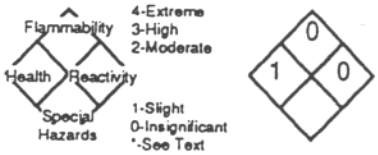
CARBORUNDUM MATERIAL SAFETY DATA SHEET

24-HOUR EMERGENCY ASSISTANCE	GENERAL ASSISTANCE	NFPA FIRE HAZARD SYMBOL*
BP America: 800-321-8642 CHEMTREC Assist: 800-424-9300	716-278-2183	
MSDS Number > 251/M0018		

MANUFACTURER/SUPPLIER: The Carborundum Company - Fibers Division
ADDRESS: P.O. Box 808, Niagara Falls, New York 14302

PRODUCT IDENTIFICATION

TRADE NAME:
FIBERFRAX ® DURABLANKET ® # 50-150

CAS NUMBER: 142844-00-6
SYNONYM(S): CERAMIC FIBER; REFRACTORY FIBER; MMVF; REFRACTORY CERAMIC FIBER; RCF
CHEMICAL FAMILY: VITREOUS ALUMINOSILICATE FIBERS
MOLECULAR FORMULA: Al2O3.SiO2 (Amorphous)
MOLECULAR WEIGHT: NA
PRODUCT CODE: NA **HIERARCHY:** NA

PRODUCT HAZARD SUMMARY

HEALTH
WARNING!
POSSIBLE CANCER HAZARD BY INHALATION
MAY BE HARMFUL IF INHALED
(Hazard depends on duration and level of exposure)
MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT

FLAMMABILITY NON-COMBUSTIBLE

REACTIVITY STABLE

PRODUCT HEALTH HAZARD INFORMATION

INGESTION:
Ingestion is unlikely. If ingested in sufficient quantity, may cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting, abdominal pain and diarrhea.

SKIN:

SLIGHTLY TO MODERATELY IRRITATING. May cause irritation, inflammation and rash.

EYE:

SLIGHTLY TO MODERATELY IRRITATING. Abrasive action may cause damage to the outer surface of the eye.

INHALATION:

May cause respiratory tract irritation. Pre-existing medical conditions may be aggravated by exposure; specifically, bronchial hyper-reactivity and chronic bronchial or lung disease.

SPECIAL TOXIC EFFECTS:

The existing toxicology and epidemiology data bases for RCF's are still preliminary. Carborundum is continuing to support the necessary investigations and will make all data available to all interested parties. Information will be updated as studies are completed and reviewed. The following is a review of the results to date:

EPIDEMIOLOGY

At this time there are no known published reports demonstrating negative health outcomes of workers exposed to refractory ceramic fiber (RCF). Epidemiologic investigations of RCF production workers are ongoing.

The preliminary evidence, obtained from employees in RCF manufacturing facilities, is as follows:

1) There is no evidence of any fibrotic lung disease (interstitial fibrosis) whatsoever on X-ray.

2) There is no evidence of any lung disease among those employees exposed to RCF that had never smoked.

3) A statistical "trend" was observed in the exposed population between the duration of exposure to RCF and a decrease in some measures of pulmonary function. These observations are clinically insignificant. In other words, if these observations were made on an individual employee, the results would be interpreted as being within the normal range.

4) Pleural plaques (thickening along the chest wall) have been observed in a small number of employees who had a long duration of employment. There are several occupational and non-occupational causes for pleural plaque. It should be noted that plaques are not "pre-cancer" nor are they associated with any measurable effect on lung function.

TOXICOLOGY

A number of studies on the health effects of inhalation exposure of rats and hamsters are available. Rats were exposed to RCF in a series of life-time nose-only inhalation studies. The animals were exposed to 30, 16, 9, and 3 mg/m3, which corresponds with approximately 200, 150, 75, and 25 fibers/cc.

Animals exposed to 30 and 16 mg/m3 were observed to have developed a pleural and parenchymal fibrosis; animals exposed to 9 mg/m3 had developed a mild parenchymal fibrosis; animals exposed to the lowest dose were found to have had the response typically observed any time a material is inhaled into the deep lung. While a statistically significant increase in lung tumors was observed following exposure to the highest dose, there was no excess lung cancers at the other doses. Two rats exposed to 30 mg/m3 and one

rat exposed to 9 mg/m3 developed mesotheliomas.

The International Agency for Research on Cancer (IARC) reviewed the carcinogenicity data on man-made vitreous fibers (including ceramic fiber, glasswool, rockwool, and slagwool) in 1987. IARC classified ceramic fiber, fibrous glasswool and mineral wool (rockwool and slagwool) as possible human carcinogens (Group 2B).

FIRST AID

INGESTION:
Ingestion is unlikely. If ingested, the preferred method of elimination is through natural gastrointestinal elimination. Drink extra water. Get medical attention if gastrointestinal symptoms develop, for example, irritation, nausea, vomiting, abdominal pain and diarrhea.

SKIN CONTACT:
Remove contaminated clothing. Wash area of contact thoroughly with soap and water. Do not rub or scratch exposed skin. Using a skin cream or lotion after washing may be helpful. Get medical attention if irritation persists.

EYE CONTACT:
Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists.

INHALATION:
Remove person from source of exposure and move to fresh air. Some people may be sensitive to a fiber induced irritation of the respiratory tract. If symptoms such as shortness of breath, cough, wheezing or chest pain develop, seek medical attention. If person experiences continued breathing difficulties, administer oxygen until medical assistance can be rendered.

NOTES TO PHYSICIAN

NA

PERSONAL PROTECTION INFORMATION

The following personal protective guidelines should be followed. However, when the material has been exposed to temperatures greater than 1800 F, more extensive precautions are required as outlined in the "Special Precautions/Supplemental Information" section.

EYE PROTECTION:
Wear safety glasses or chemical goggles to prevent eye contact. Contact lenses should not be worn unless chemical goggles are also used and care is taken not to touch the eyes with contaminated body parts or materials. Have eye washing facilities readily available where eye contact can occur.

SKIN PROTECTION:
Wear gloves, hats and full body covering to prevent skin irritation as necessary (see Special Precautions/Supplemental Information Section).

RESPIRATORY PROTECTION:
Properly designed and operated engineering controls are the most effective methods for

minimizing airborne dust and fiber. If exposures exceed our Recommended Exposure Guideline of 1 fiber/cc of air (8-hour TWA) and engineering controls are not feasible, respiratory protection (as described below) must be used. Respiratory protection must also be used if respiratory irritation is experienced, when airborne concentrations are unknown, or the material has been exposed to temperatures greater than 1800 F (see Specia Precautions/Supplemental Information Section). When handling RCF products in monitored areas, Carborundum recommends that NIOSH/MSHA approved respirators be worn as outlined in the following table:

Concentration (8-hour TWA)	Minimum Acceptable Respirator Type
0 - 1 fiber/cc	Optional disposable dust respirator (e.g. 3M 9970 or equivalent).
1 - 5 fibers/cc	Half-face, air-purifying respirator equipped with high-efficiency particulate air (HEPA) filter cartridges (e.g. 3M 6000 series with 2040 filter or equivalent).
5 - 25 fibers/cc	Full face, air-purifying respirator with high-efficiency particulate air (HEPA) filter cartridges (e.g. 3M 7800S with 7255 filters or equivalent) or powered air-purifying respirator (PAPR) equipped with HEPA filter cartridges (e.g. 3M W3265S with W3267 filters or equivalent).
Greater than 25 fibers/cc	Full face, positive pressure supplied air respirator (e.g. 3M 7800S with W9435 hose and W3196 low pressure regulator kit or W3061 high pressure regulator kit or equivalent connected to Grade D air supply).

If airborne fiber levels are not known, as minimum protection, use half-mask air-purifying respirator equipped with high-efficiency particulate air (HEPA) filter cartridges. If respiratory protection is used, the employer must establish a respiratory protection program as described in 29 CFR 1910.134.

PHYSICAL PROPERTIES

BOILING POINT: NA
SPECIFIC GRAVITY: 2.73 G/CM3
MELTING POINT: 1790 C (3260 F)
% VOLATILE: NA
VAPOR PRESSURE: NA
EVAPORATION RATE (WATER=1): NA
VAPOR DENSITY (AIR=1): NA
VISCOSITY: NA
% SOLUBILITY IN WATER: NA
OCTANOL/WATER PARTITION COEFFICIENT: ND
POUR POINT: NA
pH: NA
APPEARANCE/ODOR: WHITE ODORLESS TEXTILE, WOVEN TAPE, WOVEN FABRIC, FELT, OR BULK FIBERS.

ND = No Data
NA = Not Applicable

FIRE AND EXPLOSION DATA

FLASH POINT: NONE
AUTOIGNITION TEMPERATURE: NONE
FLAMMABILITY LIMITS IN AIR (% BY VOL.) LOWER: NA
FLAMMABILITY LIMITS IN AIR (% BY VOL.) UPPER: NA

BASIC FIREFIGHTING PROCEDURES:
Use extinguishing agent suitable for type of surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
None.

REACTIVITY DATA

STABILITY/INCOMPATIBILTY:
Stable under conditions of normal use. Soluble in hydrofluoric acid, phosphoric acid and concentrated alkali.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:
None.

ENVIRONMENTAL INFORMATION

Spill or Leak Procedure:
Use vacuum suction with HEPA filters to clean up spilled material. Use wet sweeping or a dust suppressant where sweeping is necessary. Avoid clean up procedures that may result in water pollution. Personal safety, handling and exposure recommendations described elsewhere in this data sheet apply to exposure during clean up of spilled material and must be followed.

WASTE DISPOSAL:
This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be characteristically hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. Check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, 264, 268 and 270 apply. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations, and in such a manner as to assure no discharge to a source of drinking water.

SARA TITLE III INFORMATION:
Listed below are the hazard categories for the Superfund Amendments and Reauthorization Act (SARA) Section 311/312 (40 CFR 370):

Immediate Hazard: - Delayed Hazard: X Fire Hazard: - Pressure Hazard: - Reactivity Hazard: -

ND = No Data
NA = Not Applicable

This product does not contain toxic chemicals (in excess of the applicable de minimis concentration) that are subject to the annual toxic chemical release reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313 (40 CFR 372).

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

There may be specific regulations at the local, regional or state level that pertain to this material.

REGULATORY INFORMATION

This product is manufactured in compliance with TSCA. While refractory ceramic fiber has been assigned a CAS number, it is a simple mixture and therefore not listed on the TSCA inventory. All components of this product are listed on the Canadian DSL Inventory.

This product contains the following substance(s) listed by the State of California on Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986:

- ceramic fibers (airborne particles of respirable size)

The following Canadian Workplace Hazardous Materials Information System (WHMIS) categories apply to this product:

Compressed Gas	-	Flammable/Combustible	-	Oxidizer	-	Acutely Toxic	-
Other Toxic Effects	x	BioHazardous	-	Corrosive	-	Dangerously Reactive	-

SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

HANDLING/STORAGE:

The toxicologic data indicate that ceramic fiber should be handled with caution. The handling practices described in this MSDS must be strictly followed (see section on Personal Protection Information). In particular, when handling refractory ceramic fiber in any application, special caution should be taken to avoid unnecessary cutting and tearing of the material to minimize generation of airborne dust.

It is recommended that full body clothing be worn to reduce the potential for skin irritation. Washable or disposable clothing may be used. Do not take unwashed work clothing home. Work clothes should be washed separately from other clothing. Rinse washing machine thoroughly after use. If clothing is to be laundered by someone else, inform launderer of proper procedure. Work clothes and street clothes should be kept separate to prevent contamination.

Product which has been in service at elevated temperatures (greater than 1800 F) may undergo partial conversion to cristobalite, a form of crystalline silica. This reaction occurs at the furnace lining hot face. As a consequence, this material becomes more friable; special caution must be taken to minimize generation of airborne dust. The amount of cristobalite present will depend on the temperature and length in service.

IARC has recently reviewed the animal, human and other relevant experimental data on silica in order to critically evaluate and classify the cancer causing potential. Based on its review, IARC classified crystalline silica as a group 2A carcinogen (probable human carcinogen).

The OSHA permissible exposure limit (PEL) for cristobalite is 0.05 mg/M3 (respirable dust). The ACGIH threshold limit value (TLV) for cristobalite is 0.05 mg/M3 (respirable

dust) (ACGIH 1991-92). Use NIOSH or MSHA approved equipment when airborne exposure limits may be exceeded. The minimum respiratory protection recommended for given airborne cristobalite concentrations are:

Concentration	Minimum Acceptable Respirator Type
Up to 5 fibers/cc or up to 10 times the OSHA PEL for cristobalite	Half face, air-purifying respirator equipped with high-efficiency particulate air (HEPA) filter cartridges (e.g. 3M 6000 series with 2040 filter or equivalent).
Up to 25 fibers/cc or 50 times the OSHA PEL for cristobalite (2.5 mg/m3)	Full face, air-purifying respirator with high-efficiency particulate air (HEPA) filter cartridges (e.g. 3M 7800S with 7255 filters or equivalent) or powered air-purifying respirator (PAPR) equipped with HEPA filter cartridges (e.g. 3M W3265S with W3267 filters or equivalent).
Greater than 25 fibers/cc or 50 times the OSHA PEL for cristobalite (2.5 mg/m3)	Full face, positive pressure supplied air respirator (e.g. 3M 7800S with W9435 hose and W3196 low pressure regulator kit or W3061 high pressure regulator kit connected to clean air supply or equivalent).

If airborne fiber or cristobalite concentrations are not known, as minimum protection, use NIOSH/MSHA approved half face, air-purifying respirator with HEPA filter cartridges.

Insulation surfaces should be lightly sprayed with water before removal to suppress airborne dust. As water evaporates during removal, additional water should be sprayed on surfaces as needed. Only enough water should be sprayed to suppress dust so that water does not run onto the floor of the work area. To aid the wetting process, a surfactant can be used.

After RCF removal is completed, dust-suppressing cleaning methods, such as wet sweeping or vacuuming, should be used to clean the work area. If dry vacuuming is used, the vacuum must be equipped with a HEPA filter. Air blowing or dry sweeping should not be used. Dust-suppressing components can be used to clean up light dust.

EMPTY CONTAINERS:

Product packaging may contain product residue. Do not reuse.

TRANSPORTATION REQUIREMENTS

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101):	NA
D.O.T. HAZARD CLASS (49 CFR 172.101):	NA
UN/NA CODE (49 CFR 172.101):	NA
PACKING GROUP (49 CFR 172.101):	NA
BILL OF LADING DESCRIPTION (49 CFR 172.202):	PRODUCT NAME
D.O.T. LABELS REQUIRED (49 CFR 172.101):	NA
D.O.T. PLACARDS REQUIRED (49 CFR 172.504):	NA

ND = No Data
NA = Not Applicable

INGREDIENTS/HEALTH HAZARD INFORMATION

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REF.
Aluminosilicate (vitreous)	142844-00-6	99.50-100	1 fiber/cc 8-hr. TWA (Carborundum)*
Remaining components not determined hazardous and/or hazardous components present at less and 1.0% (0.1% for carcinogens).	NA	Trace	NA

*No OSHA or ACGIH exposure limits have been established for these materials. Pending the results of long-term health effects studies, airborne exposures should be controlled at or below the Carborundum Recommended Exposure Guidelines listed above.

REVISION DATE: 12-mar-1993 REPLACES SHEET DATED: 30-mar-1992
COMPLETED BY: CARBORUNDUM HSEQ DEPARTMENT

ND = No Data
NA = Not Applicable