



## **MATERIAL SAFETY DATA SHEET**

### **SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

**Product Name:** ExFlex® Products

**Manufacturer:**

Federal-Mogul Corporation  
26555 Northwestern Highway  
Southfield, MI 48033

**MSDS#** BH-020

**24hr Emerg # (Infotrac):** 1-800-535-5053

**International:** 001-352-323-3500

**Non-Emerg #:** 248-354-9844

### **SECTION 2: COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS**

BH – ExFlex® Products are acryl-coated fiberglass braided sleeving, designed for higher thermal and electrical performance and meet fray-resistance needs. The products will survive severe bending or push back without creating fiberglass fray, reducing risk of skin irritation. They are excellent in applications where temperatures exceed 240°C since the saturant used will volatilize without toxic or excessive fumes or smoke. ExFlex is used in wire harness assemblies where its flexibility and ease of expansion over irregular terminals and wire groups make application easy.

Although several of the ingredients used to formulate this product may be hazardous in the raw state, the manufacturing process results in a solid, infusible form, binding and otherwise, rendering the product inert. The constituents identified below may be present in quantities greater than 1% (0.1% for carcinogens) that may be released from the product by such operations as overheating, burning, machining, abrading, or riveting.

The information in this document provides the minimum criteria for safe usage and handling of this product. Companies using this product should develop their own occupational health program to protect employees from injury or adverse health effects.

<b>Ingredient</b>	<b>CAS No.</b>	<b>% Weight</b>	<b>OSHA PEL</b>	<b>ACGIH TLV (2005)</b>
Continuous filament glass fibers	65997-17-3	<80	1 f/cc*	1 f/cc or 5 mg/m <sup>3</sup>
Acrylonitrile	107-13-1	4.8	2 ppm	2 ppm
Formaldehyde	50-0-0	0.1	0.75 ppm 2 ppm (STEL)	0.3 ppm (C) (A2)
Ammonium Hydroxide	1336-21-6	0.1	Not Established	Not Established

\* proposed

### **SECTION 3: HAZARDS IDENTIFICATION**

#### **EMERGENCY OVERVIEW**

The product is not considered hazardous, but operations (e.g., overheating, burning, machining, abrading, or riveting) that can create airborne dust should be avoided.

## POTENTIAL HEALTH EFFECTS

### Inhalation:

Dust or vapor may cause respiratory irritation.

### Skin:

Prolonged contact may cause skin irritation.

### Eye:

Dust particles may cause irritation or corneal injury due to mechanical action.

### Ingestion:

Not a probable route of entry.

### Carcinogenicity:

	COMPONENT NTP IARC OSHA
Acrylonitrile	Yes 2B Yes
Ammonium Hydroxide	No No No
Continuous filament glass fibers	No 3 No
Formaldehyde	Yes 2A Yes

### Symptoms and Effects of Exposure to Selected Individual Components

### ACRYLONITRILE

**Acute** – May cause somnolence, general anesthesia, cyanosis and diarrhea. Symptoms include flushing of the face, salivation, irritation of eyes and nose, nausea, deepened respiration, weakness and headache.

**Chronic** – IARC classifies acrylonitrile as “probably carcinogenic to humans”.

**Other** – Human systemic irritant, may be toxic by skin and ingestion exposure routes. Target organs include liver, brain, kidneys and cardiovascular system.

### CONTINUOUS FILAMENT GLASS FIBERS

**Acute** - May cause irritation to skin, eyes, nose, and throat. May cause skin rash, conjunctivitis, coughing and sneezing.

**Chronic** – Although some studies of fibrous and mineral wool workers have shown a link to lung cancer in humans, those studies have clearly provided no evidence of a link between lung cancer and continuous filament fiberglass exposure.

### FORMALDEHYDE

**Acute** – Gastrointestinal effects may develop if ingested; may cause nausea, vomiting and severe abdominal pain. Exposure to the skin may cause irritation and contact dermatitis at low to moderate levels. Inhalation may cause irritation of the upper respiratory tract, a burning sensation of the nose and throat, sneezing, coughing, headache, difficulty breathing, nausea, vomiting, and excessive thirst. May cause conjunctivitis, eye irritation/redness/burning and excessive tearing.

**Chronic** – May sensitize respiratory tract and cause an asthmatic reaction. May sensitize the skin and cause an allergic skin reaction. May aggravate asthma and inflammatory or fibrotic pulmonary disease.

## SECTION 4: FIRST AID MEASURES

<b>Inhalation:</b>	Move to fresh air. If irritation persists, seek medical attention.
<b>Eye Contact:</b>	Rinse thoroughly with ample amounts of water. If irritation persists, seek medical attention.
<b>Skin Contact:</b>	Wash exposed area with soap and cool water. Avoid scratching irritated areas. If irritation persists, seek medical attention.
<b>Ingestion:</b>	Not a probable route of entry.

## SECTION 5: FIRE FIGHTING MEASURES

This product is flame resistant.

**Flashpoint:** N/A      **LEL:** N/A      **UEL:** N/A      **Autoignition Temperature:** N/A

**Extinguishing Media:** Use media type for surrounding fire.

**Unusual Fire and Explosion Hazards:** None known.

**Special Fire-Fighting Procedure:** Wear self-contained breathing apparatus when extinguishing a fire.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

If dust is generated, remove the dust by vacuuming or wet-mopping. Vacuums used for this purpose should be equipped with HEPA filters. Do not use compressed air to blow dust from surfaces.

## SECTION 7: HANDLING AND STORAGE

Store in a cool, dry place. If dust is generated during shipping, remove the dust from the container by vacuuming or wet-mopping. Vacuums used for this purpose should be equipped with HEPA filters. Do not use compressed air to blow dust from surfaces.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Ventilation Protection:** Any operation which may produce dust, including machining, grinding, riveting, or abrading this product, should be adequately exhausted to prevent inhalation of dust.

**Respiratory Protection:** Use a NIOSH-approved respirator if there is a potential for exposure to exceed applicable PELs or TLVs. (See 29 CFR 1910.134, OSHA Respiratory Protection Standard.)

**Skin Protection:** If skin irritation occurs, gloves and other protective garments may be worn. For cutting operations, gloves and loose-fitting clothing are recommended to be worn.

**Eyes:** Wear safety glasses or goggles when cutting the material.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>Boiling Point:</b>	N/A	<b>Vapor Pressure:</b>	N/A
<b>Melting Point:</b>	Not determined	<b>Vapor Density (air = 1):</b>	N/A
<b>pH:</b>	N/A	<b>% Volatile:</b>	N/A
<b>Specific Gravity:</b>	2.45	<b>Evaporation Rate:</b>	N/A
<b>Water Solubility:</b>	Insoluble	<b>Form, Color, and Odor:</b>	Solid, various colors, odorless

## SECTION 10: STABILITY AND REACTIVITY

**Stability:** Stable at normal temperatures and storage conditions.

**Incompatibility (Materials/Conditions to Avoid):** None known

**Hazardous Polymerization:** Will not polymerize.

**Decomposition Products:** At high combustion, may produce such by-products as carbon monoxide, carbon dioxide, oxides of nitrogen, ammonia vapors, and small amounts of aromatic or aliphatic hydrocarbons.

## SECTION 11: TOXICOLOGICAL INFORMATION

**Inhalation:** Refer to Section 3

**Skin:** Refer to Section 3

**Eye:** Refer to Section 3

**Ingestion:** Refer to Section 3

**Acute:** None known

**Chronic:** None known

## SECTION 12: ECOLOGICAL INFORMATION

Not available.

## SECTION 13: DISPOSAL CONSIDERATIONS

Federal and state law regulates disposal of scrap material or dust as solid waste. Contact local regulatory agencies for guidance.

## SECTION 14: TRANSPORTATION INFORMATION

**Proper Shipping Name:** Not regulated  
**Hazard Class:** N/A  
**Identification Number:** N/A  
**Packing Group:** N/A  
**Shipping Label:** None  
**Additional Marking Requirement:** None

## SECTION 15: REGULATORY INFORMATION

**U.S. TSCA:** The chemicals used to manufacture this product are listed on the U.S. Toxic Substances Control Act (TSCA) Inventory.

**California Proposition 65:** This product contains acrylonitrile and formaldehyde, ingredients known to the State of California to cause cancer, birth defects or other reproductive effects.

**SARA Title III – Section 313 Supplier Notification:** This product contains the following chemicals subject to SARA Title III/CERCLA “reportable quantities” (RQs) and/or “threshold planning quantities” (TPQs) and/or are classified as “Toxic Chemicals” under the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and 40 CFR 372:

**Ingredient  
CAS Number**

Acrylonitrile  
107-13-1

Formaldehyde  
50-00-0

**RCRA Hazardous Waste Code:** Not Available

**CERCLA Hazardous Substances:** Acrylonitrile and formaldehyde are CERCLA Hazardous Substances.

**OSHA:** PELs have been established for three of the constituents but not the product.

**WHMIS Classification:** Not Available

## SECTION 16: OTHER INFORMATION

### Abbreviations:

CAS No.:	Chemical Abstract Services Number
OSHA PEL:	U.S. Occupational Safety and Health Administration, Permissible Exposure Limit
ACGIH TLV:	American Conference of Governmental Industrial Hygienists, Threshold Limit Value (2005)
ppm:	Parts of contaminant per million parts of sampled air, on a volume-to-volume basis.
f/cc:	Fibers per cubic centimeter of sampled air
mg/m <sup>3</sup> :	Milligrams of contaminant per cubic meter of sampled air, on a weight-to-volume basis.
C:	Ceiling limit, a concentration that shall not be exceeded at any time during the exposure period.
A2:	ACGIH has designated this constituent as a suspected human carcinogen.
STEL:	Short-term exposure limit
N/A:	Not Applicable
IARC:	International Agency for Research on Cancer
NTP:	National Toxicology Program
HEPA:	High-efficiency particulate air
NIOSH:	National Institute of Occupational Safety and Health

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