



## ThinFilmRepellant LT-4 - 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-4

RECOMMENDED USE: Coating, liquid repellant

MANUFACTURER: Thin Film Partners, LLC

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

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### SECTION 2: INGREDIENTS

INGREDIENT	Wt%	C.A.S. NUMBER
2-Butanone	74-99	78-93-3
Fluoroaliphatic copolymer	1-26	Proprietary

### SECTION 3: HAZARDS IDENTIFICATION

Potential Acute Health Effects:

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Thermal decomposition of fluoropolymer may be harmful if inhaled. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH. MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED]. The substance is toxic to central nervous system (CNS). The substance may be toxic to kidneys, the reproductive system, liver, skin. Repeated or prolonged exposure to the substance can produce target organs damage.



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### SECTION 4: FIRST AID MEASURES

#### 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. Get medical attention.

#### Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

#### Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

#### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear. If thermal decomposition products have been inhaled, get immediate medical attention.

#### Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

### SECTION 5: FIRE FIGHTING MEASURES

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 465°C (869°F)

Flash Points: CLOSED CUP: -20°C (-4°F). OPEN CUP: -9°C (15.8°F) (Cleveland)

Flammable Limits: LOWER: 2.6% UPPER: 12.8%

Products of Combustion: These products are carbon oxides and fluorinated compounds, including Hydrogen Fluoride (HF)

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances: Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of oxidizing materials, of acids.



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### Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards: Vapor may travel considerable distance to source of ignition and flash back.

### Special Remarks on Explosion Hazards:

Forms explosive mixtures with hydrogen peroxide, acetic acid, nitric acid, nitric acid + sulfuric acid, chromic anhydride, chromyl chloride, nitrosyl chloride, hexachloromelamine, nitrosyl perchlorate, nitryl perchlorate, permonosulfuric acid, thiodiglycol + hydrogen peroxide, potassium ter-butoxide, sulfur dichloride, 1-methyl-1,3-butadiene, bromoform, carbon, air, chloroform, thitriazylperchlorate.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### Small Spill:

Dilute with soap and water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

### Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## SECTION 7: HANDLING AND STORAGE

### Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, acids, alkali metals.

### Storage:

Store in a segregated and approved area (flammables area) . Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Keep away from direct sunlight and heat and avoid all possible sources of ignition (spark or flame). Exposure to water vapor will reduce product shelf life.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits. Ventilation fans and other electrical service must be non-sparking and have an explosion-proof design.



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### Exposure Limits:

TWA: 500 STEL: 750 (ppm) from ACGIH (TLV) [United States] TWA: 750 STEL: 1000 (ppm) from OSHA (PEL) [United States] TWA: 500 STEL: 1000 [Australia] TWA: 1185 STEL: 2375 (mg/m<sup>3</sup>) [Australia] TWA: 750 STEL: 1500 (ppm) [United Kingdom (UK)] TWA: 1810 STEL: 3620 (mg/m<sup>3</sup>) [United Kingdom (UK)] TWA: 1800 STEL: 2400 from OSHA (PEL) [United States] Consult local authorities for acceptable exposure limits.

### Personal Protective Equipment:

Eyes: Wear chemical splash goggles. Skin: Wear butyl rubber gloves, apron, and/or clothing. Clothing: Wear appropriate protective clothing to prevent skin exposure. Respirators: A NIOSH/MSHA approved or European Standard EN 149 air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical state and appearance: Liquid

Odor: Fruity. Mint-like. Fragrant. Ethereal

Taste: Pungent, Sweetish

Color: Slightly yellow to Clear

Boiling Point: 60°C

Specific Gravity: 0.8 (Water = 1)

Vapor Pressure: 28 kPa (@ 20°C)

Vapor Density: 2 (Air = 1)

Volatility: Not available.

Odor Threshold: 60 ppm

Dispersion Properties:

Solubility: Turbid in cold water, hot water



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### SECTION 10: STABILITY AND REACTIVITY

Chemical Stability: Stable at room temperature in closed containers under normal storage and handling conditions.

Conditions to Avoid: High temperatures, ignition sources, confined spaces.

Incompatibilities with Other Materials: Strong oxidizing agents, strong reducing agents, strong bases, nitric acid, hexachloromelamine, sulfur dichloride, potassium tert-butoxide.

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide. At temperatures  $>300^{\circ}\text{C}$  Fluoropolymers can decompose to form hydrogen fluoride (HF). Hydrogen fluoride has an ACGIH Threshold Limit Value of 3 parts per million (as fluoride) as a Ceiling Limit and an OSHA PEL of 3 ppm of fluoride as an eight hour Time-Weighted Average and 6 ppm of fluoride as a Short Term Exposure Limit. The odor threshold for HF is 0.04 ppm, providing good warning properties for exposure.

### SECTION 11: TOXICOLOGICAL INFORMATION

Acetone CAS# 67-64-1:

Dermal, guinea pig: LD50 =  $>9400$  uL/kg;  
Draize test, rabbit, eye: 20 mg Severe;  
Draize test, rabbit, eye: 20 mg/24H Moderate;  
Draize test, rabbit, eye: 10 uL Mild;  
Draize test, rabbit, skin: 500 mg/24H Mild;  
Inhalation, mouse: LC50 = 44 gm/m<sup>3</sup>/4H;  
Inhalation, rat: LC50 = 50100 mg/m<sup>3</sup>/8H;  
Oral, mouse: LD50 = 3 gm/kg;  
Oral, rabbit: LD50 = 5340 mg/kg;  
Oral, rat: LD50 = 5800 mg/kg;

Carcinogenicity:

No ingredients in this material are listed by ACGIH, IARC, NTP, or CA Prop 65.



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### SECTION 12: ECOLOGICAL & ECOTOXICOLOGICAL INFORMATION

Ecotoxicity: Fish: Rainbow trout: 5540 mg/l; 96-hr; LC50Fish: Bluegill/Sunfish: 8300 mg/l; 96-hr; LC50 No data available.

Environmental: Volatilizes, leeches, and biodegrades when released to soil. TERRESTRIAL FATE: If released on soil, will both volatilize and leach into the ground, readily biodegrades and there is evidence suggesting that it biodegrades fairly rapidly in soils. AQUATIC FATE: If released into water, will probably biodegrade. It is readily biodegradable in screening tests, although data from natural water are lacking. It will also be lost due to volatilization (estimated half-life 20 hr from a model river). Adsorption to sediment should not be significant.

Physical: ATMOSPHERIC FATE: In the atmosphere, will be lost by photolysis and reaction with photochemically produced hydroxyl radicals. Half-life estimates from these combined processes are 79 and 13 days in January and June, respectively, for an overall annual average of 22 days. Therefore considerable dispersion should occur. Being miscible in water, wash out by rain should be an important removal process. This process has been confirmed around Lake Shinsei-ko in Japan. There was found in the air and rain as well as the lake.

Other: No information is available for the fluoroaliphatic silane. However it is known that fluoropolymers resist biogradation.

### 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.

EPA Hazardous Waste Number: Not regulated

CAS# 67-64-1 waste number U002 (Ignitable waste)

### SECTION 14: TRANSPORT INFORMATION

UN No.: Not established: UN1090

ADR / RID Status: Not regulated

IMDG Status: Not regulated

ICAO / IATA Status: Not regulated

US DOT Status: Not regulated, Hazard Class 3

Reportable Quantity (RQ): 5000lbs

### SECTION 15: REGULATORY INFORMATION

TSCA Status: These chemicals are either listed on the TSCA Inventory or exempt.

SARA Section 302: None of the chemicals are Section 302 hazard.

SARA Section 311, 312: Acute = Yes, Reactivity=No, Fire=No

SARA Section 313 = No chemicals are reportable.



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### CHEMICAL INVENTORIES

The components of this product are in compliance with the chemical notification requirements of TSCA. Components of this material are either TSCA registered or have been commercialized under the TSCA polymer exemption at 40CFR723.250. Polymers subject to this exemption are not listed on the TSCA Inventory, but are in compliance with TSCA requirements.

This MSDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR1910.1200.

### SECTION 16: OTHER INFORMATION

#### NFPA Hazard Classification

Health: 2 Flammability: 1 Reactivity: 0 Special Hazards: None

#### NFPA Hazard Classification

Health: 2 Flammability: 3 Reactivity: 0 Special Hazards: None

#### HMIS Hazard Classification

Health: 2 Flammability: 1 Reactivity: 0 Protection: X - See PPE section.

#### HMIS Hazard Classification

Health: 2 Flammability: 3 Reactivity: 0 Protection: X - See PPE section

**DISCLAIMER:** Judgments as to the suitability of information herein for the purchaser's purposes are necessarily the purchaser's responsibility. Although reasonable care has been taken in the preparation of such information, Thin Film Partners LLC, extends no warranties, makes no representations, and assumes no responsibility as to the accuracy or suitability of such information for application to the purchaser's intended purpose or for consequences of its use.

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