



## MATERIAL SAFETY DATA SHEET

### SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Expando DM**Manufacturer:**Federal-Mogul Corporation  
26555 Northwestern Highway  
Southfield, MI 48033**MSDS#** BH-015**24hr Emerg # (Infotrac):** 1-800-535-5053**International:** 001-352-323-3500**Non-Emerg #:** 248-354-9844

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

Expando DM is a tough, lightweight product used to oversleeve designed to offer maximum resistance to abrasion and impact damage. Featuring a dual monofilament construction, it smoothly blends larger monofilament strands of nylon with support strands of polyester.

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 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	>90	None Established	None Established
Caprolactam	105-60-2	negligible	None Established	5 mg/m <sup>3</sup> (*)
Polycapromide	25038-54-4	negligible	None Established	None Established
Inorganic Pigments	None Established	negligible	None Established	None Established

\*: inhalable fraction, vapor and aerosol

### 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:** Inhalation of dust and vapor may cause moderate respiratory irritation.

**Skin:** Molten material can cause thermal burns.

**Eye:** Solid or dust particle may cause irritation or corneal injury due to mechanical action.

**Ingestion:** Not a probable route of entry.

## POTENTIAL HEALTH EFFECTS (continued)

### Carcinogenicity:

	COMPONENT NTP IARC OSHA
Caprolactam	No No No
Polycapramide	No No No
Inorganic Pigments	No No No
Thermoplastic Polyester	No No No

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

#### CAPROLACTAM

Moderately toxic by ingestion or skin contact. A skin and eye irritant. When heated, could emit toxic fumes of nitrogen oxides.

#### POLYCAPROAMIDE

An experimental neoplastigen by implant route. Moderately toxic by ingestion or inhalation. When heated, could produce toxic fumes of nitrogen oxide.

## SECTION 4: FIRST AID MEASURES

<b>Inhalation:</b>	Move to fresh air. Seek medical attention. If not breathing give artificial respiration.
<b>Eye Contact:</b>	Flush with water to remove particle. Seek medical attention.
<b>Skin Contact:</b>	Wash thoroughly with soap and water. If irritation persists, seek medical attention. If molten material falls on skin, do not attempt to remove material; cool immediately with water. Seek medical attention.
<b>Ingestion:</b>	If significant quantities have been consumed, give two glasses of water and induce vomiting. Seek medical attention.

#### SECTION 5: FIRE FIGHTING MEASURES

This product is inherently flame resistant, but may ignite at temperatures 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.

**Unusual Fire and Explosion Hazards:** Toxic vapors can be emitted in 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 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 and dry place. Do not heat to greater than 200°C for prolonged periods of time. Avoid breathing fumes at elevated temperatures. Shipping and storage may accumulate dust in shipping containers. Place in an airtight polyethylene bag or remove dust by vacuuming/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:** Use local exhaust when heated to greater 200°C. Reduce caprolactam vapor to Less than 1 ppm with efficient ventilation. 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. Wear gloves when winding or unwinding this product.

**Eyes:** Wear safety glasses or goggles, as necessary, if dust exposure is possible.

#### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>Boiling Point:</b>	N/A	<b>Vapor Pressure:</b>	N/A
<b>Melting Point:</b>	200°C	<b>Vapor Density (air = 1):</b>	N/A
<b>pH:</b>	N/A	<b>% Volatile:</b>	N/A
<b>Specific Gravity:</b>	1.14-1.38 g/cc	<b>Evaporation Rate:</b>	N/A
<b>Water Solubility:</b>	Insoluble	<b>Form, Color and Odor:</b>	Solid, various and odorless

#### SECTION 10: STABILITY AND REACTIVITY

<b>Stability:</b>	Stable at normal temperatures and storage conditions.
<b>Incompatibility (Materials/Conditions to Avoid):</b>	Oxidizing agents, acids and bases
<b>Hazardous Polymerization:</b>	Will not polymerize
<b>Decomposition Products:</b>	Avoid exposing to temperatures above 200 °C for prolonged periods of time. At this temperature, thermal decomposition starts to occur. It produces such by-products as carbon monoxide, carbon dioxide, ammonia and trace amounts of acetaldehyde, esters, alcohols and acids. Caprolactam is release when heating to greater than 200°C.

#### SECTION 11: TOXICOLOGICAL INFORMATION

<b>Inhalation:</b>	Refer to Section 3
<b>Skin:</b>	Refer to Section 3
<b>Eye:</b>	Refer to Section 3
<b>Ingestion:</b>	Refer to Section 3
<b>Acute:</b>	None known
<b>Chronic:</b>	None known

#### SECTION 12: ECOLOGICAL INFORMATION

N/A

#### SECTION 13: DISPOSAL CONSIDERATIONS

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

#### SECTION 14: TRANSPORTATION INFORMATION

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

#### SECTION 15: REGULATORY INFORMATION

<b>U.S. TSCA:</b>	All chemicals used in the manufacture of this product are listed on the U.S. Toxic Substances Control Act (TSCA) Inventory
<b>California Proposition 65:</b>	This product does not contain ingredients known to the State of California to cause cancer, birth defects or other reproductive effects.
<b>SARA Title III – Section 313 Supplier Notification:</b>	This product does not contain 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.
<b>RCRA Hazardous Waste Code:</b>	Not Available
<b>CERCLA Hazardous Substances:</b>	Not Available
<b>OSHA:</b>	Not Available
<b>WHMIS Classification:</b>	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)
mg/m <sup>3</sup> :	Milligrams of constituent per cubic meter of sampled air
<:	Less than
N/A:	Not Applicable
IARC:	International Agency for Research on Cancer
NTP:	National Toxicology Program
NIOSH:	National Institute of Occupational Safety and Health
HEPA:	High-efficiency particulate air

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