERGLASS FABRIC COATED WITH NOFIRE® CERAMIC FIRE RETARDANT COATING,  
LAMINATED TO STAINLESS STEEL

### SECTION I - HAZARDOUS INGREDIENT

PRODUCT IS NON HAZARDOUS ACCORDING TO OSHA HAZARD COMMUNICATION STANDARD 190.1200.  
THIS PRODUCT DOES NOT CONTAIN TOXIC CHEMICALS SUBJECT TO REPORTING REQUIREMENTS OF SECTION 313 OF  
THE EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT OF 1986 AND OF 40 CFR.

<u>Ingredients</u>	<u>Percent</u>
Coating	25
Fiberglass fabric	40
Stainless Steel	35

### SECTION II - PHYSICAL DATA

BOILING POINT - COATING 212°F  
EVAPORATION RATE: N/A  
SOFTENING POINT: N/A  
PERCENT VOLATILE: N/A  
SPECIFIC GRAVITY: 2.5  
ODOR-APPEARANCE-COLOR: WHITE, ODORLESS, FABRIC

%VOLATILE VOLUME: N/A  
VAPOR DENSITY: N/A  
MELTING POINT: N/A  
SOLUBILITY IN WATER: Coating water soluble

### SECTION III - FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION: NOT FLAMMABLE  
SPECIAL FIRE FIGHTING PROCEDURES: N/A

### SECTION IV - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE: ACUTE HYPERSENSITIVE INDIVIDUALS MAY EXPERIENCE SOME SKIN SENSITIZATION OR IRRITATION.  
CHRONIC: MAY BE A SKIN IRRITANT IF PRODUCT IS SEVERLY DAMAGED  
MEDICAL CONDITIONS PRONE TO AGGRAVATION BY EXPOSURE: NONE KNOWN.  
PRIMARY ROUTES OF ENTRY: DERMAL  INHALATION  INGESTION   
EMERGENCY & FIRST AID PROCEDURES: EYES: FLUSH IMMEDIATELY WITH LARGE AMOUNT OF WATER FOR 15 MINUTES. TAKE TO PHYSICIAN FOR MEDICAL TREATMENT; SKIN: WASH AFFECTED AREAS WITH SOAP & WATER. CONSULT PHYSICIAN IF IRRITATION OCCURS; INGESTION: DRINK 1 OR 2 GLASSES OF WATER TO DILUTE. DO NOT INDUCE VOMITING. CONSULT PHYSICIAN IMMEDIATELY.

### SECTION V - REACTIVITY DATA

STABILITY: UNSTABLE  STABLE   
HAZARDOUS POLYMERIZATION: MAY OCCUR  WILL NOT OCCUR   
HAZARDOUS DECOMPOSITION PRODUCTS: OXIDES OF CARBON  
CONDITIONS TO AVOID: FABRIC STRENGTH IS DESTROYED IN STRONG BASES AND HYDROFLUORIC ACID

### SECTION VI - SPILL OR LEAK PROCEDURES

MATERIAL CAN BE BRUSHED OFF, REROLLED AND USED.  
WASTE DISPOSAL METHOD: DISPOSE OF IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS. BEFORE ATTEMPTING CLEAN-UP, REFER TO HAZARD CAUTION INFORMATION IN OTHER SECTIONS OF THIS SHEET.

### SECTION VII - SAFE HANDLING & USE INFORMATION

RESPIRATORY PROTECTION: NONE REQUIRED  
VENTILATION: OPEN WINDOW  
PROTECTIVE GLOVES: SHOULD BE WORN  
EYE PROTECTION: SAFETY GLASSES  
OTHER PROTECTIVE EQUIPMENT: FULL LENGTH CLOTHING TO AVOID PROLONGED & REPEATED CONTACT. LIFTING DEVICES MAY BE NEEDED FOR HEAVY ROLLS. WASH WORK CLOTHS SEPARATELY FROM OTHER CLOTHING.  
VENTILATION: LOCAL EXHAUST - NONE  
MECHANICAL (GENERAL) - RECOMMENDED

### SECTION VIII - SPECIAL PRECAUTIONS

#### NONE

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# Material Safety Data Sheet

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ceramic Fiber Textile (Cloth, Tape, Twisted Rope, Round Braid, Square Braid, Sleeving, Yarn)

Chemical Name: Aluminosilicate fiber

Trade Name: CeraTex

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Manufacturer's Name: Mineral Seal Corp.

Address (Number, Street, City, State and ZIP code): 1832 S. Research Loop, Tucson AZ 85710

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Emergency Telephone Number: (520) 885- 8228

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Telephone Number for Information: (520) 885 - 8228

Revision Date: 09/15/08

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## 2. COMPOSITION / INFORMATION ON INGREDIENTS

Components	CAS Number	%(By Weight)
Aluminosilicate Ceramic Fiber (A1203 48%, A1203+ SiO2 97%)	142844-00-6	85%
Other components: Fiber glass, Viscose rayon	N/D	15%

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## 3. HAZARDS IDENTIFICATION

Route(s) of Entry: Respiratory Tract (nose & throat), Eyes, Skin

Acute and Chronic Health Hazards:

No increased incidence of respiratory disease in studies on occupationally exposed workers.

### POSSIBLE CANCER HAZARD BY LONG-TERM HEAVY INHALATION

In animal studies, long-term laboratory exposure to doses hundreds of times higher than normal occupational exposures has produced fibrosis, lung cancer, and mesothelioma in rats or hamsters. The fibers used in those studies were specially sized to maximize rodent respirability.

Other Possible Effects:

Inhalation: If inhaled in sufficient amount, it may cause irritation to respiratory tract, scratchiness of the nose or throat, cough or chest discomfort.

Eye Irritation: May cause eye irritation by contact. Prolonged contact may cause damage to the outer surface of the eye.

Skin Irritation: May cause skin irritation by contact, may also result in inflammation, rash or itching.

Gastrointestinal Irritation: Unlikely route of entry.

Medical Conditions Aggravated by Exposure: Asthma, dermatitis, allergies, or chronic lung disease may be aggravated by exposure

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## HAZARD CLASSIFICATION

In the following cases, hazard classification are based on results from animal testing. The conclusions are qualitative only and do not rest upon any quantitative analysis suggesting that the hazard actually may occur at current occupational exposure levels.

In October 2001, the International Agency for Research on Cancer (IARC) confirmed that Group 2b (possible human carcinogen) remains the appropriate IARC classification for RCF including ceramic fiber. Possible cancer hazard by inhalation, especially when the fiber become cristobalite at high temperature above 1,800° F.

The Seventh Annual Report on Carcinogens (1994), prepared by the National Toxicology Program (NTP), classified respirable RCF and glasswool as substances reasonably anticipated to be carcinogens.

The American Conference of Governmental Industrial Hygienists (ACGIH) has classified RCF as "A2-Suspected Human Carcinogen."

The Commission of The European Communities (DG XI) has classified RCF as a substance that should be regarded as if it is carcinogenic to man.

The State of California, pursuant to Proposition 65, The Safe Drinking Water and Toxic Enforcement Act of 1986, has listed "ceramic fibers (airborne fibers of respirable size)" as a chemical known to the State of California to cause cancer.

The Canadian Environmental Protection Agency (CEPA) has classified RCF as "probably carcinogenic" (Group 2).

The Canadian Workplace Hazardous Materials Information System (WHMIS) – RCF is classified as Class D2A – Materials Causing Other Toxic Effects

The Hazardous Materials Identification System (HMIS)

Health 1\*      Flammability 0      Reactivity 0      Personal Protection Index: X (Employer Determined)  
(\*potential for chronic effects)

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## 4. FIRST AID MEASURES

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### RESPIRATORY TRACT IRRITATION:

Move the person to a dust free location. Get medical attention if the irritation continues.

### EYE IRRITATION:

Flush with large amounts of water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists.

### SKIN IRRITATION:

For skin irritation, remove soiled clothing. Do not rub or scratch exposed skin. Wash area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful.

### GASTROINTESTINAL IRRITATION:

Unlikely to happen. However, if gastrointestinal tract irritation develops, move the person to a dust free environment.

### NOTES TO PHYSICIANS:

Skin and respiratory effects are the result of temporary, mild mechanical irritation; fiber exposure does not result in allergic manifestations.

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## 5. FIRE FIGHTING MEASURES

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NFPA Codes:            Flammability: 0            Health: 1            Reactivity: 0            Special: 0

NFPA Unusual Hazards: None

Flammable Properties: None

Flash Point: None

Hazardous Decomposition Products: None

Unusual Fire and Explosion Hazard: None

Extinguishing Media: Use extinguishing media suitable for type of surrounding fire.

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## 6. ACCIDENTAL RELEASE MEASURES

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### SPILL PROCEDURES

Avoid creating airborne dust. Dust suppressing cleaning methods such as wet sweeping or vacuuming should be used to clean the work area. If vacuuming, the vacuum must be equipped with a HEPA filter. Compressed air or dry sweeping should not be used for cleaning.

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## 7. HANDLING AND STORAGE

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### STORAGE

Store in original container in a dry area. Keep container closed when not in use.

### HANDLING

Handle ceramic fiber carefully. Limit use of power tools unless in conjunction with local exhaust. Use hand tools whenever possible. Frequently clean the work area with HEPA filtered vacuum or wet sweeping to minimize the accumulation of debris. Do not use compressed air for clean-up.

### EMPTY CONTAINERS

Product packaging may contain residue. Do not reuse.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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### Exposure Limits:

OSHA PEL: N/D

Manufacturer/Supplier Suggested Limit: 0.5 f/cc, 8-hr. TWA

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### Mechanical Controls:

local exhaust ventilation, dust collection, and other equipment designed to minimize airborne fiber emissions

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### Personal Respiratory Protection Equipments:

When exposure is under 0.5 f/cc, respiratory protection equipment is optional. When exposure is above 0.5f/cc limit, half - facepiece, or full-facepiece air purifying respirator equipped with a NIOSH certified P100 particulate filter cartridge or PAPR with tight-fitting full facepiece is recommended depending on the exposure level.

### Skin Protection:

Wear gloves, head coverings and washable or disposable full body clothing as necessary to prevent skin irritation. clothing may be used. Wash work clothing separately. Minimize or avoid non-work dust.

### Eye Protection:

Wear safety glasses with side shields or other forms of eye protection in compliance with appropriate OSHA standards. Do not touch eyes with soiled body parts or materials.

For more information, please contact manufacturer/supplier.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

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ODOR AND APPEARANCE:	White, odorless, fibrous material
CHEMICAL FAMILY:	Vitreous Aluminosilicate Fibers
BOILING POINT:	N/A
WATER SOLUBILITY (%):	Not Soluble in Water
MELTING POINT:	1760° C (3200° F)
SPECIFIC GRAVITY:	2.50 – 2.75
VAPOR PRESSURE:	N/A
pH:	N/A
VAPOR DENSITY (Air = 1):	N/A
% VOLATILE:	N/A
MOLECULAR FORMULA:	N/D

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## 10. STABILITY AND REACTIVITY

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CHEMICAL STABILITY:	Stable under conditions of normal use.
INCOMPATIBILITY:	Soluble in hydrofluoric acid, phosphoric acid, and concentrated alkali.
CONDITIONS TO AVOID:	None.
HAZARDOUS DECOMPOSITION PRODUCTS:	None.
HAZARDOUS POLYMERIZATION:	N/A

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## 11. WASTE DISPOSAL

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Approved landfill. This substance is not specifically listed as hazardous waste in federal regulations. For particular situation check Federal definition 40 CFR 261 and State regulations. Check local, regional, state or provincial regulations to identify all applicable disposal requirements.

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N/D: No Data    N/A: Not Applicable

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