SAFETY DATA SHEET

Issue Date 24-August-2015 **Revision Date** 26-August-2020 **Version** 3

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name LS-381 (All Types)

Other Means of Identification

SDS # LC-077

Recommended Use of the Chemical and Restrictions on Use

Recommended Use Epoxy curing agent for high performance composites and electronics

Details of the Supplier of the Safety Data Sheet

Supplier Address

Lindau Chemicals, Inc.
731 Rosewood Drive
Columbia, SC 29201

Emergency Telephone Number

Company Phone Number Phone: 1-803-799-6863
Fax: 1-803-256-3639

Emergency Telephone INFOTRAC 01-352-323-3500 (International)
1-800-457-4280 (North America)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: The information below relates to repeated and prolonged exposure, particularly where exposure is to the vapor form of the substance. The supplier has indicated that eye exposure normally results in eye irritation.

Classification

Serious Eye Damage/Eye Irritation	Category 1
Respiratory Sensitization	Category 1
Skin Sensitization	Category 1

Signal Word

Danger

Hazard Statements

H318: Causes serious eye damage
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled
H317: May cause an allergic skin reaction

Appearance Green liquid **Physical State** Liquid **Odor** Characteristic

Precautionary Statements - Prevention
P261: Avoid breathing fumes or vapors.
P272: Contaminated work clothing should not be allowed out of the workplace.
P280: Wear protective gloves, protective clothing and eye protection.
P284: In case of inadequate ventilation wear respiratory protection.

Precautionary Statements - Response
P305 + P351: IF IN EYES: Rinse cautiously with water for several minutes.
P338: Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/physician.

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P333 + P313: If skin irritation or rash occurs: Get medical advice/attention.
P362 + P364: Take off contaminated clothing and wash it before reuse.

P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P342 + P311: If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

Precautionary Statements - Disposal
P501: Dispose of contents/container to an approved waste disposal plant.

Hazards Not Otherwise Classified (HNOC)
Causes mild skin irritation

Other Hazards
Harmful to aquatic life with long lasting effects
Harmful to aquatic life

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Methyltetrahydrophthalic anhydride	34090-76-1	> 50
Tetrahydrophthalic anhydride	85-43-8	10–20
Methylhexahydrophthalic anhydride	19438-60-9	10–20
Phthalic anhydride	85-44-9	1–5
Benzyltriethylammonium chloride	56-37-1	1–10

** If Chemical Name/CAS No is “proprietary” and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.**

4. FIRST AID MEASURES

First Aid Measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. If symptoms persist, call a physician.

Eye Contact Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Get immediate medical advice/attention.

Ingestion Call immediately a physician or your local Poison Control Center.

Skin Contact Wash with soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.

Most Important Symptoms and Effects, both Acute and Delayed

Symptoms Contact may cause irritation and redness. Direct eye contact may cause stinging, tearing and redness. May cause irritation to the mucous membranes and upper respiratory tract.

Indication of any Immediate Medical Attention and Special Treatment Needed

Note to Physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Media Dry chemical, carbon dioxide (CO_2), water spray (fog)

Unsuitable Media Not determined

Specific Hazards Arising from the Chemical
Burning may produce irritating vapors, carbon monoxide and/or carbon dioxide.

Hazardous Combustion Products Carbon monoxide, carbon dioxide

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures

Personal Precautions Use personal protective equipment as required. Remove all sources of ignition. Ensure adequate ventilation.

Environmental Precautions Avoid subsoil penetration. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.

Methods and Material for Containment and Cleaning Up

Methods for Containment Provide ventilation and respirator if needed. Flush area with water/soda ash. Keep flames away. Avoid subsoil penetration. Do not let product enter drains or contaminate surface water.

Methods for Cleaning Up Absorb spillage with non-combustible, absorbent material. Dispose of in accordance with federal, state and local regulations. Flush area with water and soda ash.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Advice on Safe Handling Use only in well-ventilated areas. Use personal protection recommended in Section 8. Avoid breathing vapors. Do not take contaminated clothing out of the workplace.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store at temperatures above 32°F (0°C) to prevent crystallization.

Packaging Materials Do not transfer to unmarked containers.

Incompatible Materials Alcohols, alkalis, water

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH REL
Phthalic anhydride 85-44-9	TWA: 1 ppm TWA: 6.1 mg/m^3	TWA: 2 ppm TWA: 12 mg/m^3 (vacated) TWA: 1 ppm (vacated) TWA: 6 mg/m^3	IDLH: 60 mg/m^3 TWA: 1 ppm TWA: 6 mg/m^3

Control Parameters

Engineering Controls Apply technical measures to comply with the occupational exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/Face Protection Wear approved safety goggles.

Skin and Body Protection Wear chemical resistant, impermeable gloves. Wear suitable protective clothing.

Respiratory Protection Ensure adequate ventilation, especially in confined areas.

General Hygiene Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	Liquid		
Appearance	Green liquid	**Odor**	Characteristic
Color	Green	**Odor Threshold**	Not determined

Property	**Values**	**Remarks/Method**
pH	Not determined	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	> 307 °C / > 585 °F	ASTM D-86
Flash Point	> 135 °C / > 275 °F	(PM)
Evaporation Rate	zero	(butyl acetate = 1)
Flammability (Solid, Gas)	n/a-liquid	
Upper Flammability Limit	Not applicable	
Lower Flammability Limit	Not applicable	
Vapor Pressure	0 mm Hg	@ 15 °C
Vapor Density	5.7	(air = 1)
Specific Gravity	1.16–1.18	(water = 1) @ 25 °C
Water Solubility	Negligible	
Solubility in Other Solvents	Not determined	
Partition Coefficient	Not determined	
Autoignition Temperature	Not determined	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	
Additional Information	Volatile by volume 0%	

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions

Chemical Stability
Stable under recommended storage conditions

Possibility of Hazardous Reactions
None under normal processing

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid
Slowly hydrolyzed by water. Reacts with incompatible materials.

Incompatible Materials
Alcohols, alkalis, water

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Product Information

Inhalation Harmful if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Eye Contact Causes serious eye damage

Ingestion May cause burns of the mouth, throat and gastrointestinal tract. Normal handling and hygiene precautions should always be taken to avoid ingestion.

Skin Contact May cause mild skin irritation. May cause allergic skin reaction.

Component Information

Chemical Name	Oral LD50	Dermal LD50
Methyltetrahydrophthalic anhydride 34090-76-1	2140 mg/kg (Rat)	
Tetrahydrophthalic anhydride 85-43-8	5410 mg/kg (Rat)	
Phthalic anhydride 85-44-9	1530 mg/kg (Rat)	> 10 g/kg (Rabbit)
Benzyltriethylammonium chloride 56-37-1	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rat)

Information on Physical, Chemical and Toxicological Effects

Symptoms Please see Section 4 of this SDS for symptoms.

Delayed and Immediate Effects as well as Chronic Effects from Short-term and Long-term Exposure

Sensitization May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life. Harmful to aquatic life with long-lasting effects.

Chemical Name	Algae/aquatic plants EC50	Fish LC50	Crustacea EC50
Tetrahydrophthalic anhydride 85-43-8	Desmodesmus subspicatus 65.7 mg/L 72 h	Leuciscus idus 610 mg/L 48 h (static)	Daphnia magna 117 mg/L 24 h
Phthalic anhydride 85-44-9		Leuciscus idus 313 mg/L 48 h (static)	
Benzyltriethylammonium chloride 56-37-1		Pimephales promelas 141–185 mg/L 96 h (flow-through)	

Persistence and Degradability

Not determined

Mobility

Not determined

Bioaccumulation

Chemical Name	Partition Coefficient
Phthalic anhydride 85-44-9	0.73

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Dispose of in accordance with federal, state and local regulations. Incinerate in a suitable furnace or bury with lime in an approved landfill.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

Chemical Name	RCRA	RCRA - Basis for Listing
Phthalic anhydride 85-44-9	U190	Included in waste streams: F039, K023, K024, K093, K094

14. TRANSPORT INFORMATION

Regulatory Entity

DOT Not regulated

IATA Not regulated

IMDG Not regulated

Note

Please see current shipping paper for most up-to-date shipping information, including exemptions and special circumstances.

15. REGULATORY INFORMATION

International Inventories

Components Listed TSCA, DSL/NDSL, EINECS/ELINCS, ENCS, IECSC, KECI, PICCS, TCSI, AICS, NZIoC

Legend:

TSCA *- United States Toxic Substances Control Act Section 8(b) Inventory*
DSL/NDSL *- Canadian Domestic Substances List/Non-Domestic Substances List*
EINECS/ELINCS *- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*
ENCS *- Japan Existing and New Chemical Substances*
IECSC *- China Inventory of Existing Chemical Substances*
KECI *- Korea Existing Chemicals Inventory*
PICCS *- Philippines Inventory of Chemicals and Chemical Substances*
TCSI *- Taiwan Chemical Substance Inventory*
AICS *- Australian Inventory of Chemical Substances*
NZIoC *- New Zealand Inventory of Chemicals*

United States Federal Regulations

EPCRA

This product contains the following EPCRA Section 313 chemical subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-to-know Act of 1986 (40 CFR 372). **This information must be included in all SDSs that are copied and distributed for this material.**

Chemical Name	CAS No	Weight-%	EPCRA 313 Threshold Value %
Phthalic anhydride	85-44-9	1–5	1.0

CERCLA

Chemical Name	Hazardous Substances Reportable Quantity (RQ)
Phthalic anhydride 85-44-9	RQ 5000 lb final RQ RQ 2270 kg final RQ

United States State Regulations

California Proposition 65 This product does not contain any Proposition 65 chemicals.

United States State Right-to-Know Regulations

Chemical Name	California	Florida	Massachusetts	Minnesota	New Jersey	Pennsylvania
Phthalic anhydride 85-44-9	X	X	X	X	X	X
Benzyltriethylammonium chloride 56-37-1					X	X

16. OTHER INFORMATION

NFPA	**Health Hazards**	**Flammability**	**Instability**	**Special Hazards**
	Not determined	Not determined	Not determined	Not determined
HMIS	**Health Hazards**	**Flammability**	**Physical Hazards**	**Personal Protection**
	1	1	0	Not determined

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Disclaimer

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. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet