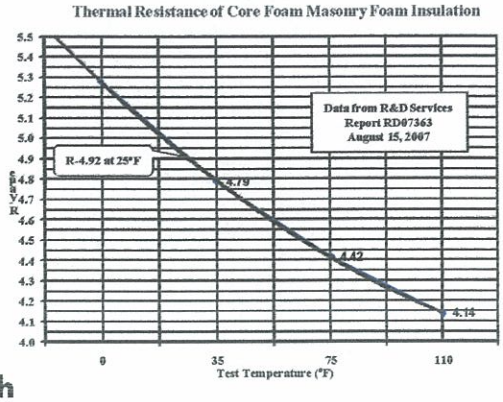
# Core Foam Masonry Foam Insulation®
# Product Information Sheet

P. O. Box 10393 • Knoxville, TN 37939
800.656.3626 • Fax 865.588.6607 • www.cfifoam.com

**Southern Foam Insulation, Inc.**

| | | |
|---|---|---|
| **R-Value per inch** | 4.92/inch | @ 25°F mean temperature[1] |
| **Flame Spread** | 25 | per ASTM E-84 @ 3.5" thick |
| **Smoke Density** | 200 | per ASTM E-84 @ 3.5" thick |
| **Fire Classification** | Class A | per NFPA *Life Safety Code* |




**R-Value of CMU Wall with Core Foam Masonry Foam Insulation**

| | *60 lbs./ft³ block*[1] | *80 lbs./ft³ block*[1] | *100 lbs./ft³ block*[1] | *125 lbs./ft³ block*[1] |
|---|---|---|---|---|
| **8-Inch Block** | 14-15 | 11-12 | 9-10 | 7-8 |
| **10-Inch Block** | 17-18 | 14-15 | 11-12 | 8-9 |
| **12-Inch Block** | 19-20 | 16-17 | 12 -13 | 10-11 |

[1]Thermal performance is portrayed to reflect typical installed conditions based upon NAVLAP accredited laboratory testing per ASTM C518 as well as industry accepted engineering calculations. Core Foam Masonry Foam Insulation typically is installed at densities ranging from 0.55 to 0.90 lbs./ft³; the above data is based upon ASTM C518 testing at 0.72 lbs./ft³ by R & D Services, Inc., Cookeville, TN. Thermal performance claims are based upon average density and conditions.

**Fire Separation:** As a Class A rated insulation, **Core Foam Masonry Foam Insulation** may be installed in wall assemblies without detracting from the wall's fire separation characteristics. Amino-plast foams have been shown to contribute no more than 30 minutes of added performance.

**Sound Attenuation:** Installing insulation within a wall cavity will improve the STC rating by about 4 to 6 dB according to accepted industry sources.[2] Applying these minimum predicted improvement levels to accepted industry STC values (NCMA)[3] shows that Core Foam Masonry Foam Insulation® in a 8-Inch CMU wall will achieve an approximate STC value of 53 to 56 dB.

**Wythe Cavity Fill:** Millions of double wythe masonry structures are successfully insulated by completely filling the wythe cavity with amino-plast foamed-in-place insulation. We suggest adding a mineral fiber weep hole protection strip to ensure drainage at the cavity's base.

**Core Foam Masonry Foam Insulation® Advantages –**

- Superior high speed installation technology
- Low to no formaldehyde; Exceeds requipments of OSHA TWA Emmissions Standard of <0.75 ppm for 24 hr. period
- Exceptional thermal performance
- Class A (Class 1) acceptable to install in Fire Rated assemblies
- Costs less to install than rigid foam insulation or loose fill
- Installed by factory trained, experienced personnel
- Low shrinkage – < 0.5% in closed CMU cells
- Improves STC ratings in masonry walls

[2]acoustics.com
[3]NCMA = National Concrete Masonry Association

CORE FOAM
Masonry Foam Insulation®

**Core Foam Masonry Foam Insulation Meets or Exceeds All Building Code Requirements**

*cfiFOAM products, including Core Foam Masonry Foam Insulation, are not associated with and are a different product from the Core Fill-500™ products manufactured by Tailored Chemical Products, Inc.*



*August 2008*

# Southern Foam Insulation, Inc.

## Thermal Resistance
## Insulated with Core Foam Masonry Foam Insulation

### 8-Inch Concrete Masonry Unit

| Block Density | R-Value |
|---|---|
| 60 PCF | 14-15 |
| 80 PCF | 11-12 |
| 100 PCF | 9-10 |

### 10-Inch Concrete Masonry Unit

| Block Density | R-Value |
|---|---|
| 60 PCF | 17-18 |
| 80 PCF | 14-15 |
| 100 PCF | 11-12 |

### 12-Inch Concrete Masonry Unit

| Block Density | R-Value |
|---|---|
| 60 PCF | 19-20 |
| 80 PCF | 16-17 |
| 100 PCF | 12-13 |

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Masonry Foam Insulation®

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# Southern Foam Insulation, Inc.

**Core Foam Masonry Foam Insulation®—Specification Guide—AIA Short Form**

**Section 07210: Building Insulation (Foamed-in-Place Insulation)**

**Part 1—General**

Description of Work:

A. Applications for foam insulation specified in this section include:
   1. Foam-in-place insulation in cavities of concrete masonry unit (CMU) walls and wythe area of exterior walls to improve thermal resistance of wall section.
   2. Foam-in-place acoustical insulation in interior and exterior CMU walls and stud-cavity walls.

Quality Assurance:

A. Foam insulation is to be installed by or under the supervision of a Core Foam Masonry Foam Insulation-trained installer.
B. Products are supplied by manufacturer as concentrates and are to be blended by installer to insure product reactivity and consistency.
C. Product is also available in a factory-mixed version supplied by the manufacturer.

**Part 2—Products**

Manufacturer / Certified Installer

Southern Foam Insulation, Inc.
2593 Clark St., #108
Apopka, FL 32073
Phone: 407-293-8773
Fax: 407-293-5112
888-684-3626 (FOAM)

# Southern Foam Insulation, Inc.

Typical Product Performance Standards:

A. ASTM E-84 Surface Burning Characteristics:
   a. Flame Spread: 25 or Less
   b. Smoke Generated: Less than 450
   c. Thickness: 3.5 inches (maximum thickness allowed by test apparatus)
   d. Tests performed by an independent, certified laboratory located within the United States of America.

B. Thermal Conductivity:
   a. k-value 0.22 BTU/(hr $ft^2$ °F in)

C. Thermal Resistance:
   a. R-value 4.92 per inch @ 25°F

**Part 3—Execution**

Installation Guidelines:

1. All open cells and voids within each wall shall be filled with foam insulation as specified on the drawings.
2. Core Foam Masonry Foam Insulation shall be mixed by the installer prior to each job or the factory-mixed version shall be supplied by the manufacturer.
3. Walls can be filled with foam using either top-fill or, more commonly, pressure-injection techniques.
   a. For top-fill, the installer must use an extension tube to begin installing foam from the bottom of the cavity, withdrawing the extension tube as foam fills the cavity.
   b. For pressure-injection, small holes are drilled in each CMU, typically 5/8"-7/8" in diameter, at an approximate height of four feet from finished floor level. Normally each vertical core is drilled and injected with foam in 10'-24' lifts, although in 8" CMU, alternating cores can be used.
   c. Core Foam Masonry Foam Insulation is injected until it completely fills each vertical core of block cells, evidenced by foam exiting the adjacent injection hole. Repeat steps b and c at an approximate height of 10'-14' above the initial row of injection holes, or as needed, until the wall is completely filled.
   d. Patch holes with mortar to resemble existing surface.

**END OF SECTION 07210**

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**CORE FOAM MASONRY FOAM INSULATION® TYPICALLY MEETS OR EXCEEDS THE STANDARDS OF OTHER FOAM-IN-PLACE INSULATION PRODUCTS. CORE FOAM MASONRY FOAM INSULATION IS VIEWED AS AN APPROVED EQUAL WHERE OTHER PRODUCTS ARE SPECIFIED.**

*Comparison of Core Foam Masonry Foam Insulation and Core-Fill 500 Foam Insulation*

| | Core Foam Masonry Foam Insulation | Core-Fill 500 |
|---|---|---|
| Fire Rating | Class I | Class I |
| Flame Spread | 25 or Less | 25 or Less |
| Smoke Developed Index | 200 | 450 or Less |
| Low Formaldehyde Content | Yes | No |
| R-Value of 8" CMU Wall @ 100 lb/ft³ | 9.0 to 10.0 | 9.1 |
| R-Value of 12" CMU Wall @ 100 lb/ft³ | 12.0 to 13.0 | 12.5 |
| R-Value of Foam | 4.92/inch @ 25°F | 4.9/inch @ 35°F |
| Acoustic Properties | STC 53-56 in 8" CMU | STC 53 in 8" CMU |
| Shrinkage in CMU Wall | <0.5% | <1.0% |
| Fire Resistance Rating Impact | Negligable | Negligable |

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*Comparison of Core Foam Masonry Foam Insulation and PolyMaster R-501*

| | Core Foam Masonry Foam Insulation | PolyMaster R-501 |
|---|---|---|
| Fire Rating | Class I[1] | Class II[2] |
| Flame Spread | 25 or Less | 75 or Less* |
| Smoke Developed Index | 200 | 450 or Less |
| Formaldehyde Content | <0.25% (Low) | <3.0% (High) |
| R-Value of Foam @ 25°F Mean Temperature | 4.92/inch | 4.6/inch |
| Acoustic Properties | STC 53-56 in 8" CMU | STC 52 in 8" CMU |
| Shrinkage in CMU Wall | <0.5% | <2.0% |
| Fire Resistance Rating Impact | Negligable | Negligable |
| Water Vapor Transmission | 12 perms | ? |
| Compressive Strength | .579 $lb_f/in^2$ | ? |
| Open Cell Content | 40% by Volume | ? |

[1]Commercial Testing Co., Report #02-06199, ASTM E 84-01, @ 3.5" Thick
[2]ICC-ES Legacy Report 2319, 4.2 Surface Burning Characteristics, @ 2.4" Thick

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*Comparison of*
*Core Foam Masonry Foam Insulation*
*and Thermco Foam Insulation*

| | Core Foam Masonry Foam Insulation | Thermco Foam Insulation |
|---|---|---|
| Fire Rating | Class I | Class I |
| Flame Spread | 25 or Less | 25 or Less |
| Smoke Developed Index | 200 | 450 or Less |
| Low Formaldehyde Content | Yes | No |
| Contains Resorcinol (Causes Brown Staining) | No | Yes |
| R-Value of 8" CMU Wall @ 100 lb/ft³ | 9.0 to 10.0 | 9.1 |
| R-Value of 12" CMU Wall @ 100 lb/ft³ | 12.0 to 13.0 | 12.5 |
| R-Value of Foam | 4.92/inch 25°F Mean Temperature | 4.7/inch 35°F Mean Temperature |
| Acoustic Properties | STC 53-56 in 8" CMU | STC 52 in 8" CMU |
| Shrinkage in CMU Wall | <0.5% | 1.86% |
| Shelf-Life of Product | 1 Year | 60 Days |
| Dry-Resin Foam | Yes | No |

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*Comparison of*
*Core Foam Masonry Foam Insulation*
*and Tripolymer Foam Insulation*

| | Core Foam Masonry Foam Insulation® | Tripolymer® |
|---|---|---|
| Fire Rating | Class I | Class I |
| Flame Spread | 25 or Less | 25 or Less |
| Smoke Developed Index | 450 or Less | 450 or Less |
| R-Value of 8" CMU Wall | 9.0 to 10.0 @ 100 lb/ft³ | 11.27 @ 80 lb/ft³<br>8.21 @ 105 lb/ft³ |
| R-Value of 12" CMU Wall @ 100 lb/ft³ | 12.0 to 13.0 @ 100 lb/ft³ | 16.11 @ 80 lb/ft³<br>11.42 @ 105 lb/ft³ |
| R-Value of Foam | 4.9/inch @ 25°F | 4.8/inch @ 35°F |
| Acoustic Properties | STC 53-56 in 8" CMU | STC 53 in 8" CMU |
| Shrinkage in CMU Wall | <0.5% | 05-1.5% |
| Fire Resistance Rating Impact | Negligable | Negligable |
| Dry Resin Foam | Yes | No |

## SECTION A

## "Surface Burning Characteristics"

**INDUSTRY STANDARD:** NFPA 101 Life Safety Code classifies Building Materials according to their Surface Burning Characteristics as:

Class A (I): Flame Spread 0-25; Smoke Developed Index 0-450[1]
Class B (II): Flame Spread 26-75; Smoke Developed Index 0-450[1]
Class C (III): Flame Spread 76-200; Smoke Developed Index 0-450[1]

**RESULTS:** **Independent Test Results for Core Foam Masonry Foam Insulation by Commercial Testing Company, a NVLAP-accredited test facility:**

**Report Number 02-08067**
**Test Number 3360-1587**

**Class A (Class I) Rating**

**Flame Spread Index 25 or less[1]**

**Smoke Developed Index less than 450**

[1]This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

**COMMERCIAL TESTING COMPANY**
Post Office Box 985 • 1215 South Hamilton Street • Dalton, Georgia 30722
Telephone (706) 278-3935 • Facsimile (706) 278-3936

Standard Method of Test for
Surface Burning Characteristics of Building Materials

ASTM E 84–01

**3.5-inch Core Foam (Sample B)**

Report Number 02–08067

Test Number 3360–1587
August 6, 2002

Core Foam, Inc.
Knoxville, Tennessee

*The ASTM E 84 furnace operated by Commercial Testing Company is recognized by the United States Department of Commerce, National Institute of Standards and Technology (NIST), through the National Voluntary Laboratory Accreditation Program (NVLAP) for compliance with Title 15 of the Code of Federal Regulations, Part 285. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92–1987).*

Commercial Testing Company

Jonathan Jackson

*(Authorized Signature)*



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*Since 1974*

## INTRODUCTION

This report is a presentation of results of a surface flammability test on a material submitted by Core Foam, Inc., Knoxville, Tennessee.

The test was conducted in accordance with the ASTM International fire test response standard E 84–01, *Surface Burning Characteristics of Building Materials*, sometimes referred to as the Steiner tunnel test. This test is applicable to exposed surfaces such as walls and ceilings. The test is conducted with the specimen in the ceiling position with the surface to be evaluated exposed face down to the ignition source. The method, which is similar to NFPA No. 255 and UL No. 723, is an American National (ANSI) Standard and has been approved for use by agencies of the Department of Defense for listing in the DoD *Index of Specifications and Standards*.

This standard is used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions, but does not by itself incorporate all factors required for fire–hazard or fire–risk assessment of materials, products, or assemblies under actual fire conditions.

## PURPOSE

The purpose of the test is to provide the comparative measurements of surface flame spread and smoke development of materials with that of select grade red oak and reinforced cement board under specific fire exposure conditions. The test exposes a nominal 24-foot long by 20-inch wide test specimen to a controlled air flow and flaming fire adjusted to spread the flame along the entire length of a red oak specimen in 5.50 minutes. During the 10-minute test duration, flamespread over the specimen surface and density of the resulting smoke are measured and recorded. Test results are calculated relative to red oak, which has an arbitrary rating of 100, and reinforced cement board, which has a rating of 0.

The test results are expressed as Flame Spread Index and Smoke Developed Index. The Flame Spread Index is defined in ASTM E 176 as "a number or classification indicating a comparative measure derived from observations made during the progress of the boundary of a zone of flame under defined test conditions." The Smoke Developed Index, a term specific to ASTM E 84, is defined as "a number or classification indicating a comparative measure derived from smoke obscuration data collected during the test for surface burning characteristics." There is not necessarily a relationship between the two measurements.

The method does not provide for measurement of heat transmission through the surface tested, the effect of aggravated flame spread behavior of an assembly resulting from the proximity of combustible walls and ceilings, or classifying a material as noncombustible solely by means of a Flame Spread Index.

The zero reference and other parameters critical to furnace operation are verified on the day of the test by conducting a 10–minute test using 1/4–inch thick reinforced cement board. Periodic tests using NOFMA certified 23/32–inch select grade red oak flooring provide data for the 100 reference.

## TEST SAMPLE

The test sample, selected by the client, was identified as **3.5-inch Core Foam (Sample B)**, a white color foam in place insulation having a thickness of 3.5 inches. The material was conditioned to equilibrium in an atmosphere with the temperature maintained at 71 ± 2°F and the relative humidity at 50 ± 5 percent. For testing, three lengths of the material, each measuring 2 feet wide by 8 feet in length, were placed over a 2–inch hexagonal wire mesh supported by 1/4–inch diameter steel rods spanning the ledges of the tunnel furnace at 24–inch intervals. This method of auxiliary sample support is described in Appendix X1 of the E 84 standard, Guide to Mounting Methods, Sections X1.1.2.2 and X1.1.2.3.

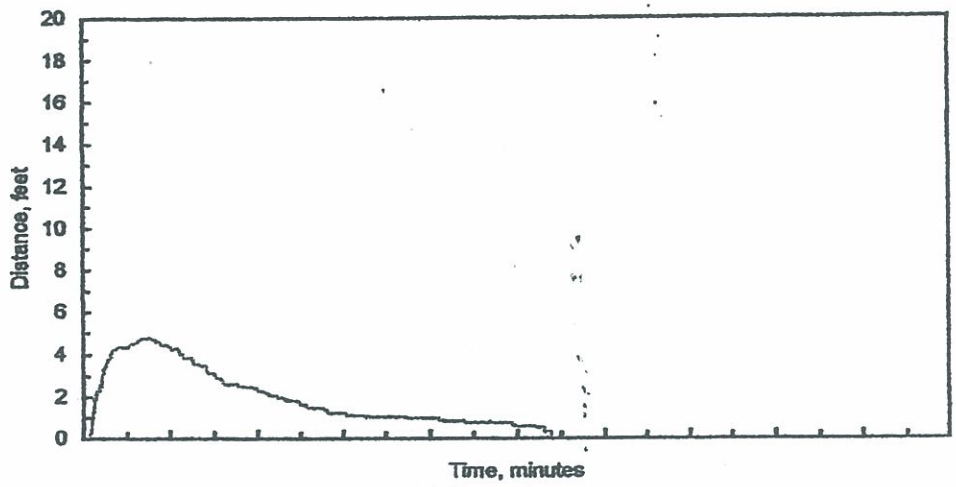
## ASTM E 84 TEST DATA

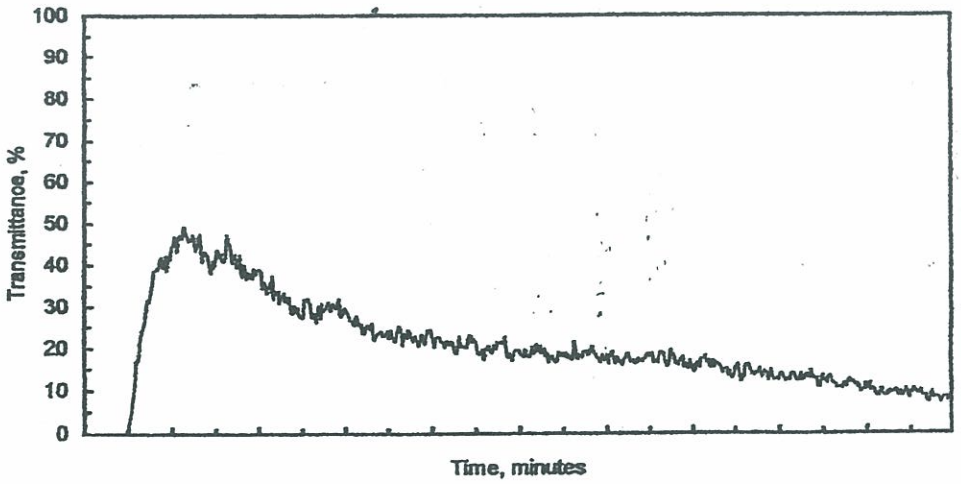
Client: Core Foam, Inc.
Test Number: 3360-1587
Material Tested: 3.5" Core Foam (Sample B)
Date: August 6, 2002

Test Results:

Time to Ignition = 00.08 minutes
Maximum Flamespread Distance = 04.76 feet
Time to Maximum Spread = 00.72 minutes

Flame Spread Index = 25
Smoke Developed Index = 200



## TEST RESULTS

The test results, calculated on the basis of observed flame propagation and the integrated area under the recorded smoke density curve, are presented below. The Flame Spread Index obtained in E 84 is rounded to the nearest number divisible by five. Smoke Developed Indices are rounded to the nearest number divisible by five unless the Index is greater than 200. In that case, the Smoke Developed Index is rounded to the nearest 50 points. Flame spread and smoke development data are presented graphically in the computer print-out at the end of this report.

| Test Specimen | Flame Spread Index | Smoke Developed Index |
|---|---|---|
| Reinforced Cement Board<br>Red Oak Flooring | 0<br>100 | 0<br>100 |
| 3.5-inch Core Foam (Sample B) | 25 | 200 |

## OBSERVATIONS

Specimen ignition over the burners occurred at 0.08 minute. Surface flame spread was observed to a maximum distance of 4.76 feet beyond the zero point at 0.72 minute. The maximum temperature recorded during the test was 510°F.

## CLASSIFICATION

The Flame Spread Index and Smoke Developed Index values obtained by the ASTM E 84 test are frequently used by code officials and regulatory agencies in the acceptance of interior finish materials for various applications. The most widely accepted classification system is described in the National Fire Protection Association publication NFPA 101 *Life Safety Code*, where:

| | | |
|---|---|---|
| Class A | 0 – 25 Flame Spread Index | 0 – 450 Smoke Developed Index |
| Class B | 26 – 75 Flame Spread Index | 0 – 450 Smoke Developed Index |
| Class C | 76 – 200 Flame Spread Index | 0 – 450 Smoke Developed Index |

Class A, B, and C correspond to Type I, II, and III respectively in other codes such as SBCCI, BOCA, and ICBO. They do not preclude a material being otherwise classified by the authority of jurisdiction.

# Southern Foam Insulation, Inc.

## *MSDS Material Safety Data Sheet*
## *Core Foam Masonry Foam Insulation®*

*24 Hour Emergency Telephone - CHEMTREC: 1-800-424-9300*
All non-emergency questions should be directed to your local installer or to cfiFOAM Customer Service at 1-800-656-3626, PO Box 10393, Knoxville, TN 37939.

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### 1. Identification

| | |
|---|---|
| **Product:** | Core Foam Masonry Foam Insulation® |
| **Date Prepared:** | October 2002 |
| **Date Revised:** | January 2007 |
| **Chemical Description:** | Aminoplast Polymeric Foam |
| **Product Use:** | Foam-in-Place Insulation |

### 2. Hazardous Ingredients

**Hazardous Components:** None present at levels above 0.1%.

### 3. Physical and Chemical Data

Since Core Foam Masonry Foam Insulation is a solid, physical characteristics such as boiling point, vapor pressure, vapor density, percent volatiles, evaporation rate, etc., do not apply.

| | |
|---|---|
| **Solubility in Water:** | Negligible. |
| **Density:** | 0.5-1.0 $lb/ft^3$ |
| **Appearance and Odor**: | White semi-rigid foam. |

## 4. Fire and Explosion Hazard Data

**Flash Point:** n/a
**Extinguishing Media:** Water spray or mist, $CO_2$, dry chemical, foam.
**Special Fire Fighting Procedures:** Wear a self-contained breathing apparatus with a full face-piece operated in pressure demand or other positive displacement mode.

## 5. Reactivity Data

**Chemical Stability:** Normally stable.
**Incompatibility:** Unknown.
**Decomposition Products:** Carbon dioxide, carbon monoxide, and oxides of nitrogen may be released during a fire.
**Hazardous Polymerization:** Will Not Occur.

## 6. Health Hazard Data

**Threshold Limit Value:** None Established.
**OSHA Permissible Exposure:** None Established for foam. Foam may contain trace amounts of formaldehyde, which has an OSHA PEL of 2 ppm STEL and .75 ppm TWA.
**Routes of Entry:**
**Ingestion:** Unlikely due to physical state. May cause choking if swallowed.
**Skin:** Not known to be an irritant.
**Eyes:** Dust can cause irritation.
**Inhalation:** Inhalation of foam dust.

**First Aid Procedures:**
**Eyes:** Flush thoroughly with water.
**Skin:** Does not apply.
**Inhalation (of dust):** Call physician if coughing, discomfort or air passage obstruction occurs.
**Ingestion:** No adverse effects anticipated.

**Carcinogenicity Information:** Foam is not listed as a carcinogen.

## 7. Spill or Leak Procedure

**For Spill:** Not applicable. This is a solid product.
**Waste Disposal Method:** Dispose of in approved landfill according to local, state, and federal regulations.

## 8. Protective Equipment and Other Control Measures

| | |
|---|---|
| **Respiratory Protection:** | If needed, wear a respirator to avoid dust inhalation when cutting or fabricating foam. |
| **Protective Gloves:** | None needed. |
| **Eye Protection:** | If needed, wear safety glasses. |
| **Personal Protection Equipment:** | No special requirements. |

## 9. Special Precautions

| | |
|---|---|
| **Storage Information:** | Does not apply. |
| **Usage Precautions:** | Ventilate well until foam fully cures. Avoid prolonged foam contact with temperatures in excess of 190°F. |
| **DOT Hazard Class:** | n/a |
| **DOT Placard:** | None required. |

*All data are believed to be correct, however, this should not be accepted as a guarantee of their accuracy without confirming tests in your own plant or laboratory. The data relates only to the material as supplied and does not relate to combinations with other materials or processes.*