MATERIAL SAFETY DATA SHEET

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Expando FR Plus (White)

Manufacturer:
Federal-Mogul Corporation
26555 Northwestern Highway
Southfield, MI 48033

MSDS# BH-008

24hr Emerg # (Infotrac): 1-800-535-5053
International: 001-352-323-3500
Non-Emerg #: 248-354-9844

SECTION 2: COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

Bentley-Harris Expando FR Plus is a tough, lightweight product used to oversleeve and protect cable assemblies, hoses and wire harnesses. Made of braided flame retardant polyester monofilmanets, Expando FR increases cut-through strength and abrasion resistance of electrical and thermal insulating surfaces. It is specially treated to eliminate end fray.

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 overheating, burning, machining, abrasion, or riveting.

This information 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.

Ingredient	CAS No.	% Weight	OSHA PEL	ACGIH TLV
Thermoplastic Polyester	None Established	<30	None Established	None Established
Anitmony Trioxide	1327-33-9	<30	0.5 mg/m^3	None Established (A2)
Organic Flame Retardant	None Established	<45	None Established	None Established
Acrylamide	79-06-1	<1	0.3 mg/m^3	0.03 mg/m^3
Acrylonitrile	107-13-1	<1	1 ppm (AL)	2 ppm
Formaldehyde	50-00-0	<1	0.5 ppm (AL)	0.3 ppm (C)
Ethyl Acrylate	140-88-5	<1	25 ppm	5 ppm

A2: Categorized by ACGIH as Suspected Huam Carcinogen; there is limited evidence of carcinogenicity in humans and sufficient ecidence of carcinogenicity inexperimental anim as with revelance to humans
AL: Action level
C: Ceiling Limit

SECTION 3: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Shipped material 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 from abnormal abrasion or vapors from heating to greater than 300°C can cause irritation.

Skin: Molten material can cause thermal burns.

Eye: Solid or dust particle may cause irritation or corneal injury.

Ingestion: Not a probable route of entry.

POTENTIAL HEALTH EFFECTS (continued)

Carcinogenicity:

COMPONENT	NTP	IARC	OSHA
Thermoplastic Polyester	No	No	No
Antimony Trioxide	No	No	No
Organic Flame Retardant	No	No	No
Acrylamide	No	Yes (2B)	No
Acrylonitrile	Yes	Yes (2A)	Yes
Formaldehyde	Yes	Yes	Yes
Ethyl Acrylate	Yes	Yes	No

Symptoms and Effects of Exposure to Selected Individual Components

ANTIMONY TRIOXIDE
Inhalation – No serious health risks reported from exposure other than a possible change in blood pressure. Prolonged exposure may cause irritation of the nose, throat, and mouth.
Other hazards – Skin or eye contact may result in coughing, dizziness, headache, nausea, vomiting, diarrhea, stomach cramps, and insomnia.

ACRYLONITRILE
Acute – Overexposure to acrylonitrile may cause somnolence, general anesthesia, cyanosis, and diarrhea. Symptoms include flushing of the face, salivation, irritation of eyes and nose, nausea, deepened respiration, weaknes,s and headache.
Chronic – IARC classifies this component as a "probably carcinogenic to humans".
Other hazards – Human systemic irritant and may be poisonous by skin absorption and ingestion. Target organs include liver, central nervous system brain, kidneys, and cardiovascular system.

FORMADLEHYDE
Acute – Gastrointestinal toxicity may occur if ingested and may cause nausea, vomiting and severe abdominal pain. Exposure to the skin may cause irritation an contact dermatitis at moderately low levels. Inhalation may cause irritation of the upper respiratory trac, burning sensation of the eyes, nose, and throat, sneezing, coughing, headache, difficulty breathing, nausea, vomiting and excessive thirst. May cause conjunctivitis, eye irritation/redness and excessive tearing.
Chronic – Sensitizing of respiratory tract and development of an asthmatic reaction to further exposure. Sensitization and allergic skin reaction. Can aggrevate asthma and inflammatory or fibrotic pulmonary disease.

ETHYL ACRYLATE
Poison by ingestion and inhalation. Moderately toxic by skin contact and intraperitoneal routes. Human systemic effects by inhalation: eye olfactory and pulmonary changes. A skin and eye irritant.

ACRYLAMIDE
Poison by ingestion, skin contact, intravenous, intraperitoneal, and possible other routes. Intoxication from acrylamide has caused peripheral neuropathy, erthemia and peeling of the palms. It is dangerous in its raw state because it can be absorbed through unbroken skin.

SECTION 4: FIRST AID MEASURES

Inhalation: Move to fresh air. Seek medical attention.

Eye Contact: Rinse thoroughly with ample amounts of water for 15 minutes. Seek medical attention.

Skin Contact: Wash thoroughly with soap and water. If molten material falls on skin, do not attempt to remove material; cool immediately with water. Seek medical attention.

Ingestion: Seek medical attention.

SECTION 5: FIRE FIGHTING MEASURES

This product is inherently flame resistant, but may ignite at temperature exceeding 600°C in an oxygen-enriched atmosphere.

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

Extinguishing Media: Use media suitable for surrounding fire. Product is a flame retardant.

Unusual Fire and Explosion Hazards: Toxic vapors can be emitted under fire conditions.

Special Fire Fighting Procedure: Wear self-contained breathing apparatus when extinguishing. Hazardous decomposition products are generated in fire conditions.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Scrap monofilament may present a slipping hazard. Sweep up and dispose of according to all federal and state disposal procedures. If dust is generated during machining, abrading or riveting, remove 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

Do not heat to greater than 200°C. Avoid breathing fumes at elevated temperatures. If dust is generated while shipping product, remove 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 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 dust, vapor, or fume exceeding 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.
Eyes:	Wear safety glasses or goggles, as necessary, if dust exposure is possible.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point:	N/A	**Vapor Pressure:**	N/A
Melting Point:	240-250°C	**Vapor Density (air = 1):**	N/A
pH:	N/A	**% Volatile:**	N/A
Specific Gravity:	1.5 g/cc	**Evaporation Rate:**	N/A
Water Solubility:	Insoluble	**Form, Color and Odor:**	Solid, white and odorless

SECTION 10: STABILITY AND REACTIVITY

Stability:	Stable at normal temperatures and storage conditions.
Incompatibility (Materials/Conditions to Avoid):	Oxidizing agents, acids and bases.
Hazardous Polymerization:	Will not polymerize.
Decomposition Products:	Avoid exposing to temperatures above 250°C for prolonged periods of time. At this temperature, thermal decomposition starts to occur producing such by-products as carbon monoxide, carbon dioxide, hydrogen bromide, hydrogen cyanide, oxides of nitrogen, bromine and small amounts of aromatic and 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: Refer to Section 3

Chronic: Refer to Section 3

SECTION 12: ECOLOGICAL INFORMATION

N/A

SECTION 13: DISPOSAL CONSIDERATIONS

Federal and state law regulates disposal of scrap material or dust as solid waste; must be in accordance with federal and state law. Contact local regulatory agency for guidance.

SECTION 14: TRANSPORTATION INFORMATION

Proper Shipping Name: Not regulated by these modes of transportation
Hazard Class: None
Identification Number: None
Packing Group: N/A
Shipping Label: None
Additional Marking Requirement: None

SECTION 15: REGULATORY INFORMATION

U.S. TSCA: All chemicals used in the manufacture of this product are listed on the U.S. Toxic Substances Control Act (TSCA) Inventory

California Proposition 65: This product contains 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
Acrylamide	76-06-1
Acrylonitrile	107-13-1
Ethyl acrylate	140-88-5
Formaldehyde	50-00-0

RCRA Hazardous Waste Code: Not Available

CERCLA Hazardous Substances: Not Available

OSHA: Not Available

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 (2004)
N/A:	Not Applicable
IARC:	International Agency for Research on Cancer
NTP:	National Toxicology Program

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