

SAFETY DATA SHEET

Classified in accordance with 29 CFR 1910.1200

1. Identification

Product identifier: Biolys® (62.4% L-Lysine)**Chemical name:**

L-Lysine sulphate and its by-products from fermentation

Other means of identification

None.

Recommended restrictions**Recommended use:** Feed additive**Restrictions on use:** Not known.**Manufacturer/Importer/Distributor Information**

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Emergency telephone number:

24-Hour Health : +1 800 424 9300 (CHEMTREC - US & CANADA)

Emergency : 800 681 9531 (CHEMTREC MEXICO)

+1 703 527 3887 (CHEMTREC WORLD)

2. Hazard(s) identification

Hazard Classification**OSHA hazard(s)**

Combustible dust

Label Elements**Hazard Symbol:** No symbol**Signal Word:** No signal word.**Hazard Statement:** May form combustible dust concentrations in air.**Precautionary Statements**

Hazard(s) not otherwise classified (HNOC): None.

3. Composition/information on ingredients

Chemical name:

L-Lysine sulphate and its by-products from fermentation
Mixtures

Composition Comments: The components are not hazardous or are below required disclosure limits.

4. First-aid measures

Description of necessary first-aid measures

General information:	Pay attention to self-protection. Remove victims from hazardous area. Immediately remove soiled or soaked clothing and remove it to a safe distance. Keep victim warm, in a stabilized position and covered. Do not leave the victim unattended. Place patients who are unconscious but breathing in the stabilized lateral position.
Inhalation:	Inhalation is possible if aerosols, mists, dusts, or smoke form. Move to fresh air. With labored breathing: Provide with oxygen. Consult a doctor immediately. If the casualty is not breathing: Perform mouth-to-mouth resuscitation, notify emergency physician immediately.
Skin Contact:	Wash off affected area immediately with plenty of water for at least 15 minutes. Get medical attention if any discomfort continues.
Eye contact:	With eye held open, thoroughly rinse immediately with plenty of water for at least 10 minutes. In case of persistent discomfort: Consult an ophthalmologist.
Ingestion:	Rinse mouth. Immediately give large quantities of water to drink. Seek medical advice.
Personal Protection for First-aid Responders:	No data available.

Most important symptoms and effects, both acute and delayed

Symptoms:	None known.
Hazards:	Other dangerous properties can not be excluded.

Indication of immediate medical attention and special treatment needed

Treatment:	This substance does not have any noteworthy noxious potential. Damage to health is thus not expected.
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5. Fire-fighting measures

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media:	Water. Water fog.
Unsuitable extinguishing media:	Dry powder Carbon Dioxide.
Special hazards arising from the substance or mixture:	In the case of fire, the following hazardous smoke fumes may be produced: carbon monoxide, carbon dioxide, nitric oxides, hydrocyanic acid. In case of fire and/or explosion do not breathe fumes.
Special protective equipment and precautions for firefighters	
Special fire fighting procedures:	Contaminated fire-extinguishing water must be disposed of in accordance with the regulations issued by the appropriate local authorities. Fire residues should be disposed of in accordance with the regulations.
Special protective equipment for fire-fighters:	In the event of fire, wear self-contained breathing apparatus.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures:	Use personal protective equipment. Keep unauthorized personnel away.
Accidental release measures:	Avoid dust formation.
Methods and material for containment and cleaning up:	Use mechanical handling equipment.
Environmental Precautions:	Obey relevant local, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

7. Handling and storage

Handling

Technical measures (e.g. Local and general ventilation):	Ensure suitable suction/aeration at the work place and with operational machinery. Earthing of equipment. Take precautionary measures against static discharges.
Safe handling advice:	Handle in accordance with good industrial hygiene and safety practice. If there is the possibility of skin/eye contact, the indicated hand/eye/body protection should be used.
Contact avoidance measures:	see Precautions for safe handling.

Storage

Safe storage conditions:	Store in a cool and shaded area. Keep containers dry and tightly closed to avoid moisture absorption and contamination. Keep away from sources of ignition - No smoking. Avoid dust formation. VDI 2263 "Dust fires and dust explosions; dangers, evaluation, preventive measures."
Safe packaging materials:	No data available.

8. Exposure controls/personal protection

Control Parameters

Occupational Exposure Limits

None of the components have assigned exposure limits.

Biological Limit Values

No biological exposure limits noted for the ingredient(s).

Appropriate Engineering Controls

Ensure suitable suction/aeration at the work place and with operational machinery. Earthing of equipment. Take precautionary measures against static discharges.

Individual protection measures, such as personal protective equipment

Eye/face protection:

Safety glasses with side-shields conforming to EN166

Skin Protection

Hand Protection:

Additional Information: Wear protective gloves made of the following materials: rubber or plastics., Change protective gloves regularly.

Skin and Body Protection:

Safety showers and eye showers should be easily accessible. In order to determine further specifications applicable to the personal protection equipment, a hazard assessment according to the OSHA standards (29 CFR 1910.132) for personal protection equipment (PPE) is recommended before the product is used.

Respiratory Protection:

A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

Hygiene measures:

Wash face and/or hands before break and end of work. Cleanse and apply cream to skin after work.

9. Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Physical state:	solid
Form:	dry, free flowing granules
Color:	Light brown
Odor:	Characteristic
Odor Threshold:	No data available.
Melting Point:	Not determined.
Boiling Point:	Not applicable

Flammability:	Not classified as a flammability hazard comparable product
Upper/lower limit on flammability or explosive limits	
Explosive limit - upper:	not to be determined
Explosive limit - lower:	(DIN EN 14034) 60 g/m ³
Flash Point:	Not applicable solid
Autoignition Temperature:	> 392 °F/200 °C (VDI 2263) (in dm ³ wire basket (IMDG code))
Decomposition Temperature:	No data available.
pH:	Not determined.
Viscosity	
Dynamic viscosity:	Not applicable solid Not applicable solid
Kinematic viscosity:	No data available.
Flow Time:	No data available.
Solubility(ies)	
Solubility in Water:	partly soluble > 363 g/l (73 °F/23 °C) comparable product
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	-3.05 tested substance: L-Lysine
Vapor pressure:	No data available.
Relative density:	No data available.
Density:	No data available.
Bulk density:	620 - 670 kg/m ³
Vapor density (air=1):	No data available.
Particle characteristics	
Particle Size:	11 µm
Particle Size Distribution:	No data available.
Specific surface area:	No data available.
Surface charge/Zeta potential:	No data available.
Shape:	No data available.
Crystallinity:	No data available.
Surface treatment:	No data available.
Other information	
Explosive properties:	Dusts of the product are explosible.
Oxidizing properties:	Not to be expected in view of the structure
Burning Number:	Burning Number: 2 Combustibility test in accordance with VDI 2263 BZ 2 - briefly ignites and rapidly extinguishes.
Minimum ignition temperature:	842 °F/450 °C (VDI 2263) (BAM-furnace) grain size < 63µm
Metal Corrosion:	No data available.
Minimum Exposable Concentration (MEC):	60 g/m ³
Dust explosion properties:	ST-1 ST-1
Dust Explosion Description Number Kst:	109 m.b./s
Minimum ignition energy:	> 300 mJ (VDI 2263) sieve fraction with inductance > 44 mJ calculated

10. Stability and reactivity

Reactivity:	No data available.
Chemical Stability:	Stable under recommended storage conditions.
Possibility of hazardous reactions:	Dust may form explosive mixture with air.
Conditions to avoid:	See chapter Conditions for safe storage, including any incompatibilities
Incompatible Materials:	No further information available
Hazardous Decomposition Products:	No hazardous decomposition products are known.

11. Toxicological information

Information on toxicological effects

Information on likely routes of exposure

Inhalation:	Relevant route of exposure. Information on effects are given below.
Skin Contact:	Relevant route of exposure. Information on effects are given below.
Eye contact:	Relevant route of exposure. Information on effects are given below.
Ingestion:	If handled correctly, not a relevant route of exposure. Information on effects are given below.

Acute toxicity (list all possible routes of exposure)

Oral Product:	LD 50 (Rat): > 5,110 mg/kg (OECD 401) comparable product
Dermal Product:	Not classified for acute toxicity based on available data.
Inhalation Product:	NOAEL (Rat, 4 h): 5.3 mg/l Not toxic after single exposure; Dust and mist, comparable product

Repeated dose toxicity Product:	NOAEL (Rat(Female, Male), Oral): 1,869 mg/kg comparable product
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Skin Corrosion/Irritation Product:	Not irritating OECD 404 (Rabbit): Not irritating; comparable product
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Serious Eye Damage/Eye Irritation Product:	Not irritating Rabbit: comparable product
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Respiratory or Skin Sensitization Product:	Buehler Test, OECD 406 (Guinea Pig): Not a skin sensitizer. comparable product
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Carcinogenicity

Product name: Biolys® (62.4% L-Lysine)

Product: Not classified Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

No carcinogens present or none present in regulated quantities

ACGIH: US.ACGIH Threshold Limit Values:

No carcinogens present or none present in regulated quantities

US. National Toxicology Program (NTP) Report on Carcinogens:

No carcinogens present or none present in regulated quantities

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended:

No carcinogens present or none present in regulated quantities

Germ Cell Mutagenicity

Not classified

In vitro

Product: Ames test (OECD 471): negative;
Chromosomal aberration (OECD 473): negative;

In vivo

Product: No data available.

Reproductive toxicity

Product: Not classified

Specific Target Organ Toxicity - Single Exposure

Product: No data available.

Specific Target Organ Toxicity - Repeated Exposure

Product: Based on available data, the classification criteria are not met.

Aspiration Hazard

Product: No data available.

Information on health hazards**Other hazards**

Product: No data available.

12. Ecological information**Ecotoxicity:****Acute hazards to the aquatic environment:****Fish**

Product: LC 50 (Cyprinus carpio, 96 h): > 200 mg/l
LC 0 (Cyprinus carpio, 96 h): > 200 mg/l

Aquatic Invertebrates

Product: EC 50 (Daphnia magna, 48 h): > 1,000 mg/l comparable product
NOEC (Daphnia magna, 48 h): 340 mg/l comparable product

Toxicity to Aquatic Plants

Product: EC 50 (Desmodesmus subspicatus (Scenedesmus subspicatus), 72 h): >

Product name: Biolys® (62.4% L-Lysine)

2,000 mg/l (OECD 201) growth rate
EC 50 (Desmodesmus subspicatus (Scenedesmus subspicatus), 72 h): 450 mg/l (OECD 201) Biomass**Toxicity to microorganisms****Product:** No data available.**Chronic hazards to the aquatic environment:****Fish****Product:** No data available.**Aquatic Invertebrates****Product:** No data available.**Toxicity to Aquatic Plants****Product:** No data available.**Toxicity to microorganisms****Product:** No data available.**Persistence and Degradability****Biodegradation****Product:** No data available.**BOD/COD Ratio****Product:** No data available.**Bioaccumulative potential****Bioconcentration Factor (BCF)****Product:** No data available.**Partition Coefficient n-octanol / water (log K_{ow})****Product:** Log K_{ow}: -3.05 tested substance: L-Lysine**Mobility in soil:****Product** No data available.**Results of PBT and vPvB assessment:****Product** No data available.**Other adverse effects:****Other hazards****Product:** No further information available**Additional Information:** No data available.**13. Disposal considerations****Disposal methods:** Waste must be disposed of in accordance with federal, state, provincial and local regulations.**Contaminated Packaging:** Packaging material should be recycled or disposed of in accordance

with federal, state and local regulations.

14. Transport information

Domestic regulation

49 CFR

Not regulated as a dangerous good

International Regulations

UNRTDG

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. Toxic Substances Control Act (TSCA) Section 5(a)(2) Final Significant New Use Rules (SNURs) (40 CFR 721, Subpt E)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050), as amended

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

None present or none present in regulated quantities.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Combustible dust

US. EPCRA (SARA Title III) Section 304 Extremely Hazardous Substances Reporting Quantities and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substances

None present or none present in regulated quantities.

US. EPCRA (SARA Title III Section 313 Toxic Chemical Release Inventory (TRI) Reporting

None present or none present in regulated quantities.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

No ingredient requiring a warning under CA Prop 65.

Inventory Status:

Canada DSL Inventory List:	Not in compliance with the inventory.	
US TSCA Inventory:	Not in compliance with the inventory.	

16. Other information, including date of preparation or last revision

HMIS Hazard ID

Health	1
Flammability	2
Physical Hazards	0
PERSONAL PROTECTION	

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible; *Chronic health effect

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Version #: 1.0

Further Information: No data available.

Revision Information

Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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