



SAFETY DATA SHEET

Issue Date 18-May-2005

Revision Date 20-May-2016

Version 3

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identifier

Product Name LS-252 (All Types)

Other Means of Identification

SDS # LC-035

Recommended Use of the Chemical and Restrictions on Use

Recommended Use Curing agent

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

Acute Toxicity: Inhalation	Category 4
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 1
Respiratory Sensitization	Category 1
Skin Sensitization	Category 1

Signal Word

Danger

Hazard Statements

Harmful if inhaled
Causes skin irritation
Causes serious eye damage
May cause allergy or asthma symptoms or breathing difficulties if inhaled
May cause an allergic skin reaction

**Appearance** Brown liquid**Physical State** Liquid**Odor** Mild organic**Precautionary Statements - Prevention**

Wash face, hands and any exposed skin thoroughly after handling.
 Wear protective gloves, protective clothing and eye protection.
 Avoid breathing fumes or vapors.
 Use only outdoors or in a well-ventilated area.
 In case of inadequate ventilation wear respiratory protection.
 Contaminated work clothing should not be allowed out of the workplace.

Precautionary Statements - Response

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
 IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention.
 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. If experiencing respiratory symptoms, call a POISON CENTER or doctor/physician.

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Methyl-5-norbornene-2,3-dicarboxylic anhydride	25134-21-8	> 60
5-Norbornene-2,3-dicarboxylic anhydride	826-62-0	10-30
1-(2-Hydroxypropyl) imidazole	37788-55-9	1-5

** 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

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. Immediately call a Poison Control Center or doctor/physician.
Skin Contact	Take off contaminated clothing and wash it before reuse. Wash thoroughly with soap and water until no traces of the chemical remain. If skin irritation occurs: Get medical advice/attention.
Inhalation	Remove to fresh air. If breathing is difficult, give oxygen by trained personnel. If symptoms are severe or persist, get medical attention immediately.
Ingestion	Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink two to four full cups of milk or water. DO NOT attempt to neutralize with chemical agents.

Most Important Symptoms and Effects, both Acute and Delayed

Symptoms	Causes serious eye damage. Causes skin irritation. May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause respiratory irritation.
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Indication of any Immediate Medical Attention and Special Treatment Needed

Note to Physician	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES**Extinguishing Media**

Suitable Media	Foam, carbon dioxide (CO ₂), dry powder
Unsuitable Media	Not determined

Specific Hazards Arising from the Chemical

Combustible material. Material reacts with water or steam to produce heat and free acid.

Hazardous Combustion Products Aldehydes, organic acids, 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. Material reacts with water or steam to produce heat and free acid. Flood fire area with water from a distance.

6. ACCIDENTAL RELEASE MEASURES**Personal Precautions, Protective Equipment and Emergency Procedures**

Personal Precautions	Use personal protective equipment as required. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Ensure adequate ventilation, especially in confined areas. Keep personnel upwind from leak. Avoid inhalation of vapors and contact with skin and eyes.
Environmental Precautions	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information, and see Section 13, Disposal Considerations, for additional information.

Methods and Material for Containment and Cleaning Up

Methods for Containment	Cover spill with dry ground vermiculite, mix and transfer to a properly marked container. Close container tightly and retain or submit for disposal. For large spills, dike well ahead of liquid. Transfer recovered liquid and solid diking material to separate containers (if practical) for recovery or disposal.
Methods for Cleaning Up	Absorb spillage with non-combustible, absorbent material. Collect and keep material in suitable, sealed containers for disposal. Dispose of in accordance with federal, state and local regulations. Flush area with water and soda ash. Rinse area with clean water and allow to dry before permitting traffic.

7. HANDLING AND STORAGE

Precautions for Safe Handling

Advice on Safe Handling

Handle in accordance with good industrial hygiene and safety practice. Use personal protection recommended in Section 8. Avoid contact with skin, eyes or clothing. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid breathing vapors or fumes. Use only with adequate ventilation. Contaminated work clothing should not be allowed out of the workplace. Remove contaminated clothing and shoes. Discard shoes that become saturated with product.

Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions

Keep container tightly closed and store in a cool, dry and well-ventilated place. Recommended storage temperature is between 15°C (59°F) and 30°C (86°F). Thaw frozen material below 40°C (104°F) and mix well before using. Store away from incompatible materials. Protect from moisture.

Packaging Materials

Reuse of empty drums or containers is not recommended. Dispose of all empty containers properly, in accordance with federal, state and local regulations.

Incompatible Materials

Strong acids, strong bases, oxidizing agents, water

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region-specific regulatory bodies.

Control Parameters

Engineering Controls

Ensure adequate ventilation, especially in confined areas.

Individual Protection Measures, such as Personal Protective Equipment

Eye/Face Protection

Wear approved chemical safety goggles. Use full-face shield when splashing is possible.

Skin and Body Protection

Wear chemical resistant, impermeable gloves. Use chemical resistant apron or other impermeable clothing, if needed, to avoid contaminating regular clothing, which could result in prolonged or repeated skin contact. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with the product. Do not reuse them. Keep PPE separate from other laundry and wash separately.

Respiratory Protection

No protection is ordinarily required under normal conditions of use with adequate ventilation. In case of inadequate ventilation, wear respiratory protection.

General Hygiene

Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on Basic Physical and Chemical Properties

Physical State	Liquid	Odor	Mild organic
Appearance	Brown liquid	Odor Threshold	Not determined
Color	Brown		
<u>Property</u>	<u>Values</u>	<u>Remarks/Method</u>	
pH	Not determined	Hydrolyzes to diacid	
Melting Point/Freezing Point	Not determined		
Boiling Point/Boiling Range	120 °C (248 °F)	(2 mm Hg)	
Flash Point	150 °C (302 °F)	COC	
Evaporation Rate	Not determined		
Flammability (Solid, Gas)	Liquid-not determined		
Upper Flammability Limits	Not determined		
Lower Flammability Limit	Not determined		
Vapor Pressure	1.5 mm Hg	@ 30 °C (86 °F) (estimated)	
Relative Vapor Density	6.1 g / L	@ 20 °C (68 °F) (air = 1)	
Specific Gravity	1.17 – 1.19	@ 25 °C (77 °F) (water = 1)	
Water Solubility	Not determined	Hydrolyzes to diacid	
Solubility in Other Solvents	Not determined		
Partition Coefficient	2.28 – 2.62		
Autoignition Temperature	Not determined		
Decomposition Temperature	Not determined		
Kinematic Viscosity	1150 – 1535 cSt	@ 25 °C (77 °F)	
Dynamic Viscosity	1350 – 1800 cP	@ 25 °C (77 °F)	
Explosive Properties	Not determined		
Oxidizing Properties	Not determined		
Bulk Density	9.70 – 9.90 lb / gal	@ 25 °C (77 °F)	
Refractive Index	1.500 – 1.506		

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions

Chemical Stability

Stable under recommended storage conditions

Possibility of Hazardous Reactions

Reacts with water or steam to produce free acid and heat

Hazardous Polymerization Polymerizes @ 200°C or higher

Conditions to Avoid

Avoid high temperatures and exposure to water and other incompatible materials.

Incompatible Materials

Strong acids, strong bases, oxidizing agents, water

Hazardous Decomposition Products

Aldehydes, organic acids, carbon monoxide, carbon dioxide

11. TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation	May cause allergy or asthma symptoms or breathing difficulties if inhaled
Eye Contact	Causes serious eye damage
Ingestion	May cause nausea or irritation to the gastrointestinal tract
Skin Contact	Causes skin irritation and may cause an allergic skin reaction or sensitization

Information on Acute Toxicological Effects

Material	Oral LD50	Dermal LD50	Inhalation LC50
LS-252 series products	> 2100 mg/kg (Rat) (estimated)	> 3300 mg/kg (Rabbit) (estimated)	> 1.2 mg/L (Rat) 4 h (dusts/mists) (estimated)
Methyl-5-norbornene-2,3-dicarboxylic anhydride 25134-21-8	1300 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	0.75 mg/L (Rat) 4 h (dusts/mists)
1-(2-Hydroxypropyl) imidazole 37788-55-9	70.5 g/kg (Rat)	Primary irritation score: 2.25 (Rabbit)	

Information on Physical, Chemical and Toxicological Effects

Symptoms	Please see Section 4 of this SDS for symptoms.
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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, ACGIH or NTP.

12. ECOLOGICAL INFORMATION

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and Degradability

Not expected to be inherently biodegradable. Will react with water to produce free acid and heat.

Bioaccumulation

Main hydrolysis product (Methyl-5-norbornene-2,3-dicarboxylic acid) does not significantly bioaccumulate (Bioconcentration Factor is less than 5.5). Bioaccumulation is unlikely to be significant due to the low water solubility of this product.

Partition Coefficient	2.28 – 2.62
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Mobility

Not determined

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

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

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

LISTED	TSCA, DSL/NDSL, EINECS/ELINCS, ENCS, KECI, PICCS
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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

KECI - Korea Existing Chemicals Inventory

PICCS - Philippines Inventory of Chemicals and Chemical Substances

United States Federal Regulations

CERCLA	This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) of the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).
SARA 313	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA, Title III, Section 313.
SARA 302	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
CWA (Clean Water Act)	This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

United States State Regulations

California Proposition 65	This product does not contain any Proposition 65 chemicals.
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United States State Right-to-Know Regulations

Chemical Name	New Jersey	Pennsylvania
Methyl-5-norbornene-2,3-dicarboxylic anhydride 25134-21-8	X	X
5-Norbornene-2,3-dicarboxylic anhydride 826-62-0	X	X

16. OTHER INFORMATION

<u>NFPA</u>	Health Hazards Not determined	Flammability Not determined	Instability Not determined	Special Hazards Not determined
<u>HMIS</u>	Health Hazards 2	Flammability 1	Physical Hazards 0	Personal Protection Not determined

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Revision Note Update of classification

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