

**PRODUCT TECHNICAL DOSSIER**

**L-LYSINE HYDROCHLORIDE**

**Product Code:**

P1210

**Raw Material Full Name:**

L-Lysine HCl

**Raw Material Full Botanical/Chemical/Latin/Trade Name/Synonyms:**

(S)-2, 6-Diaminohexanoic acid monohydrochloride

**This material is Food Grade:**

✓

**Vegan / Vegetarian Status:**

✓

**Limit/Range/Specification:**

98.5% - 101.5%

**CAS Number:**

657-27-2

**EC/EINECS Number:**

211-519-9

**Molecular Formula for the raw material:**

$C_6H_{15}ClN_2O_2$

**Average Molecular weight:**

182.65

**Solubility in Water:**

Very Soluble in Water

**Solubility in Alcohol:**

Slightly Soluble in Alcohol

**Particle Size:**

12 Mesh

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**Percentage passed through:**

100%

**pH:**

5.0 – 6.0

**Loss on Drying:**

Max 0.4%

**Residue on Ignition:**

Max 0.1%

**Specific Rotation:**

+20.4° - +21.4°

**Country of Origin:**

China

**Country of Origin of the Manufacture:**

China

**Base Source/Start Material:**

Glucose (Corn)

**Origin of Product – Synthetic, Plant, Mineral, Animal, Fish or Fermented:**

Fermented

**Material is:**

L-Lysine HCL 98.5~101.5%

L-Lysine 78.84-81.24%

**Compound Ingredients Origin, Function and Percentages:**

None

**Shelf Life from Date of Manufacture:**

Min 2 Years

**Storage Conditions:**

Preserve in a well-closed container.

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**Appearance (Fine/Crystals/Crystalline/Hygroscopic):**

Crystalline Powder

**Colour:**

White to Off White

**Flavour/Taste:**

Characteristic

**Odour:**

Characteristic

**Do any of the parameters change in different seasons?**

No

**Microbiological Test**

**Total Viable Count:**

Max 1,000cfu/g

**Yeast & Moulds:**

Max 100cfu/g

**E. Coli:**

Negative/g

**Salmonella:**

Not detected in 25g

**Heavy Metals**

**Heavy Metals**

Max 0.0015%

**Iron (Fe):**

Max 0.003%

**Sulphate (SO<sub>4</sub>):**

Max 0.03%

**Chloride:**

19.0~19.6

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**Lead (Pb):**

Max 3 ppm

**Cadmium (Cd):**

Max 1ppm

**Mercury (Hg):**

Max 0.1ppm

**Arsenic (As):**

Max 1 ppm

**Pharmacopeia Standard Used:**

CP/USP

Please note that surveillance testing may mean that not all the parameters stated on this specification are tested for every batch.

The allergen information is supplied by the manufacturer, we have not tested for each individual allergen to ensure they are not present. The information given is based on a documented risk assessment and is accurate to the best of our knowledge. If you intend to make a voluntary “free from” claim on your pack, additional testing may need to be carried out. For technical and labelling guidance you should always speak to the competent authority for the market or member state in which the final products are placed.

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ALLERGENS	Product Contains YES/NO	Listed Item on Site at Manufacturer YES/NO	If YES, Please Comment
Peanuts and Peanut Derivatives (including possible cross contamination)	NO	NO	
other Nut and Nut Derivatives <i>Almond (Amygdalus communis L.), Hazelnut (Corylus avellana), Walnut (Juglans regia), Cashew (Anacardium occidentale), Pecan nut (Carya illinoiesis (Wangenh.) K. Koch), Brazil nut (Bertholletia excelsa), Pistachio nut (Pistacia vera), Macadamia nut and Queensland nut (Macadamia ternifolia)</i>	NO	NO	
Sesame Seeds and Sesame Seed Derivatives	NO	NO	
other Seeds and Seed Derivatives (Poppy Seeds, Cotton Seeds, Sunflower Seeds)	NO	NO	
Milk and Milk Derivatives (including lactose)	NO	NO	
Egg and Egg Derivatives	NO	NO	
Cereals and Derivatives containing OR POTENTIALLY CONTAMINATED WITH Gluten <i>(wheat, wheatgrass, faro, freekeh, spelt, kamut, rye, oats, barley, barley grass)</i>	NO	NO	
Soya and Soya Derivatives	NO	NO	
Lupin and Lupin Derivatives	NO	NO	
Mustard and Mustard Derivatives	NO	NO	
Celery or Celery Derivatives (including Celeriac)	NO	NO	
Fish and Fish Derivatives	NO	NO	
Molluscs and their Derivatives	NO	NO	
Crustaceans and their Derivatives	NO	NO	
Sulphur Dioxide and Sulphites (E220, E228) at levels > 10mg/kg or 10mg/litre	NO	NO	

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ADDITIVES / CONTAMINANTS / DIETARY REQUIREMENTS	Product Contains YES/NO	Listed Item on Site at Manufacturer YES/NO	If YES, Please Comment
Additives	NO	NO	
Antioxidants	NO	NO	
Ethylene Oxide	NO	NO	
Gelatine	NO	NO	
Flavourings (Artificial / Nature Identical / Natural / Smoked)	NO	NO	
Maize / Corn and any Derivatives	YES	YES	Starting Material is Glucose (Corn)
Legumes / Pulses	NO	NO	
Rice and Rice Derivatives	NO	NO	
Added Salt	NO	NO	
Added Sugar / artificial or natural sweeteners	NO	NO	
Aspartame	NO	NO	
BHA / BHT (E320 / E321)	NO	NO	
Caffeine	NO	NO	
Colours (Artificial / Nature Identical / Natural / Smoked)	NO	NO	
Dextrose	NO	NO	
Dioxins	NO	NO	
MSG (Added and Naturally Occurring E621) or Glutamates (E620 to E625)	NO	NO	
Nucleotides (E627, E630, E631, E635)	NO	NO	
Polyols (sugar alcohols)	NO	NO	
Benzoates (E210 / E219)	NO	NO	
Sorbic Acid (E200, E203)	NO	NO	
any other Preservatives	NO	NO	
Ethanol	NO	NO	
Honey	NO	NO	
Lactose	NO	NO	
Yeast and Yeast Derivatives	NO	NO	
All Animal Products (Beef, Pork, Poultry or other) and Derivatives (which may include growth/yield hormones, antibiotics etc.)	NO	NO	
Bovine Products or Derivatives (which may include growth/yield hormones, antibiotics etc.)	NO	NO	

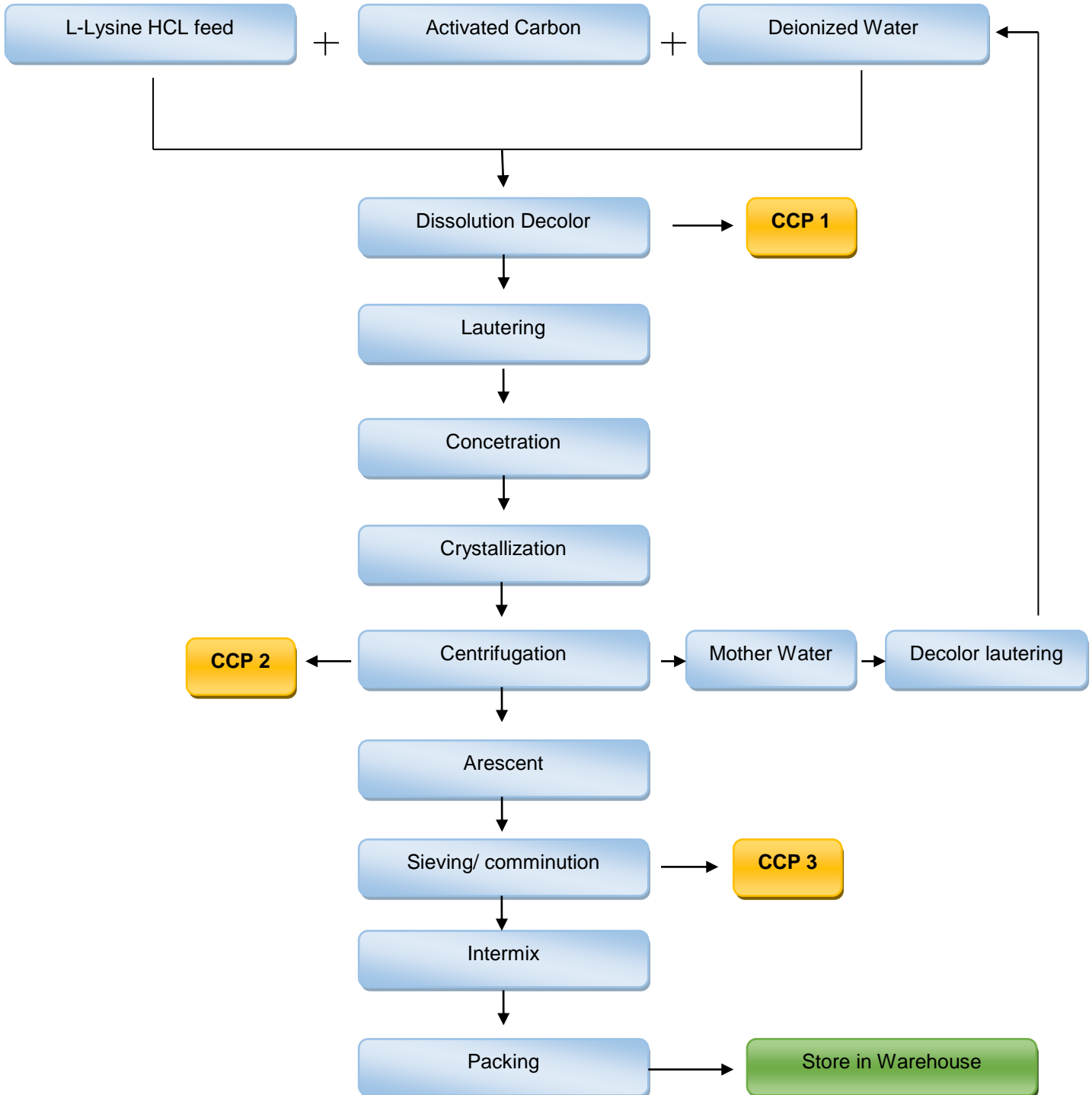
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**PRODUCTION FLOW CHART**



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### **CONFIRMATION OF BSE/TSE STATUS**

This is to certify that this product complies with all relevant current UK and EU Legislative requirements in regard to Transmissible Spongiform Encephalopathies (TSE) and Bovine Spongiform Encephalopathy (BSE) for human food, and so is free of TSE/BSE.

This is also to certify that, during the course of their manufacture, the above-mentioned product did not come into contact with any materials, which could be derived from TSE/BSE risk materials.

### **CONFIRMATION OF GM STATUS**

This is to certify that this product is not manufactured from GM raw materials and is therefore not subject to labelling under regulations 1829/2003/EC and 1830/2003/EC.

### **CONFIRMATION OF NON-IRRADIATION STATUS**

This is to certify that this product, whole or in part, has not been subjected to Ionising Radiation as per European Directives 1999/3/EC.

### **CONFIRMATION OF NANDROLONE STATUS**

This is to certify that this product, whole or in part, has not come into contact with Nandrolone or any of its precursors in any way.

### **CONFIRMATION OF IOC PRODUCT STATUS**

This is to certify that this product, whole or in part, has not come into contact with any product/s, which is banned by the IOC (International Olympics Committee) and or WADA.

### **CONFIRMATION OF ANIMAL TESTING STATUS**

This is to certify that all the products sold by Cambridge Commodities have not been tested on animals in any part of its manufacture in accordance with regulation 86/609/EEC.

### **CONFIRMATION OF PESTICIDES STATUS**

This is to certify that the above-mentioned product complies with the regulation (EC) No.396/2005 of 23rd February 2005 and commission Regulation (EU) No. 559/2011 of 7th June 2011 amending annexes II and III of the above Regulation.

### **CONFIRMATION OF NANOPARTICLE STATUS**

This is to certify that unless otherwise stated, the above-mentioned product is free of nanoparticles. Commission Recommendation 2011/696/EU, defines as follows: "'Nanomaterial' means a natural, incidental or manufactured material containing particles, in an unbound state or as an aggregate or as an agglomerate and where, for 50 % or more of the particles in the number size distribution, one or more external dimensions is in the size range 1 nm - 100 nm".

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## L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)

Cambridge Commodities

Chemwatch Hazard Alert Code: 0

Version No: 1.1

Issue Date: **05/07/2018**

Safety Data Sheet (Conforms to Regulation (EU) No 2015/830)

Print Date: **05/07/2018**

S.REACH.GBR.EN

### SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

#### 1.1. Product Identifier

Product name	L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)
Chemical Name	L-lysine monohydrochloride
Synonyms	Not Available
Chemical formula	C6H14N2O2.ClH
Other means of identification	P1210
CAS number	657-27-2*
EC number	211-519-9
REACH registration number	01-2119559192-38-XXXX

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Use according to manufacturer's directions.
Uses advised against	Not Applicable

#### 1.3. Details of the supplier of the safety data sheet

Registered company name	Cambridge Commodities
Address	Lancaster Way Business Park, Ely, Cambridgeshire Cambridgeshire CB6 3NX United Kingdom
Telephone	+44 1353 667258
Fax	Not Available
Website	Not Available
Email	MsdS@c-c-l.com

#### 1.4. Emergency telephone number

Association / Organisation	Not Available
Emergency telephone numbers	Not Available
Other emergency telephone numbers	Not Available

### SECTION 2 HAZARDS IDENTIFICATION

#### 2.1. Classification of the substance or mixture

Classification according to regulation (EC) No 1272/2008 [CLP] <sup>[1]</sup>	Not Applicable
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#### 2.2. Label elements

Hazard pictogram(s)	Not Applicable
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SIGNAL WORD **NOT APPLICABLE**

## L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)

**Hazard statement(s)**

Not Applicable

**Supplementary statement(s)**

Not Applicable

**Precautionary statement(s) Prevention**

Not Applicable

**Precautionary statement(s) Response**

Not Applicable

**Precautionary statement(s) Storage**

Not Applicable

**Precautionary statement(s) Disposal**

Not Applicable

**2.3. Other hazards**

REACH - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

**SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS****3.1. Substances**

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classification according to regulation (EC) No 1272/2008 [CLP]
1.657-27-2 2.211-519-9 3.Not Available 4.01-2119559192-38-XXXX	100	<u>L-lysine monohydrochloride</u>	Not Applicable

**Legend:** 1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 3. Classification drawn from C&L; \* EU IOELVs available**3.2. Mixtures**

See 'Information on ingredients' in section 3.1

**SECTION 4 FIRST AID MEASURES****4.1. Description of first aid measures**

<b>Eye Contact</b>	▶ Generally not applicable.
<b>Skin Contact</b>	▶ Generally not applicable.
<b>Inhalation</b>	▶ If dust is inhaled, remove from contaminated area. ▶ Encourage patient to blow nose to ensure clear passage of breathing. ▶ If irritation or discomfort persists seek medical attention. ▶ Generally not applicable.
<b>Ingestion</b>	▶ Generally not applicable.

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

See Section 11

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

Treat symptomatically.

**SECTION 5 FIREFIGHTING MEASURES****5.1. Extinguishing media**

- ▶ Foam.
- ▶ Dry chemical powder.
- ▶ BCF (where regulations permit).
- ▶ Carbon dioxide.
- ▶ Water spray or fog - Large fires only.

**5.2. Special hazards arising from the substrate or mixture**

<b>Fire Incompatibility</b>	▶ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result
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**5.3. Advice for firefighters**

<b>Fire Fighting</b>	▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear breathing apparatus plus protective gloves. ▶ Prevent, by any means available, spillage from entering drains or water courses. ▶ Use water delivered as a fine spray to control fire and cool adjacent area. ▶ <b>DO NOT</b> approach containers suspected to be hot.
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## L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)

	<ul style="list-style-type: none"> <li>▶ Cool fire exposed containers with water spray from a protected location.</li> <li>▶ If safe to do so, remove containers from path of fire.</li> <li>▶ Equipment should be thoroughly decontaminated after use.</li> </ul> <p>Slight hazard when exposed to heat, flame and oxidisers.</p>
<b>Fire/Explosion Hazard</b>	<p>Combustible. Will burn if ignited.            Combustion products include:            carbon monoxide (CO)            carbon dioxide (CO<sub>2</sub>)            hydrogen chloride            phosgene            nitrogen oxides (NO<sub>x</sub>)            other pyrolysis products typical of burning organic material.            Articles and manufactured articles may constitute a fire hazard where polymers form their outer layers or where combustible packaging remains in place.            Certain substances, found throughout their construction, may degrade or become volatile when heated to high temperatures. This may create a secondary hazard.</p>

### SECTION 6 ACCIDENTAL RELEASE MEASURES

#### 6.1. Personal precautions, protective equipment and emergency procedures

See section 8

#### 6.2. Environmental precautions

See section 12

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

<b>Minor Spills</b>	<ul style="list-style-type: none"> <li>▶ Clean up all spills immediately.</li> <li>▶ Secure load if safe to do so.</li> <li>▶ Bundle/collect recoverable product.</li> <li>▶ Collect remaining material in containers with covers for disposal.</li> </ul>
<b>Major Spills</b>	<ul style="list-style-type: none"> <li>▶ Minor hazard.</li> <li>▶ Clear area of personnel.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear physical protective gloves e.g. Leather.</li> <li>▶ Contain spill/secure load if safe to do so.</li> <li>▶ Bundle/collect recoverable product and label for recycling.</li> <li>▶ Collect remaining product and place in appropriate containers for disposal.</li> <li>▶ Clean up/sweep up area.</li> <li>▶ Water may be required.</li> </ul>

#### 6.4. Reference to other sections

Personal Protective Equipment advice is contained in Section 8 of the SDS.

### SECTION 7 HANDLING AND STORAGE

#### 7.1. Precautions for safe handling

<b>Safe handling</b>	<ul style="list-style-type: none"> <li>▶ Limit all unnecessary personal contact.</li> <li>▶ Wear protective clothing when risk of exposure occurs.</li> <li>▶ Use in a well-ventilated area.</li> <li>▶ Avoid contact with incompatible materials.</li> <li>▶ When handling, <b>DO NOT eat, drink or smoke.</b></li> <li>▶ Keep containers securely sealed when not in use.</li> <li>▶ Avoid physical damage to containers.</li> <li>▶ Always wash hands with soap and water after handling.</li> <li>▶ Work clothes should be laundered separately.</li> <li>▶ Use good occupational work practice.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>▶ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.</li> </ul>
<b>Fire and explosion protection</b>	See section 5
<b>Other information</b>	<ul style="list-style-type: none"> <li>▶ Store away from incompatible materials.</li> </ul>

#### 7.2. Conditions for safe storage, including any incompatibilities

<b>Suitable container</b>	<p>Generally packaging as originally supplied with the article or manufactured item is sufficient to protect against physical hazards.            If repackaging is required ensure the article is intact and does not show signs of wear. As far as is practicably possible, reuse the original packaging or something providing a similar level of protection to both the article and the handler.</p> <ul style="list-style-type: none"> <li>▶ Glass container is suitable for laboratory quantities</li> </ul>
<b>Storage incompatibility</b>	<p>Avoid contamination of water, foodstuffs, feed or seed.</p> <ul style="list-style-type: none"> <li>▶ Avoid reaction with oxidising agents</li> </ul>

#### 7.3. Specific end use(s)

See section 1.2

### SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

#### 8.1. Control parameters

## L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)

## DERIVED NO EFFECT LEVEL (DNEL)

EXPOSURE PATTERN	WORKERS	GENERAL POPULATION
Long term - dermal, systemic effects	381 mg/kg bw/day	229 mg/kg bw/day
Long term - inhalation, systemic effects	67.1 mg/m <sup>3</sup>	19.9 mg/m <sup>3</sup>
Long term - oral, systemic effects	Not Available	22.9 mg/kg bw/day
Long term - dermal, local effects	Not Available	Not Available
Long term - inhalation, local effects	Not Available	Not Available
Short term - dermal, systemic effects	Not Available	Not Available
Short term - inhalation, systemic effects	Not Available	Not Available
Short term - oral, systemic effects	Not Available	Not Available
Short term - dermal, local effects	Not Available	Not Available
Short term - inhalation, local effects	Not Available	Not Available

## PREDICTED NO EFFECT LEVEL (PNEC)

COMPARTMENT	VALUE
Fresh Water	Not Available
Marine Water	Not Available
Aqua	Not Available
Fresh water sediment	Not Available
Marine water sediment	Not Available
Soil	Not Available
STP	10 mg/L
ORAL	Not Available

## OCCUPATIONAL EXPOSURE LIMITS (OEL)

## INGREDIENT DATA


Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available

## EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)	Not Available	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
L-lysine monohydrochloride	Not Available	Not Available

## 8.2. Exposure controls

8.2.1. Appropriate engineering controls	Articles or manufactured items, in their original condition, generally don't require engineering controls during handling or in normal use. Exceptions may arise following extensive use and subsequent wear, during recycling or disposal operations where substances, found in the article, may be released to the environment.
8.2.2. Personal protection	
Eye and face protection	<ul style="list-style-type: none"> <li>▶ Safety glasses.</li> <li>▶ Safety glasses with side shields.</li> <li>▶ Chemical goggles.</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]</li> </ul> <p>No special equipment for minor exposure i.e. when handling small quantities.</p> <p>OTHERWISE:</p> <ul style="list-style-type: none"> <li>▶ Safety glasses with side shields.</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens</li> </ul>

## L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)

	<ul style="list-style-type: none"> <li>▶ should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]</li> <li>▶ Safety glasses with side shields</li> <li>▶ Chemical goggles.</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent]</li> </ul>
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	Wear general protective gloves, eg. light weight rubber gloves.
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	<p>No special equipment needed when handling small quantities.</p> <p><b>OTHERWISE:</b></p> <ul style="list-style-type: none"> <li>▶ Overalls.</li> <li>▶ Barrier cream.</li> <li>▶ Eyewash unit.</li> </ul>

**Respiratory protection**

Not Applicable

Respiratory protection not normally required due to the physical form of the product.

**8.2.3. Environmental exposure controls**

See section 12

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES****9.1. Information on basic physical and chemical properties**

<b>Appearance</b>	Not Available		
<b>Physical state</b>	article	<b>Relative density (Water = 1)</b>	Not Available
<b>Odour</b>	Not Available	<b>Partition coefficient n-octanol / water</b>	Not Available
<b>Odour threshold</b>	Not Available	<b>Auto-ignition temperature (°C)</b>	Not Available
<b>pH (as supplied)</b>	Not Available	<b>Decomposition temperature</b>	Not Available
<b>Melting point / freezing point (°C)</b>	Not Available	<b>Viscosity (cSt)</b>	Not Available
<b>Initial boiling point and boiling range (°C)</b>	Not Available	<b>Molecular weight (g/mol)</b>	Not Available
<b>Flash point (°C)</b>	Not Available	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Not Available	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Not Available	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	Not Available	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Available
<b>Lower Explosive Limit (%)</b>	Not Available	<b>Volatile Component (%vol)</b>	Not Available
<b>Vapour pressure (kPa)</b>	Not Available	<b>Gas group</b>	Not Available
<b>Solubility in water (g/L)</b>	Immiscible	<b>pH as a solution (1%)</b>	Not Available
<b>Vapour density (Air = 1)</b>	Not Available	<b>VOC g/L</b>	Not Available

**9.2. Other information**

Not Available

**SECTION 10 STABILITY AND REACTIVITY**

<b>10.1. Reactivity</b>	See section 7.2
<b>10.2. Chemical stability</b>	Product is considered stable and hazardous polymerisation will not occur.
<b>10.3. Possibility of hazardous reactions</b>	See section 7.2
<b>10.4. Conditions to avoid</b>	See section 7.2
<b>10.5. Incompatible materials</b>	See section 7.2
<b>10.6. Hazardous decomposition products</b>	See section 5.3

**SECTION 11 TOXICOLOGICAL INFORMATION****11.1. Information on toxicological effects**

<b>Inhaled</b>	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models).
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## L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)

	Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. Not normally a hazard due to non-volatile nature of product
<b>Ingestion</b>	The material has <b>NOT</b> been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.
<b>Skin Contact</b>	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
<b>Eye</b>	Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
<b>Chronic</b>	Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

<b>L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: >=8000<=16000> <sup>[1]</sup>	Not Available
<b>L-lysine monohydrochloride</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: >=8000<=16000> <sup>[1]</sup>	Not Available

**Legend:** 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. \* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

<b>Acute Toxicity</b>	✘	<b>Carcinogenicity</b>	⊖
<b>Skin Irritation/Corrosion</b>	⊖	<b>Reproductivity</b>	⊖
<b>Serious Eye Damage/Irritation</b>	⊖	<b>STOT - Single Exposure</b>	⊖
<b>Respiratory or Skin sensitisation</b>	⊖	<b>STOT - Repeated Exposure</b>	⊖
<b>Mutagenicity</b>	⊖	<b>Aspiration Hazard</b>	⊖

**Legend:** ✘ - Data available but does not fill the criteria for classification  
 ✔ - Data available to make classification  
 ⊖ - Data Not Available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

## 12.1. Toxicity

<b>L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)</b>	<b>ENDPOINT</b>	<b>TEST DURATION (HR)</b>	<b>SPECIES</b>	<b>VALUE</b>	<b>SOURCE</b>
	LC50	96	Fish	>103mg/L	2
	EC50	48	Crustacea	>106mg/L	2
<b>L-lysine monohydrochloride</b>	<b>ENDPOINT</b>	<b>TEST DURATION (HR)</b>	<b>SPECIES</b>	<b>VALUE</b>	<b>SOURCE</b>
	LC50	96	Fish	>103mg/L	2
	EC50	48	Crustacea	>106mg/L	2

**Legend:** Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

## 12.2. Persistence and degradability

<b>Ingredient</b>	<b>Persistence: Water/Soil</b>	<b>Persistence: Air</b>
L-lysine monohydrochloride	LOW	LOW

## 12.3. Bioaccumulative potential

<b>Ingredient</b>	<b>Bioaccumulation</b>
L-lysine monohydrochloride	LOW (LogKOW = -2.9881)

## 12.4. Mobility in soil

<b>Ingredient</b>	<b>Mobility</b>
L-lysine monohydrochloride	LOW (KOC = 12.96)

## 12.5. Results of PBT and vPvB assessment

	<b>P</b>	<b>B</b>	<b>T</b>
Relevant available data	Not Available	Not Available	Not Available
PBT Criteria fulfilled?	Not Available	Not Available	Not Available

## L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)

## 12.6. Other adverse effects

No data available

## SECTION 13 DISPOSAL CONSIDERATIONS

## 13.1. Waste treatment methods

Product / Packaging disposal	<ul style="list-style-type: none"> <li>· Recycle wherever possible or consult manufacturer for recycling options.</li> <li>· Consult State Land Waste Management Authority for disposal.</li> </ul> <p>▶ <b>DO NOT allow wash water from cleaning or process equipment to enter drains.</b></p> <p>▶ It may be necessary to collect all wash water for treatment before disposal.</p> <p>▶ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.</p> <p>▶ Where in doubt contact the responsible authority.</p> <p>▶ Recycle wherever possible or consult manufacturer for recycling options.</p> <p>▶ Consult State Land Waste Authority for disposal.</p> <p>▶ Bury or incinerate residue at an approved site.</p> <p>▶ Recycle containers if possible, or dispose of in an authorised landfill.</p>
	Waste treatment options
Sewage disposal options	Not Available

## SECTION 14 TRANSPORT INFORMATION

## Labels Required

Marine Pollutant	NO
HAZCHEM	Not Applicable

## Land transport (ADR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.1. UN number	Not Applicable
14.2. UN proper shipping name	Not Applicable
14.3. Transport hazard class(es)	Class : Not Applicable
	Subrisk : Not Applicable
14.4. Packing group	Not Applicable
14.5. Environmental hazard	Not Applicable
14.6. Special precautions for user	Hazard identification (Kemler) : Not Applicable
	Classification code : Not Applicable
	Hazard Label : Not Applicable
	Special provisions : Not Applicable
	Limited quantity : Not Applicable

## Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.1. UN number	Not Applicable
14.2. UN proper shipping name	Not Applicable
14.3. Transport hazard class(es)	ICAO/IATA Class : Not Applicable
	ICAO / IATA Subrisk : Not Applicable
	ERG Code : Not Applicable
14.4. Packing group	Not Applicable
14.5. Environmental hazard	Not Applicable
14.6. Special precautions for user	Special provisions : Not Applicable
	Cargo Only Packing Instructions : Not Applicable
	Cargo Only Maximum Qty / Pack : Not Applicable
	Passenger and Cargo Packing Instructions : Not Applicable
	Passenger and Cargo Maximum Qty / Pack : Not Applicable
	Passenger and Cargo Limited Quantity Packing Instructions : Not Applicable
	Passenger and Cargo Limited Maximum Qty / Pack : Not Applicable

## Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.1. UN number	Not Applicable
14.2. UN proper shipping name	Not Applicable

## L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)

14.3. Transport hazard class(es)	IMDG Class	Not Applicable
	IMDG Subrisk	Not Applicable
14.4. Packing group	Not Applicable	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	EMS Number	Not Applicable
	Special provisions	Not Applicable
	Limited Quantities	Not Applicable

## Inland waterways transport (ADN): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.1. UN number	Not Applicable	
14.2. UN proper shipping name	Not Applicable	
14.3. Transport hazard class(es)	Not Applicable	Not Applicable
14.4. Packing group	Not Applicable	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	Classification code	Not Applicable
	Special provisions	Not Applicable
	Limited quantity	Not Applicable
	Equipment required	Not Applicable
	Fire cones number	Not Applicable

## 14.7. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

## SECTION 15 REGULATORY INFORMATION

## 15.1. Safety, health and environmental regulations / legislation specific for the substance or mixture

## L-LYSINE MONOHYDROCHLORIDE(657-27-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

European Customs Inventory of Chemical Substances ECICS (English)

European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2015/830; Regulation (EC) No 1272/2008 as updated through ATPs.

## 15.2. Chemical safety assessment

For further information please look at the Chemical Safety Assessment and Exposure Scenarios prepared by your Supply Chain if available.

## ECHA SUMMARY

Ingredient	CAS number	Index No	ECHA Dossier
L-lysine monohydrochloride	657-27-2	Not Available	01-2119559192-38-XXXX

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Not Classified	Not Available	Not Available
2	Not Classified	Not Available	Not Available

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

## National Inventory Status

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (L-lysine monohydrochloride)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	Y
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	Y
<b>Legend:</b>	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)



**L-Lysine Monohydrochloride (78.84-81.24% L-Lysine)****SECTION 16 OTHER INFORMATION**

<b>Revision Date</b>	05/07/2018
<b>Initial Date</b>	05/07/2018

**Full text Risk and Hazard codes****Other information**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

EN 166 Personal eye-protection

EN 340 Protective clothing

EN 374 Protective gloves against chemicals and micro-organisms

EN 13832 Footwear protecting against chemicals

EN 133 Respiratory protective devices

**Definitions and abbreviations**

PC—TWA: Permissible Concentration-Time Weighted Average

PC—STEL: Permissible Concentration-Short Term Exposure Limit

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit.

IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection

OTV: Odour Threshold Value

BCF: BioConcentration Factors

BEI: Biological Exposure Index

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This Information provided in this document is subject to change and the batch specific Certificate of Analysis should always be referenced.

To be used as per local legislation.

### Change History

Version	Change	Customer Notification required Yes / No
1	First Issue	N/A
2	The format has been updated and the Yeast & Moulds have been amended from Max 25cfu/g to Max 100cfu/g, due to the supplier updating their specification.	Yes
3	Updated production flow chart; Particle Size changed from 80 Mesh to 12 Mesh; Percentage passed through changed from Min 90% to 100%; Added E. Coli: < 10cfu/g, Salmonella: Not detected in 25g	Yes
4	L-lysine content added	No
5	Amended Average Molecular weight from 182.45 to 182.65 and E Coli <10cfu/g to Negative/g. Removed Heavy Metals Max 0.0015% section. Added the following information: <ul style="list-style-type: none"> <li>• Chloride: 19.0~19.6</li> <li>• Lead (Pb): Max 3 ppm</li> <li>• Cadmium (Cd): Max 1ppm</li> <li>• Mercury (Hg): Max 0.1ppm</li> <li>• Arsenic (As): Max 1 ppm</li> <li>• New MSDS</li> </ul> General reformat.	Yes
6	Added Heavy Metals Max 0.0015% section which was removed due to clerical error.	Yes

### Document Approval

Originator Job Title	QC Technician	Approver Job Title	Quality Specialist

Product Code: P1210

Version: 6



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