



ThinFilmRepellant LT-8 - Material Safety Data Sheet

Revision Date: 16January2015

This MSDS adheres to the standards and regulatory requirements of the United States and may meet the regulatory requirements in other countries.

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT: ThinFilmRepellant LT-8

RECOMMENDED USE: Coating, liquid repellant

MANUFACTURER: Thin Film Partners, LLC

ADDRESS: Thin Film Partners LLC, 2976 E. State Street #120-32, Eagle, Idaho, 83616

PHONE: (206) 257-9797

EMERGENCY PHONE: (650) 353-1945

SECTION 2: HAZARDS IDENTIFICATION

Emergency Overview:

None of the chemicals in this product are classified as a hazard.

If thermal decomposition occurs at prolonged time at temperatures above 300°C.

Warning symptoms:

Effects of breathing thermal decomposition products may include coughing, sneezing, shortness of breath, and chest tightness..

Potential Acute Health Effects:

Skin

Not expected to cause skin irritation.

Eyes

Not expected to cause eye irritation.

Inhalation:

If thermal decompositions occurs than respirator effects may include; sneezing, coughing, shortness of breast and chest tightness.

Ingestion:

No health effects are expected.

Repeated exposure

No Adverse effects expected from repeat exposure.

Target Organs

Carcinogenicity

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

Label elements, Symbols, Pictograms, Notes to Physician are not applicable for this product.



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SECTION 3: COMPOSITION OF INGREDIENTS

Component	CAS-No.	Concentration
Methyl nonafluorylbutyl ether	163702-07-6	48-37%
Methyl isobutylfluorylbutyl ether	163702-08-7	52-37%
Fluoroacrylate	NA	0.1-30%

SECTION 4. FIRST AID MEASURES

Skin Contact:

Take off all contaminated clothing immediately. Wash off with soap and warm water.

Eye Contact:

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. If symptoms persist get medical attention.

Inhalation:

Remove to fresh air. If thermal decomposition products have been inhaled, get immediate medical attention.

Ingestion:

Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Drink 1 or 2 glasses of water. If vomiting occurs lean person forward to reduce risk of aspiration. Consult a physician.

General advice: Never give anything by mouth to an unconscious person. When symptoms persist contact a physician.

SECTION 5: FIRE FIGHTING MEASURES

Flammability of the Product: Not Flammable

Flash Points: CLOSED CUP:

Method ASTM D 93

Does not Flash

Fire and Explosion hazard.

The product is not flammable. Exposure to extreme heat may cause thermal decomposition products. Hazardous decomposition products include; Hydrogen Fluoride (HF), Fluorinated hydrocarbons, Carbonyl Fluoride, Carbon oxides, Hydrogen Chloride.

Fire Extinguishing Media:

Non-combustible. Water spray, Dry chemical, Carbon dioxide

Firefighting Instructions

In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Wear neoprene gloves during cleaning up work after a fire.. Exposure to decomposition products may be a hazard to health.



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Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Evacuate personnel to safe areas. Cool containers / tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel)

Evacuate personnel to safe areas. Ventilate area with fresh air. In case of insufficient ventilation, wear suitable respiratory equipment. Refer to protective measures listed in sections 7 and 8.

Spill Cleanup

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13)

Accidental Release Measures

Prevent further leakage or spillage. Prevent spreading over a wide area (e.g. by containment or oil barriers). Should not be released into the environment. Do not allow contact with soil, surface or ground water.

SECTION 7: HANDLING AND STORAGE

Handling (Personnel):

Avoid contact with hot material. Avoid breathing thermal decomposition products. Provide sufficient air exchange and/or exhaust in work rooms. For personal protection see section 8.

Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Do not breathe vapours or spray mist. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

Handling (Physical Aspects)

The use of a drum pump is recommended for dispensing from shipping containers.

Storage:

Protect from contamination. Keep container tightly closed. Store away from heat. Store away from acids, strong bases and oxidizing agents. Avoid freezing.

Storage Temperature

<60°C (°F)



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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:

Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. For rescue and maintenance work in storage tanks and where material might be exposed to extreme heat use self-contained breathing apparatus

Personal Protective Equipment

Respiratory protection: None required.

Hand protection: Solvent resistant gloves are not required.

Eyes: Wear chemical splash goggles with side shield.

Thermal hazards: Wear heat insulating gloves when handling hot material to prevent thermal burns.

Exposure Limits

Ingredient	CAS No.	Agency	Limit Type
Methyl nonafluorobutyl ether	163702-07-6	American Indust. Hygiene	TWA: 750 ppm
Methyl nonafluoroisobutyl ether	163702-08-7	American Indust. Hygiene	TWA: 750 ppm

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form: Liquid

Color: Colorless

Odor: ether-like

pH: Neutral.

Boiling Point(range) 61°C (100.4°F) at 1,13hPa

Vapor Pressure: 269 hPa at 25°C (77°F) (202 mmHg@25°C

Density: 1.5-1.6 g/ml at 25°C (77°F)

Flash Point None

Water Solubility: slightly soluble 25°C (77°F)

Viscosity: Not determined

Vapor Density: 8.6

Solubility in water <12 ppm

Auto-ignition temp. 405°C

Volatile organics exempt

Evaporation rate 49 (BUOAC=1)

SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: No decomposition if stored and applied as directed.

Incompatibilities with Other Materials: Strong bases, strong acids, strong oxidizing agents.

Hazardous Decomposition Products: At temperatures >300°C this product decompose to form hydrogen fluoride (HF), carbon dioxide, carbon monoxide, and perfluoroisobutylene (PFIB).



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SECTION 11: TOXICOLOGICAL INFORMATION

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation: Vapors from heated material may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin Contact: Contact with the skin during product use is not expected to result in significant irritation.

Eye Contact: Vapors from heated material may cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Ingestion:

No health effects are expected.

Toxicological Data

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Methyl nonafluoroisobutyl ether	Inhalation vapor 4 hrs	Rat	LC50> 1,000mg/l
Methyl nonafluoroisobutyl ether	Ingestion	Rat	LD50> 5,000mg/l
Methyl nonafluorobutyl ether	Inhalation vapor 4 hrs	Rat	LC50> 1,000mg/l
Methyl nonafluorobutyl ether	Ingestion	Rat	LD50> 5,000mg/l

Skin Corrosion/Irritation

Name	Species	Value
Methyl nonafluoroisobutyl ether	Rabbit	No significant Irritation
Methyl nonafluorobutyl ether	Rabbit	No significant Irritationb

Serious Eye Damage/Irritation

Name	Species	Value
Methyl nonafluoroisobutyl ether	Rabbit	No significant Irritation
Methyl nonafluorobutyl ether	Rabbit	No significant Irritationb

Skin Sensitization

Name	Species	Value
Methyl nonafluoroisobutyl ether	Guinea Pig	Not sensitizing
Methyl nonafluorobutyl ether	Guinea Pig	Not sensitizing

Respiratory Sensitization

Name	Species	Value
Methyl nonafluoroisobutyl ether		Data not available or insufficient for classification
Methyl nonafluorobutyl ether		Data not available or insufficient for classification



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Germ Cell Mutagenicity

Name	Route	Value
Methyl nonafluoroisobutyl ether	In Vitro	Not mutagenic
Methyl nonafluoroisobutyl ether	In Vitro	Not mutagenic
Methyl nonafluorobutyl ether	In Vitro	Not mutagenic
Methyl nonafluorobutyl ether	In Vitro	Not mutagenic

Carcinogenicity

Name	Value
Methyl nonafluoroisobutyl ether	Data not available or insufficient for classification
Methyl nonafluorobutyl ether	Data not available or insufficient for classification

Reproductive Toxicity

Name	Route	Species	Value	Test Result
Methyl nonafluoroisobutyl ether	Ingestion	Rat	Not toxic to female reproduction	NOAEL 1000mg/kg/d
Methyl nonafluoroisobutyl ether	Inhalation	Rat	Not toxic to female reproduction	NOAEL 129mg/l
Methyl nonafluoroisobutyl ether	Ingestion	Rat	Not toxic to male reproduction	NOAEL 1000mg/kg/d
Methyl nonafluoroisobutyl ether	Inhalation	Rat	Not toxic to male reproduction	NOAEL 129mg/l
Methyl nonafluorobutyl ether	Ingestion	Rat	Not toxic to female reproduction	NOAEL 1000mg/kg/d
Methyl nonafluoroisobutyl ether	Inhalation	Rat	Not toxic to female reproduction	NOAEL 129mg/l
Methyl nonafluoroisobutyl ether	Ingestion	Rat	Not toxic to male reproduction	NOAEL 1000mg/kg/d
Methyl nonafluorobutyl ether	Inhalation	Rat	Not toxic to male reproduction	NOAEL 129mg/l

Target Organs

Specific Target Organ-Single Exposure

Name	Route	Target Organ	Value	Species	Test/Exposure
Methyl nonafluoroisobutyl ether	Inhalation	Nervous system	Some positive data but not sufficient for classification	Dog	LOAEL 913mg/l 10 minutes
Methyl nonafluoroisobutyl ether	Inhalation	Cardiac sensitization	All data are negative	Dog	LOAEL 913mg/l 10 minutes
Methyl nonafluorobutyl ether	Inhalation	Nervous system	Some positive data but not sufficient for classification	Dog	LOAEL 913mg/l 10 minutes
Methyl nonafluorobutyl ether	Inhalation	Cardiac sensitization	All data are negative	Dog	LOAEL 913mg/l 10 minutes



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Specific Target Organ –Repeated Exposure

SECTION 12: ECOLOGICAL INFORMATION

Please contact the address listed on the first page of this SDS for additional ecotoxicologic information on this material and its components.

						Duration
Methyl nonafluoroisobutyl ether	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 155 mg/l	13 weeks
Methyl nonafluoroisobutyl ether	Inhalation	bone, teeth, nails, and/or hair	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 129 mg/l	11 weeks
Methyl nonafluoroisobutyl ether	Inhalation	heart skin endocrine system hematopoietic system immune system muscles nervous system eyes kidney and/or bladder respiratory system	All data are negative	Rat	NOAEL 155 mg/l	13 weeks
Methyl nonafluoroisobutyl ether	Ingestion	endocrine system liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1,000 mg/kg/day	28 days
Methyl nonafluoroisobutyl ether	Ingestion	heart hematopoietic system immune system nervous system eyes kidney and/or bladder respiratory system	All data are negative	Rat	NOAEL 1,000 mg/kg/day	28 days
Methyl nonafluorobutyl ether	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 155 mg/l	13 weeks
Methyl nonafluorobutyl ether	Inhalation	bone, teeth, nails, and/or hair	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 129 mg/l	11 weeks
Methyl nonafluorobutyl ether	Inhalation	heart skin endocrine system hematopoietic system immune system muscles nervous system eyes kidney and/or bladder respiratory system	All data are negative	Rat	NOAEL 155 mg/l	13 weeks
Methyl nonafluorobutyl ether	Ingestion	endocrine system liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1,000 mg/kg/day	28 days
Methyl nonafluorobutyl ether	Ingestion	heart hematopoietic system immune system nervous system eyes kidney and/or bladder respiratory system	All data are negative	Rat	NOAEL 1,000 mg/kg/day	28 days



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Please contact the address listed on the first page of this SDS for additional information on the chemical fate of this material and its components.

Biodegradability: According to test results of test of biodegradability this product is not readily biodegradable..

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method: Reclaim if feasible. As a disposal alternative, incinerate in an industrial or commercial facility in the presence of a combustible material. Combustion products will include HF, HCL, HBr. Dispose of material in accordance to local/regional/national/international regulations.

EPA Hazardous Waste Number (RCRA) Not regulated.

SECTION 14: TRANSPORT INFORMATION

Not regulated per U.S. DOT, IATO or IMO.

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. If you are shipping by air or ocean, the package may not meet applicable regulatory requirements.

SECTION 15: REGULATORY INFORMATION

TSCA Status: All chemicals listed in this product are in compliance with TSCA Inventory

Fire Hazard: NO
Pressure Hazard: NO
Reactivity Hazard: NO
Immediate Hazard: NO

SECTION 16: OTHER INFORMATION

NFPA Hazard Classification

Health: 3
Flammability: 0
Instability: 0
Special Hazards:

HMIS Hazard Classification

Health: 1
Flammability: 0
Instability: 0
Physical Hazards: 0



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