

**SAFETY DATA SHEET****Biolys®**

Material no.	99064788	Version	3.17 / US
Specification	140080	Revision date	02/27/2018
Order Number	06339291	Print Date	03/13/2018
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**1. Identification****1.1. Product identifier**

Trade name	Biolys®
Chemical Name	L-Lysine sulphate and its by-products from fermentation

**1.2. Recommended use of the chemical and restrictions on use**

Relevant applications identified	Feed additive
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**1.3. Details of the supplier of the safety data sheet**

Company	Evonik Corporation USA 299 Jefferson Road Parsippany, NJ 07054-0677 USA
Telephone	973-929-8000
Telefax	973-929-8040
Email address	Product-Regulatory-Services@Evonik.com

**1.4. 24 HOUR EMERGENCY TELEPHONE NUMBERS:**

<b>CHEMTREC - US &amp; CANADA:</b>	800-424-9300
<b>CHEMTREC MEXICO:</b>	01-800-681-9531
<b>CHEMTREC INTERNATIONAL:</b>	+1 703-527-3887 (collect calls accepted)
Product Regulatory Services	: 973-929-8060

**2. Hazards identification****2.1. Classification of the substance or mixture**

Classification according to Regulation 29CFR 1910.1200

Remarks	Not a hazardous substance or mixture.
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**2.2. Label elements**

Statutory basis	Classification according to Regulation 29CFR 1910.1200
Remarks	Not a hazardous substance or mixture.

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 100 %

**2.3. Other hazards**

Dusts might form explosive mixtures with air.

Inhalation	No hazard expected in normal use.
Skin	No hazard expected in normal use.
Eyes	No hazard expected in normal use.
Ingestion	No hazard expected in normal use.

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**3. Composition/information on ingredients****3.1. Substances**

• **L-Lysine, sulfate** >= 67%

CAS-No: 60343-69-3

Remarks Not a hazardous substance or mixture.

• **By-products from fermentation** >= 28%

Remarks Not a hazardous substance or mixture.

**Other information**

This material is classified as not hazardous under OSHA regulations.  
This product is intended for FDA regulated uses only.

**3.2. Mixtures**

**not applicable**

No hazardous ingredients

**4. First aid measures****4.1. Description of first aid measures****General advice**

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 victims unattended.

If the casualty is unconscious: Place the victim in the recovery position.

**Inhalation**

Inhalation is possible if aerosols, mists, dusts, or smoke form.

Move victims into fresh air.

With labored breathing: Provide with oxygen. Consult a doctor.

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.

If symptoms persist, consult a physician for treatment.

**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.

Obtain medical attention.

**4.2. Most important symptoms and effects, both acute and delayed****Symptoms**

None known

**Hazards**

Other dangerous properties can not be excluded.

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**4.3. Indication of any immediate medical attention and special treatment needed**

This substance does not have any noteworthy noxious potential. Damage to health is thus not expected.

**5. Fire-fighting measures****5.1. Extinguishing media**

Suitable extinguishing media: water, mist  
Unsuitable extinguishing media: quenching powder, Carbon dioxide (CO<sub>2</sub>)

**5.2. 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 the event of fire and/or explosion do not breathe fumes.

**5.3. Advice for firefighters**

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.  
In the event of fire, wear self-contained breathing apparatus.

**6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Wear personal protective equipment. Keep unauthorized persons away.

**6.2. Environmental precautions**

Obey relevant local, provincial and federal laws and regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

**6.3. Methods and material for containment and cleaning up**

Use mechanical handling equipment.

**Additional advice**

Avoid dust formation.

**7. Handling and storage****7.1. Precautions for safe handling**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities****Advice on protection against fire and explosion**

Keep away from sources of ignition - No smoking.  
Avoid dust formation.

VDI 2263 "Dust fires and dust explosions; dangers, evaluation, preventive measures."

**Storage**

Store in a cool and shaded area.  
Keep containers dry and tightly closed to avoid moisture absorption and contamination.

**German storage class**

11 - Combustible Solids

**Dust explosion class**

St1

Method: DIN EN 14034-2

Maximum rate of pressure rise: 403 bar/s

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Standardized max. rate of pressure increase, KSt: 109bar·m/s

**8. Exposure controls/personal protection**

**8.1. Control parameters**

<b>• exposure limit for dust</b>		
CAS-No.		
Control parameters	3 mg/m3	Time Weighted Average (TWA):(ACGIH)
type of exposure	Respirable fraction. Suitable measuring processes are: NIOSH method 0500 NIOSH method 0600	
Control parameters	10 mg/m3	Time Weighted Average (TWA):(ACGIH)
type of exposure	Inhalable particulate.	
Control parameters	15 mg/m3	Time Weighted Average (TWA) Permissible Exposure Limit (PEL)(OSHA Z1)
type of exposure	Total dust.	
Control parameters	5 mg/m3	Time Weighted Average (TWA) Permissible Exposure Limit (PEL)(OSHA Z1)
type of exposure	Respirable fraction. Suitable measuring processes are: NIOSH method 0500 NIOSH method 0600	

**Other information**

none known.

Contains no substances with occupational exposure limit values.

**DNEL/DMEL values**

Remarks No substance-related safety assessment is necessary / has been conducted for this product.

**PNEC values**

Remarks No substance-related safety assessment is necessary / has been conducted for this product.

**8.2. Exposure controls**

**Engineering measures**

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

**Personal protective equipment**

**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.

**Hand protection**

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

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**Eye protection**

Safety glasses

**Skin and body protection**

A safety shower and eye wash fountain should be readily available.

To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

**Hygiene measures**

Wash face and/or hands before break and end of work.

Cleanse and apply cream to skin after work.

**Protective measures**

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.

**9. Physical and chemical properties****9.1. Information on basic physical and chemical properties**

physical state	solid
Colour	light brown
Form	solid
Odour	characteristic
Odour Threshold	not determined
pH	not determined
Melting point/range	not determined
Boiling point/range	not applicable
Flash point	not applicable solid
Evaporation rate	no data available
Flammability (solid, gas)	not flammable Method: UN method N.1
Lower explosion limit	dust: 60 g/m <sup>3</sup> ( 11 µm ) Method: DIN EN 14034
Upper explosion limit	not to be determined
Vapour pressure	no data available
Relative vapour density	no data available
Relative density	no data available
Water solubility	> 363 g/l (23 °C) partly soluble comparable product
Partition coefficient: n-	log Pow: -3.05

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octanol/water tested substance:  
 L-Lysine

~~Autoignition temperature 450 °C~~  
 Method: VDI Guideline 2263 sheet 1  
 (BAM-furnace)  
~~grain size~~  
 < 63µm

Thermal decomposition no data available

Viscosity, dynamic not applicable  
 solid

## 9.2. Other information

Explosiveness not to be expected, given the composition employed  
 Dusts might form explosive mixtures with air.

Bulk density 620 - 670 kg/m<sup>3</sup>

glow temperature > 400 °C  
 Method: VDI 2263

Minimum ignition energy > 300 mJ (20 °C)  
 Classification: Normal combustability  
 Method: VDI Guideline 2263 sheet 1  
 mean grain size: 11 µm  
 sieve fraction  
 with inductance

> 44 mJ (50 °C)  
 Classification: Normal combustability  
 mean grain size: 11 µm  
 calculated

maximum absolute explosive pressure 8.6 bar  
 grain size  
 < 63µm

8.6 bar  
 mean grain size  
 8,9µm

Metal corrosion no data available

speed of hydrolysis half-life period: 1 years (25 °C) (pH 7)  
 Method: 92/69/EEC, C.7

Burning number BZ 2 - briefly ignites and rapidly extinguishes.  
 Method: Combustibility test in accordance with VDI 2263

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**10. Stability and reactivity****10.1. Reactivity**

No further information available

**10.2. Chemical stability**

Stable under recommended storage conditions.

**10.3. Possibility of hazardous reactions**

Possibility of hazardous reactions      Dust can form an explosive mixture in air.

**10.4. Conditions to avoid**See chapter  
7.2. Conditions for safe storage, including any incompatibilities**10.5. Incompatible materials****10.6. Hazardous decomposition products**

No hazardous decomposition products known.

**11. Toxicological information****11.1. Information on toxicological effects**

Acute oral toxicity	LD50 Rat: > 5110 mg/kg Method: OECD Test Guideline 401 Test substance: comparable product
Acute inhalation toxicity	NOAEL Rat: 5.3 mg/l / 4 h Method: OECD Test Guideline 403 Test substance: comparable product
Acute dermal toxicity	Assessment: no data available
Skin irritation	Rabbit No skin irritation Method: OECD Test Guideline 404 Test substance: comparable product
Eye irritation	Rabbit No eye irritation Method: OECD Test Guideline 405 Test substance: comparable product
Sensitization	Buehler Test Guinea pig: Does not cause skin sensitisation. Method: OECD Test Guideline 406
Repeated dose toxicity	Oral Rat(male/female) / 28-day NOAEL: 1869 mg/kg Method: OECD Test Guideline 407 Test substance: comparable product
Assessment of STOT single	no data available

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exposure  
 Assessment of STOT repeat exposure  
 Assessment: The classification criteria are not met based on the available data.

Risk of aspiration toxicity no data available

~~Genotoxicity in vitro~~  
~~Ames test Salmonella typhimurium~~  
 negative  
 Method: OECD Test Guideline 471

chromosomal aberration human lymphocytes  
 negative  
 Metabolic activation: S-9 rat liver mix  
 Method: OECD Test Guideline 473

Carcinogenicity Not to be expected due to the "in vitro" test result.

carcinogenicity assessment Contains no carcinogenic substances as defined by NTP, IARC and/or OSHA.

Toxicity to reproduction  
 Rat: in maternally non-toxic doses  
 NOEL (No Observed Effect Level) of parents: 1912 mg/kg  
 Method: OECD Test Guideline 415  
 Test substance: comparable product  
 No evidence of effects of reproductive / developmental toxicity.

## Toxicological information on components

L-Lysine, sulfate  
60343-69-3

Acute oral toxicity  
 LD50 Rat: > 5110 mg/kg  
 Method: OECD Test Guideline 401  
 Test substance: comparable product

Acute inhalation toxicity  
 NOAEL Rat: 5.3 mg/l / 4 h  
 Method: OECD Test Guideline 403  
 Test substance: comparable product

Acute dermal toxicity  
 Assessment: no data available

Skin irritation  
 Rabbit  
 No skin irritation  
 Method: OECD Test Guideline 404  
 Test substance: comparable product

Eye irritation  
 Rabbit  
 No eye irritation  
 Method: OECD Test Guideline 405  
 Test substance: comparable product

Sensitization  
 Buehler Test Guinea pig: Does not cause skin sensitisation.



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Method: OECD Test Guideline 406  
Test substance: comparable product

**Repeated dose toxicity**

**Oral Rat(male/female) / 28 day**  
NOEL: 1869 mg/kg  
Method: OECD Test Guideline 407  
Test substance: comparable product

**Gentoxicity in vitro**

**Ames test Salmonella typhimurium**  
negative  
Method: OECD TG 471  
Test substance: dry matter

**chromosomal aberration human lymphocytes**  
negative  
Metabolic activation: S-9 rat liver mix  
Method: OECD TG 473  
Test substance: dry matter

**Toxicity to reproduction**

**Rat: in maternally non-toxic doses**  
NOEL (No Observed Effect Level) of parents: 1912 mg/kg  
Method: OECD Test Guideline 415  
Test substance: comparable product  
No evidence of effects of reproductive / developmental toxicity.

**By-products from fermentation**

Further information: no evidence for hazardous properties

**12. Ecological information****12.1. Toxicity**

no data available

**Toxicity to fish**

LC50 semi-static test *Cyprinus carpio*: > 200 mg/l / 96 h  
Method: OECD TG 203

LC0 semi-static test *Cyprinus carpio*: > 200 mg/l / 96 h  
Method: OECD TG 203

**Toxicity in aquatic invertebrates**

NOEC *Daphnia magna*: 340 mg/l / 48 h  
Test substance: comparable product  
Method: OECD Test Guideline 202

EC50 *Daphnia magna*: > 1000 mg/l / 48 h  
Test substance: comparable product  
Method: OECD Test Guideline 202

**Toxicity to algae**

EC50 static test *Desmodesmus subspicatus*: > 2000 mg/l / 72 h

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End point: growth rate  
Method: OECD Test Guideline 201

~~EC50 static test *Desmodesmus subspicatus*: 450 mg/l / 72 h~~  
End point: Biomass  
Method: OECD Test Guideline 201

**12.2. Persistence and degradability**

Biodegradability Result: rapidly biodegradable  
Test substance: comparable product  
Method: OECD Test Guideline 301A

**12.3. Bioaccumulative potential**

Bioaccumulation no data available

**12.4. Mobility in soil**

Mobility no data available

**12.5. Other adverse effects**

Further Information No further information available  
no data available

**13. Disposal considerations****13.1. Waste treatment methods****Product**

Waste must be disposed of in accordance with federal, state, provincial and local regulations.

**Uncleaned packaging**

Packaging material should be recycled or disposed of in accordance with federal, state and local regulations.

**14. Transport information**

**Not dangerous according to transport regulations.**

14.1. UN number:

14.2. UN proper shipping name:

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- 14.3. Transport hazard class(es): --
- 14.4. Packing group: --
- 14.5. Environmental hazards (Marine pollutant): --
- 14.6. Special precautions for user: Yes  
Not dangerous according to transport regulations.

**15. Regulatory information****US Federal Regulations****OSHA**

If listed below, chemical specific standards apply to the product or components:

- None listed

**Clean Air Act Section (112)**

If listed below, components present at or above the de minimus level are hazardous air pollutants:

- None listed

**CERCLA Reportable Quantities**

If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

- None listed

**SARA Title III Section 311/312 Hazard Categories**

The product meets the criteria only for the listed hazard classes:

- No SARA Hazards

**SARA Title III Section 313 Reportable Substances**

If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

- None listed

**Toxic Substances Control Act (TSCA)**

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

- None listed

**Other US Federal Regulatory Information**

Observe national regulations.

**State Regulations****California Proposition 65**

US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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An employer using HMIS/NFPA labeling must through training ensure that its employees are fully aware of the hazards of the chemicals used.

**HMIS Ratings**

Health :	0
Flammability :	1
Physical Hazard :	0

**16. Other information****Further information**

Revision date 02/27/2018

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

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**Legend**

<b>ACC</b>	American Chemistry Council
<b>ACGIH</b>	American Conference of Governmental Industrial Hygienists
<b>ACS</b>	Advisory Committee on Sustainability
<b>ADI</b>	Acceptable Daily Intake
<b>ASTM</b>	American Society for Testing and Materials
<b>ATP</b>	Adaptation to Technical Progress
<b>BCF</b>	Bioconcentration factor
<b>BOD</b>	Biochemical oxygen demand
<b>c.c.</b>	closed cup
<b>CAO</b>	Cargo Aircraft Only
<b>Carc</b>	Carcinogen
<b>CAS</b>	Chemical Abstract Services
<b>CDN</b>	Canada
<b>CEPA</b>	Canadian Environmental Protection Act
<b>CERCLA</b>	Comprehensive Environmental Response – Compensation and Liability Act
<b>CFR</b>	Code of Federal Regulations
<b>CMR</b>	carcinogenic-mutagenic-toxic for reproduction
<b>COD</b>	Chemical oxygen demand
<b>DIN</b>	German Institute for Standardization
<b>DMEL</b>	Derived minimum effect level
<b>DNEL</b>	Derived no effect level
<b>DOT</b>	Department of Transportation
<b>EC50</b>	half maximal effective concentration
<b>EPA</b>	Environmental Protection Agency
<b>ErC50</b>	Reduction of Growth Rate
<b>ERG</b>	Emergency Response Guide Book
<b>FDA</b>	Food and Drug Administration
<b>GHS</b>	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

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GLP	Good Laboratory Practice
GMO	Genetic Modified Organism
HCS	Hazard Communication Standard
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO-TI	International Civil Aviation Organization- Technical Instructions
ICCA	International Council of Chemical Association
ID	Identification number
IMDG	International Maritime Dangerous Goods
IUPAC	International Union of Pure and Applied Chemistry
ISO	International Organization For Standardization
LC50	50 % Lethal Concentration
LD50	50 % Lethal Dose
L(E)C50	LC50 or EC50
LOAEL	Lowest observed adverse effect level
LOEL	Lowest observed effect level
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NOAEL	No observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
o. c.	open cup
OECD	Organisation for Economic Cooperation and Development
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PBT	Persistent, bioaccumulative, toxic
PEC	Predicted effect concentration
PNEC	Predicted no effect concentration
RQ	Reportable Quantity
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
UN	United Nations
vPvB	very persistent, very bioaccumulative
voc	volatile organic compounds
WHMIS	Workplace Hazardous Materials Information System
WHO	World Health Organization

