SAFETY DATA SHEET

According to the Global Harmonized System, GHS and Hazard Communication Standard, HCS

LAMFLEX - SKU: LFX - Part A & Part B Resins © ™

SDS Number: 16009

Version 1.0 Revision Date : 05/20/2026 Issue Date : 05/20/2026 Date of Previous Issue : 05/20/2026

1. PRODUCT AND COMPANY IDENTIFICATION:

Product Information:

Trade name:	LAMFLEX - LFX - Vacuum Infusion Resin Part A & Part B
Type / usage:	Liquid urethane based polymer resin for industrial or professional use only in composite matrix fabrications.
Chemical family:	Polyaspartic Amine & Aliphatic Polyisocyanate
Supplier details:	Ortholam Inc. Richmond Virginia 23238 USA
Telephone:	+1-804-318-6042
E-mail address:	info@ortholam.us
Emergency telephone:	24 hours: +1-804-318-6042

2. HAZARDS IDENTIFICATION:

GHS Classification:

Color: Clear - colorless

Physical State: Liquid

Skin Irritation: Category 2

Skin Sensitization: Category 1

Respiratory Sensitization: Category 1

Inhalation - AcuteToxicity: Category 4

Specific target organ toxicity-single exposure: Category 3 - (Respiratory System)

Specific target organ toxicity-repeated exposure: Category 2 - (Respiratory System)

Acute toxicity (Inhalation): Category 3

Chronic Aquatic Toxicity: Category 3

GHS-Labeling symbols:

Signal Word: Warning

GHS Hazard Statements:

H302: Harmful if swallowed.
H313: May be harmful in contact with skin.
H317: May cause an allergic skin reaction.
H319: May cause eye irritation.
H332: Harmful if inhaled.
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335: May cause respiratory irritation. (nose, throat and respiratory tract)
H371: May cause damage to organs (lungs) through prolonged or repeated exposure.
H412: Harmful to aquatic life with long lasting effects.

GHS Precautionary Statements:

Prevention:

P210: Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P233: Keep containers tightly closed.
P262: Avoid getting in eyes, on skin or on clothing.
P280: Wear protective gloves, protective clothing, eye protection and face protection.
P261: Avoid breathing gas vapors, mist or spray.
P271: Use in a well ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.

Response:

P303 + P353 + P361: If on skin or hair; remove all contaminated clothing and wash skin and hair with soap and water
P304 + P340: If inhaled , remove victim to fresh air and keep at rest in a comfortable breathing position.
P333 + P313: If skin irritation or rash occurs; get medical advice / attention.
P362 + P364: Remove and wash contaminated clothing before re-use.
P370 + P378: In case of fire; use dry sand, chemical powder or foam for extinction.
P301 + P330 + P331: If swallowed; rinse mouth, do not induce vomiting.
P391: Collect spillage.
P312: Call a Poison Center or doctor / physician if you feel unwell.

Storage:

P403 + P235: Store in a cool well ventilated secure place.
P233: Keep containers tightly closed.

Disposal:

P501: Dispose of contents / container by an approved method in accordance with local / regional / national or international regulations.

For the full text of the GHS H-Statements mentioned in this Section, see Section 16.

3. COMPOSITION / INFORMATION ON INGREDIENTS:

Chemical characterization: Solution of Polyaspartic amine resins and Aliphatic isocyanate resins.

PART A: Hazardous and non-hazardous ingredients:

Chemical Name	CAS-No.	Content %	Comments
Aspartic Ester	136210-30-5	80 ~ 90	
Aspartic Ester	152637-10-0	5 ~ 20	
Aliphatic Carboxylic Ester	623-91-6	< 5	
PART B: Hazardous and non-hazardous ingredients:			
Hexamethylene Diisocyanate	28182-81-2	80 - 100	
1,6-Hexamethyalene Diisocyante	822-06-0	< 0.3	

Any concentration shown as a range is to protect confidentiality or is due to batch variation.
The specific chemical identity of and/or exact percentage composition for one or more ingredients has been withheld as a trade secret.

4. FIRST AID MEASURES:

General advice: Move out of contamination area and remove contaminated clothing.
Seek medical assistance if needed. Show this SDS to the doctor in attendance.

In case of Inhalation: After significant exposure, move victim to fresh air, put at rest and remove restrictive clothing. If breathing becomes irregular or ceases, apply artificial respiration immediately and where required supply oxygen. Seek medical assistance if irritation develops and persists.

Following skin contact: Wash skin with soap and plenty of water. Take off contaminated clothing and shoes immediately. Seek medical attention if any irritation persists.

After eye contact: Immediately flush eyes with plenty of lukewarm flowing water for 10 to 15 minutes holding eyelids apart. Use fingers to ensure that eyelids are separated and the eye is being irrigated. Remove contact lenses and protect unharmed eye. Consult with an ophthalmologist.

After Ingestion: Clean mouth with water and drink plenty of water afterwards. Do not induce vomiting. Never give anything by mouth to an unconscious person. Obtain medical attention.

Notes to physician: The symptoms and effects are as expected from the hazards as shown in Section 2.
No specific product related symptoms are known.
Treat symptomatically.

5. FIRE-FIGHTING MEASURES:

Suitable Extinguishing Media: Dry chemical, carbon dioxide or foam. Use water spray to cool unopened containers. CAUTION: re-ignition may occur.

Unsuitable Extinguishing Media: High volume water jet.

Specific hazards: Supports combustion.
Water spray may be ineffective unless used by experienced firefighters.
Heating may may cause decomposition with release of toxic fumes.
Do not allow run-off from fire fighting to enter drains or water courses.
Fire will produce smoke containing hazardous products of combustion. (see section 10)

Protective equipment: In the event of fire, wear NFPA approved self-contained breathing apparatus and full protective clothing. Decontaminate and wash protective clothing before re-use.

Further information: Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Toxic and irritating gases/fumes will be given off during the heating, combustion or thermal decomposition of diisocyanate, that are considered extremely dangerous.
Closed containers of this material may forcibly rupture when subjected to heat from surrounding fire.
After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.
Hazardous Combustion Products: carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen cyanide, isocyanate, isocyanic acid and dense black smoke.

See also Section 9. Physical and chemical properties: Safety Data.

6. ACCIDENTAL RELEASE MEASURES:

Personal precautions: Use and wear personal protective equipment.
Ensure adequate ventilation. Remove all sources of ignition.
Evacuate surrounding areas and isolate the area.

Environmental precautions: Prevent product from entering drains, waterways, groundwater systems and contact with soil.
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for containment and cleaning up: Cleanup personnel must wear appropriate PPE. Contain and soak up with inert absorbent material such as sand, earth, vermiculite or diatomaceous earth and control further spillage where possible. Place into suitably labeled closed containers for disposal as hazardous waste. Consult a regulatory specialist to determine appropriate state or local reporting requirements and for assistance with hazardous waste disposal requirements. Never return spills into original containers for re-use.

Additional advice: For personal protection see Section 8.

7. HANDLING AND STORAGE:

General Procedures: Store product in original containers. Store containers in secure, cool, dry and well ventilated area. Opened containers should be blanketed with dry nitrogen gas at atmospheric pressure to avoid a reaction with atmospheric moisture. Contamination with moisture or "basic" compounds can cause dangerous pressure buildup in closed containers.

Handling: Do not breathe vapors or spray mist. Persons with a history of skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this material is being used. Smoking, eating and drinking should be prohibited in the application area. Wash hands and face thoroughly after handling and before eating or drinking.
Open containers carefully as content may be under pressure.
Avoid contact with skin, eyes and clothing. Use only with adequate ventilation and personal protection.
Keep containers closed when not in use to avoid moisture contamination.
Do not allow products to contact open flame or electrical heating elements because dangerous decomposition products may form.

Advice on protection against fire and explosion:	Provide appropriate exhaust ventilation at places where dust is formed. Keep away from heat sparks and flames or other sources of ignition. Non sparking tools should be used. Container is hazardous when empty. Do not cut or weld on or near this container even when empty.

Advice on safe handling: For personal protection see Section 8.

Storage: Requirements for storage areas and containers.
Storage period is warranted for 6 months after delivery by Ortholam Inc. in unopened containers.
Keep in a dry, cool and well-ventilated place.
Electrical installations / working materials must comply with the technological safety standards.
Store only in original container.
Store away from other reactive materials. Observe all Federal, State, local regulations and NFPA 30 codes which pertain to the specific local requirements for storage and use, including OSHA 29 CFR 1910.106.

Storage temperature: store at 50 Deg.F (10 Deg.C) to 85 Deg.F (28 Deg.C). The Maximum Storage temperature is 122 Deg.F (50 Deg.C).
Other data: No decomposition if stored and applied as directed.

Storage incompatibility: Hazardous polymerization does not occur.
Store separately from water, amines, , strong bases, alcohols, copper alloys and reducing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION:

Engineering Controls:
Ensure that eyewash stations and safety showers are close to the workstation area.
Personal protective equipment: Proper industrial hygiene practices are required for workers handling these products.
Respiratory protection: Handle in accordance with good industrial hygiene and safety practice.
Hand and Skin protection: Wear impervious , nitrile, neoprene or butyl rubber gloves.
Eye and Face protection: Wear appropriate chemical resistant safety glasses/goggles or face shield when dispensing and mixing these materials. Where there is potential for eye contact, provide eye flushing equipment nearby.
Respiratory: For respirator selection and training, seek professional advice, whenever the workplace conditions require the use of a respirator, that meets OSHA requirements.

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)

EXPOSURE GUIDELINES

OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)							
		EXPOSURE LIMITS					
		OSHA PEL		ACGIH TLV		Supplier OEL	
Chemical Name		**ppm**	**mg/m3**	**ppm**	**mg/m3**	**ppm**	**mg/m3**
Hexane, 1,6-Diisocyanato-, Homopolymer	**TWA**	[1]	[1]	[1]	[1]	[1]	**0.5**
	STEL	[1]	[1]	[1]	[1]	[1]	**1.0**
1,6-hexamethylene Diisocyanate	**TWA**	[1]	[1]	0.005	[1]	[1]	[1]
	STEL	[1]	[1]	[1]	[1]	[1]	[1]
OSHA Table Comments: [1] = Not Established.							

9. PHYSICAL AND CHEMICAL PROPERTIES:

Physical Form: Liquid.

Color: Colorless to pale yellow.

Odor: Almost ordorless. Slight inherent odor.

Odor Threshold: No data available.

pH: Not applicable.

Freezing Point: No data available.

Boiling point: 185 Deg C (decomposes)

Flash Point: 170 Deg C (338 Deg F) (EG A9)

Evaporation rate: No data available.

Vapor pressure: Polyisocyanate: 1.8 x 10-5 @ 24 Deg C (75 Deg F).

Relative Vapor Density: No data available.

Bulk Density: 1.1 +/- 0.1 g/cm3 @ 20 Deg C.

Lower Explosion Limit (LEL): Not established.

Upper Explosion Limit (UEL): Not established.

Specific Gravity: 1.1 +/- 0.1

Solubility in Water: Insoluble - reacts slowly with water to liberate CO2 gas.

Solubility in other Solvents Partition coefficient: n-octanol/water: Log POW: ca. 6.6 (value calculated)

Auto/self-ignition Temperature: ca. 430 Deg C (806 Deg F)

Decomposition Temperature: >= 125 Deg C (>= 250 Deg F)

Viscosity, Dynamic: ca. 250 mPa.s @ 20 Deg C (68 Deg F)

Viscosity, Kinematic: No data available.

Explosive properties: No data available.

Oxidising properties: No data available.

NOTE: This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.

Key to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygiene.
NIOSH = National Institute of Occupational Safety and Health.
OSHA = Occupational Safety and Health Administration.
MSHA = Mine Safety and Health Administration.
TWA = Time-Weighted Averages are based on 8h/day 40hr/week exposures. STEL = Short Term Exposure Limits are based on 15 minute exposures.
CERCLA = Comprehensive Environmental Response, Compensation and Liability Act.
TSCA = Toxic Substances Control Act.
SARA = Superfund Amendments and Reauthorization Act of 1986.
EPCRA = Emergency Planning and Community Right-To-Know Act.
RCRA = Resource Conservation and Recovery Act.

10. STABILITY AND REACTIVITY:

Chemical Stability: The product is stable under normal handling, usage and storage conditions.

Hazardous Reactions: Contact with moisture and other materials that react with isocyanates, or exposure to temperature above 180 Deg C (350 Deg F) may cause polymerization.
Exposure to water moisture (high humidity) or high heat (temperatures greater than 180 Deg C (180 Deg F) can cause pressure build up in storage containers and lead to possible explosive rupture.
Hazardous polymerization may occur under abnormal conditions.
Polymerization is exothermic and can degenerate into an uncontrolled reaction.
Contact with incompatible materials will result in hazardous decomposition.

Materials to Avoid: Amines, Strong Oxidising agents, Strong Reducing agents, acids, other isocyanates,Water, Alcohols, Copper alloys.

Reactive Conditions / Hazards to avoid: Extreme Heat, Flames, Welding arcs, Sparks, or other high temperature sources which induce thermal decomposition.
Avoid Temperatures in excess of 90 Deg C (196 Deg F) when curing this product.

Hazardous Decomposition Products: Fire and heat will cause thermal decomposition giving off flammable and toxic products.
Thermal decomposition will lead to the release of irritating gases and vapors as follows;
Carbon Dioxide, Carbon Monoxide, Hazardous organic compounds, Dense black smoke.
Hydrogen cyanide, Isocyanate, Isocyanic acid, and other compounds unidentified.

11. TOXICOLOGICAL INFORMATION:

Data for this product is not available. Data for a similar product is provided and is summarized below.

ACUTE TOXICITY:

Hexamethylene-1.6-diisocyanate Homopolymer
LD50 Oral Rat, Female > 2500 mg/Kg
LD50 Inhalation Rat, Female 0.390 - 0.543 mg/L 4h.
LD50 Dermal Rabbit > 2,000 mg/Kg
LD50 Dermal Rat > 2,000 mg/Kg

IMMEDIATE ACUTE EFFECTS:

Hexamethylene-1.6-diisocyanate Homopolymer
Skin Corrosion/Irritation (Rabbit, 4h): Slight skin irritation. Skin sensitizer.
Eye Irritation (Rabbit): Slight irritant.
Inhalation (Mouse): Respiratory sensitizer.
STDT (One-time exposure): May cause respiratory irritation.
Dermal (Human): Sensitizer.
Respiratory (Guinea Pig): Sensitizer.
Carcinogenicity: No data available.

GENERAL COMMENTS: This product does not contain substances considered by OSHA, NTP, IARC or ACGIH to be "probable" or "suspected" human carcinogens.
The chemical, physical, and toxicological properties have not been thoroughly investigated or tested to the best of our knowledge.
Repeated chronic exposure to high levels produces adverse effects on the lungs and the nasal epithelium. (level of 400 ppm)

END USES: LAMFLEX resin is intended for professional use only. It is not intended for direct consumer, medical, cosmetic or personal use.
Exposure to high levels of these products may cause skin sensitization, or other effects.
Do not use in applications involving implantation in the human body, or in prolonged contact with internal body fluids or tissues.
Do not use for in-situ polymerizations on, or adhesion to, any human body or body part.

12. ECOLOGICAL INFORMATION:

Chemical fate and pathway: Data for this material and its components are summarized below.

Ecotoxicology: Hexamethylene-1.6-diisocyanate Homopolymer

Aquatic toxicity data: Acute and prolonger toxicity to Fish: LC50 100mg/L (zebra fish, 48 h)

(Zebra Fish, (96h), Acute Toxicity to Aquatic Invertebrates: EC50 100mg/L (water flea, 48 h)

Persistence and Biodegradability: Not readily biodegradable.

Bioaccumulative potential: This product has low potential for bioaccumulation.
An accumulation in aquatic organisms is not expected.

Ecotoxicology Assessment: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

13. DISPOSAL CONSIDERATIONS:

Waste disposal methods:

General advice: The generation of waste should be avoided or minimized wherever possible.
Attempt to use the product completely in accordance with intended use.
Avoid release to the environment. The product should not be allowed to enter drains, sewers, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used containers.
Empty containers may retain some product residues. Decontaminate empty containers before recycling.
Dispose of waste contents by mixing the A & B components together using the manufacturers product mix ratio and allow them to harden under controlled conditions.
Dispose of polymerized contents / container using a licensed waste management company and in accordance with local, state, national environmental legislation, or other requirements listed in environmental permits. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance with waste characterization, or other hazardous waste disposal criteria.

Contaminated packaging: Empty residual contents.

Empty containers should be sent to an approved waste handling company for recycling or landfill disposal.
Do not re-use empty containers.
Do not burn, or use a cutting torch on the empty container.
Follow all warnings even after the container is emptied.
Recommend crushing or puncturing used empty containers to prevent unauthorized use of the containers.

14. TRANSPORT INFORMATION:

Local and International Transport Regulations

U.S. DEPARTMENT OF TRANSPORTATION (U.S. DOT - ROAD)

UN Number: Not Regulated
Proper Shipping Name: Not applicable
Hazard Class: Not applicable
Packing Group: Not applicable
Marine Pollutant: Not classified as a marine pollutant in limited quantity.

INTERNATIONAL MARITIME DANGERUS GOODS (IMDG)

UN Number: Not Regulated
Proper Shipping Name: Not applicable
Hazard Class: Not applicable
Packing Group: Not applicable
Marine Pollutant: Not classified as a marine pollutant in limited quantity.

INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA) - Passenger & Cargo Aircraft

UN Number: Not Regulated
Proper shipping name: Not applicable
Hazard Class: Not applicable
Packing Group: Not applicable
Marine Pollutant: Not classified as a marine pollutant in limited quantity.

15. REGULATORY INFORMATION:

Chemical Inventory Status:

EU. EINECS: Conforms to.

US Toxic Substances Control Act, (TSCA - EPA): The components of these products are all listed on the TSCA inventory, or in compliance with a TSCA inventory exemption.

Australia Ind. Chemical Notification and Assessment Act: AICS: Conforms to.

European Union: To the best of our knowledge, all chemicals in this product comply with REACH regulations.

Canada Environmental Protection Act, (CEPA) - Domestic Substances List (DSL): All components of this product are on the Canadian DSL.

United States - Federal Regulations - Environment:

USA - CERCLA/SARA - Hazardous Substances and their Reportable Quantities: >1000 Lbs.
This material does not contain any chemical components with known CAS numbers that exceed the threshold (DeMinimus) reporting levels established by SARA Title III, Section 313.

USA - SARA - Section 311/312 Hazardous Categories: None.

USA - CERCLA/SARA - Section 302 - Extremely Hazardous Substances TPQ's: None.

USA - CERCLA/SARA - Section 313 - Emissions Reporting: None.

USA - CERCLA/SARA - Section 313 - PBT Chemical Listing: None.

USA - EPCRA Title III - Section 313 Toxic Chemicals (40CFR 372.65): None.

USA - EPA - RCRA - 40 CFR 261: Under RCRA, it is the responsibility of the person who generates solid waste, as defined in 40 CFR 261.2, to determine if that waste is a hazardous waste.

United States - California Regulations - Environment:

USA - California - Proposition 65 - Carcinogens List: None.
USA - California - Proposition 65 - Development Toxicity: None.
USA - California - Proposition 65 - Maximum Allowable Dose Levels (MADL): None.
USA - California - Proposition 65 - No Significant Risk Levels (NSRL): None.
USA - California - Proposition 65 - Reproductive Toxicity - Female: None.
USA - California - Proposition 65 - Reproductive Toxicity - Male: None.
CFATS - Chemical Facility Anti-Terrorism Standards - Chemicals: To the best of our knowledge, these products do not contain Appendix A Chemicals of Interest (COI) at or above the screening threshold quantity (STQ), as defined by the Department of Homeland Security, Chemical Facility Anti-Terrorism Standard.(CFATS, 6 CFR Part 27).

Comment: Marine Pollutants - DOT requirements specific to Marine Pollutants do not apply to non-bulk packagings transported by motor vehicle, rail cars or aircraft.

16. OTHER INFORMATION:

The method of hazard communication for Ortholam Inc. is comprised of product labels, and Safety Data Sheets. Safety Data Sheets for all of our products are available from our office by email or by postal service:
Email our office: info@otholam.us

The handling of products containing reactive isocyanates both polymeric and monomeric, requires appropriate protective measures referred to in this SDS. These products are therefore recommended only for use in industrial, trade or commercial applications. They are not suitable for Do-It-Yourself applications.

Contact: Product Safety Department
Telephone: +1-8043186042
Version Date: 05/20/2026
SDS Version: 1.0

DISCLAIMER / STATEMENT OF LIABILITY:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication, and furnished in good faith without warranty, express or implied, from sources believed to be reliable. The information provided is intended only as a guide for the safe handling, use, processing, storage, transportation, disposal and is not to be construed as a warranty or quality specification. Recipients are responsible to determine that the product is suitable for their circumstances, and for ensuring that the product is used, handled, stored, and disposed of safely in compliance with local, state and federal laws. The information relates only to the specific products designated herein and may not be valid for the product used in combination with any other products, materials or process, unless specified in the text.
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Revision information: The following sections contain revisions or new statements: 0