



ETREMA Products, Inc.

MATERIAL SAFETY DATA SHEET

SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Identifier ETREMA TERFENOL-D® POWDER			WHMIS Classification B4	
Product Use Various Uses				
Manufacturer's Name ETREMA Products, Inc.			Supplier's Name ETREMA Products, Inc.	
Street Address 2500 North Loop Drive			Street Address 2500 North Loop Drive	
City Ames	Province Iowa		City Ames	Province Iowa
Postal Code 50010	Telephone Number: 1-515-296-8030 (Main)		Postal Code 50010	Telephone Number: 1-515-296-8030 (MAIN)
Date MSDS Prepared December 21, 2011		MSDS Prepared By Michael Brooks		Phone Number (515) 296-8030 (MAIN)
Comments To the best of our knowledge, this Material Safety Data Sheet conforms to the requirements of US OSHA 29 CFR1910.1200. This form was prepared per ANSI standard Z400.1.				

IN CASE OF EMERGENCY CALL CHEMTEL INC. 1-800-255-3924, contract number MIS0007645, 24 hours everyday

Outside of the US, Canada, Puerto Rico and the U.S. Virgin Islands call collect +1- 813-248-0585, contract number MIS0007645

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Ingredients	%	CAS Number	LD ₅₀ of Ingredient	LC ₅₀ of Ingredient
None (See note below section 3)				

SECTION 3 — HAZARDS IDENTIFICATION

Route of entry	<input checked="" type="checkbox"/> Skin Contact	<input type="checkbox"/> Skin Absorption	<input checked="" type="checkbox"/> Eye Contact	<input checked="" type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Ingestion
ETREMA TERFENOL-D® contains no hazardous chemicals. However, the material is pyrophoric. Appropriate caution should be taken when handling the material.					
Acute Health Effects: Irritating to the skin and eyes on contact. Inhalation will cause irritation to the lungs and mucus membrane. Irritation to the eyes will cause watering and redness. Follow safe industrial hygiene practices and always wear protective equipment when handling this compound.					
Chronic Health Effects: This product has no known chronic effects. Repeated or prolonged exposure to this product is not known to aggravate medical conditions.					

SECTION 4 — FIRST AID MEASURES

<p>Skin Contact</p> <p>In case of skin contact, flush skin with water. Wash clothing before reuse. Get medical attention if irritation occurs.</p>
<p>Eye Contact</p> <p>In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get immediate medical attention.</p>
<p>Inhalation</p> <p>If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing difficult, give oxygen. Get immediate medical attention.</p>
<p>Ingestion</p> <p>First Aid for Ingestion: If swallowed seek immediate medical attention.</p>

SECTION 5 — FIRE FIGHTING MEASURES

<p>Flammable</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>If yes, under which conditions?</p> <p>Simultaneous exposure to oxygen and spark. Material can self-spark if powder is disturbed in an oxygen containing environment.</p>	
<p>Means of Extinction</p> <p>Lime, Metal fire agent or CO₂</p>		
<p>Flashpoint (° C) and Method</p> <p>N/A</p>	<p>Upper Flammable Limit (% by volume)</p> <p>N/A</p>	<p>Lower Flammable Limit (% by volume)</p> <p>N/A</p>
<p>Auto-ignition Temperature (°C)</p> <p>N/A</p>	<p>Explosion Data — Sensitivity to Impact</p> <p>N/A</p>	<p>Explosion Data — Sensitivity to Static Discharge</p> <p>Spark leads to flame in oxygen</p>
<p>Hazardous Combustion Products</p> <p>Dispersed powder and smoke</p>		
<p>[NFPA]</p> <p>Health Hazard = 1, Flammability = 3, Instability = 2, Special Hazards = None</p>		

SECTION 6 — ACCIDENTAL RELEASE MEASURES

<p>Leak and Spill Procedures</p> <p>ETREMA TERFENOL-D® Powder must be protected from oxygen and air. If powder is exposed to either environment, care must be taken to prevent sparking which may occur if particles abrade each other or are shaken. If exposed powder is encountered, gently introduce water (i.e. via a misting squirt bottle) until a sludge is produced and all particles are coated thoroughly with water. The sludge can then be carefully placed in a container of water for disposal.</p>
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SECTION 7 — HANDLING AND STORAGE

<p>Handling Procedures and Equipment</p> <p>ETREMA TERFENOL-D® Powder must be protected from oxygen and air environments. If powder is exposed to either environment, care must be taken to prevent sparking which may occur if particles abrade each other or are shaken. Other Precautions: Keep ETREMA TERFENO-D® Powder under inert gas, such as argon and/or helium, when not in use to minimize oxidation.</p>
<p>Storage Requirements</p> <p>ETREMA TERFENO-D® Powder should be kept in tightly sealed container backfilled with inert gas, such as argon and/or helium. Powder will oxidize with exposure to oxygen or air.</p>

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits <input type="checkbox"/> ACGIH TLV <input type="checkbox"/> OSHA PEL <input type="checkbox"/> Other (specify)
Specific Engineering Controls (such as ventilation, enclosed process) Only handle ETREMA TERFENO-D® Powder in an inert environment such as a glove box either evacuated (i.e. under vacuum) or backfilled with argon/helium.
Personal Protective Equipment <input checked="" type="checkbox"/> Gloves <input type="checkbox"/> Respirator <input checked="" type="checkbox"/> Eye <input type="checkbox"/> Footwear <input type="checkbox"/> Clothing <input checked="" type="checkbox"/> Other
Latex gloves, safety glasses, and dust mask recommended

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical State Powder	Odor and Appearance Dull metallic silver - odorless	Odor Threshold N/A
Specific Gravity 9250 kg/m³	Vapor Density (air = 1) N/A	Vapor Pressure (mmHg) N/A
Evaporation Rate N/A	Boiling Point (°C) >2599°C	Freezing Point (°C) >1200°C
pH N/A	Coefficient of Water/Oil Distribution N/A	Solubility in Water Insoluble

SECTION 10 — STABILITY AND REACTIVITY

Chemical Stability <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If No, Under which conditions? Oxidizing Agents, Sparks and Open Flames
Incompatibility with Other Substances <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If yes, Which Ones? Strong Acids
Reactivity and Under What Conditions? Pyrophoric (air and spark produces flame)	Hazardous Decomposition Products None

SECTION 11 — TOXICOLOGICAL INFORMATION

Effects of Acute Exposure N/A	
Effects of chronic exposure N/A	
Irritancy of Product Mild irritant to skin, eyes and respiratory system	
Skin sensitization None Known	Respiratory sensitization None Known
Carcinogenicity-IARC N/A	Carcinogenicity - ACGIH N/A
Reproductive toxicity N/A	Teratogenicity N/A
Embrototoxicity N/A	Mutagenicity N/A
Name of synergistic products/effects N/A	

SECTION 12 — ECOLOGICAL INFORMATION

Ecotoxicity

ETREMA TERFENOL-D® Powder is not known to cause adverse environmental effects. However, employ sound management practices which prevent material from contacting storm water, entering waterway, or otherwise impacting plant and animal species.

SECTION 13 — DISPOSAL CONSIDERATIONS

Waste Disposal

Normal disposal in an approved landfill

SECTION 14 — TRANSPORT INFORMATION

Special Shipping Information

None

CANADA (TDG)

UN/NA Number: UN3089, Primary Hazard Class 4.1, Packaging Group: III, Label: Flammable

DOT

UN/NA Number: UN3089, Primary Hazard Class 4.1, Packaging Group: III, Label: Flammable

VESSEL (IMO/IMDG)

UN/NA Number: UN3089, Primary Hazard Class 4.1, Packaging Group: III, Label: Flammable

AIR (ICAO/IATA)

UN/NA Number: UN3089, Primary Hazard Class 4.1, Packaging Group: III, Label: Flammable

SECTION 15 — REGULATORY INFORMATION

WHMIS Classification

B4

OSHA

Flammable Solid

SARA Title III

N/A

TSCA

N/A

CERCLA

N/A

SECTION 16 — OTHER INFORMATION

No warranty, expressed or implied, or merchantability, fitness for a particular purpose or otherwise is made, except that the products herein discussed comply with the chemical description on the labels. Buyer assumes risks of the use, storage and handling. ETREMA shall not be liable for any incidental or consequential damages arising directly or indirectly in connection with the purchase, use, storage or handling of this product. The information contained herein is, to the best of our knowledge, true and accurate. However, all recommendations or suggestions are made without guarantee, since the conditions of use are beyond our control. We disclaim any liability incurred in connection with the use of these data or suggestions. This information is not to be taken as a license to operate under or (recommendation) to infringe any patent(s). The observance of all regulations and patents is the responsibility of the user. No agent, representative or employee of this company is authorized to vary any terms of this notice.