(Material) Safety Data Sheet

Transport Symbol	WHMIS	NFPA	Personal Protective Equipment
Not controlled	Not controlled		

Original Preparation Date: 06-May-2010 **Revision Date:** *25-Sep-2013* **Revision Number:** *1*

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product Name:
ADM L-Lysine HCL
Synonyms:
L-Lys-HCl, IFN: 5-19-118

Product Code:
035150, 035155

Use of the Substance / Preparation:
Animal Feed

Contact Manufacturer:
Archer Daniels Midland Company
4666 Faries Parkway
Decatur, IL 62526, USA
Telephone Number: (+1) 217-424-5200

2. HAZARDS IDENTIFICATION

Emergency Overview

Warning. May form combustible dust concentrations in air (during processing and handling). Product dust may cause mild, mechanical irritation.

Appearance	Physical State	Odor
Tan	Granules	Slight fermentation odor

Classification according to 29 CFR 1910, amended to conform to the United Nations' Globally Harmonized System of Classification and Labelling of Chemicals (GHS):	
Hazards Not Otherwise Classified	Combustible Dust

OSHA / GHS Label Elements	
Signal Word:	Warning
Hazard Statement(s):	May form combustible dust concentrations in air (during processing and handling)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name L-lysine monohydrochloride
Molecular Formula $C_6H_{14}N_2O_2$ - HCl

Non-hazardous Components

Chemical Name	CAS-No	Weight %	North American Hazard Indicator
(S)-2,6-Diaminohexanoic Acid Monohydrochloride	657-27-2	100	None known

4. FIRST AID MEASURES

Description of first aid measures
Eye Contact Rinse thoroughly with plenty of water, also under the eyelids.
Skin Contact Wash off immediately with soap and plenty of water.
Inhalation Move to fresh air.
Ingestion Clean mouth with water and afterwards drink plenty of water. Consult a physician if necessary.
Protection of First-aiders Use personal protective equipment.

Most important symptoms and affects, both acute and delayed
Eyes Dust may cause mechanical irritation to eyes resulting in redness or watering.
Skin Product dust may cause mild, mechanical irritation.
Inhalation Dust may cause irritation of respiratory tract. See section 8 of this sheet for exposure limits pertaining to nuisance dust or "particulates not otherwise regulated".
Ingestion Not for human consumption. May be harmful if swallowed.

Indication of any immediate medical attention and special treatment needed
Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable Properties
Risk of ignition followed by flame propagation or secondary explosions should be prevented by avoiding accumulation of dust, e.g. on floors and ledges. As with most organic solids, combustion is possible at elevated temperatures or by contact with an ignition source. Fine dust dispersed in air may ignite.

Extinguishing media
Suitable Extinguishing Media Water. Carbon dioxide (CO_2). Dry chemical.
Unsuitable Extinguishing Media None known.

Special hazards arising from the substance or mixture

Hazardous Combustion Products	Carbon monoxide (CO), Carbon dioxide (CO_2), Nitrogen oxides (NOx), HCl.
Specific Hazards Arising from the Chemical	None known.
Sensitivity to mechanical impact	No information available.
Sensitivity to static discharge	Yes. (as dust).

Advice for fire-fighters
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.

NFPA

Health 0
Flammability 1
Stability and Reactivity 0
Physical hazard None known

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Avoid dust formation.
Environmental Precautions
Prevent further leakage or spillage if safe to do so.
Methods for Clean-up
Sweep up and shovel into suitable containers for disposal.

7. HANDLING AND STORAGE

Handling
Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation. Avoid dust formation in confined areas. Fine dust dispersed in air may ignite. Refer to NFPA 61, "Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities".
Storage
Keep containers dry and tightly closed to avoid moisture absorption and contamination.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits

Chemical Name	ACGIH TLV	OSHA PEL	MEXICO	NIOSH
Particulates not otherwise regulated	TWA: 10 mg/m³ inhalable particles, recommended TWA: 3 mg/m³ respirable particles, recommended	TWA: 15 mg/m³ total dust TWA: 5 mg/m³ respirable fraction	not listed	not listed

Engineering Measures Ensure adequate ventilation, especially in confined areas. Apply technical measures to comply with the occupational exposure limits. However it is the duty of the user to verify this and follow given exposure limits at the workplace.

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

Personal Protective Equipment

Eye/face Protection. If exposed to airborne dust, appropriate safety glasses with side-shields or safety goggles are recommended. If airborne dust concentrations are excessive, wear goggles.

Skin and Body Protection Protective clothing and gloves may be worn to reduce the potential of mechanical irritation.

Respiratory Protection If exposed to airborne dust, use appropriate NIOSH approved (or equivalent) respiratory protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Tan
Physical State	Granules
Odor	Slight fermentation odor
Odor Threshold	No information available
pH	Neutral (in an aqueous solution)
Flash Point	Not applicable
Autoignition Temperature	No data available
Boiling point	Not applicable
Melting/Freezing Point	Approx. 260 °C / 500 °F
Decomposition temperature	No information available
Oxidizing Properties	No information available
Flammability Limits in Air	No information available
Explosion Limits	No information available
Water Solubility	Soluble (500-600 g/liter in H_2O at 25°C)
Solubility(ies)	Insoluble in: Alcohol. and Ether.
Evaporation Rate	Not applicable Not applicable
Vapor Pressure	Not applicable Not applicable
Vapor Density	Not applicable
Partition Coefficient (n-octanol/water)	No information available

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions.
Possibility of Hazardous Reactions None under normal processing.
Conditions to Avoid Heat, flames and sparks. Avoid conditions that generate dust.
Incompatible Materials No materials to be especially mentioned.
Hazardous Decomposition Products Thermal decomposition may lead to release of, Carbon monoxide (CO), Carbon dioxide (CO_2), Nitrogen oxides (NOx), HCl.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity	Based on available data, the classification criteria are not met.
Skin corrosion/irritation	Based on available data, not, or only slightly irritating.
Serious eye damage/eye irritation	Based on available data, no evidence of serious eye damage / irritation.
Respiratory or skin sensitisation	Based on available data, not expected to be a skin or respiratory sensitiser.
Germ cell mutagenicity	Not expected to be mutagenic.
Carcinogenicity	Based on available data, no evidence of carcinogenicity.
Reproductive toxicity	Based on available data, no evidence of reproductive toxicity
STOT - single exposure	No evidence of toxicity.
STOT - repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, no known aspiration hazard.

Potential health effects

Eyes	Dust may cause mechanical irritation to eyes resulting in redness or watering.
Skin	Product dust may cause mild, mechanical irritation.
Inhalation	Dust may cause irritation of respiratory tract. See section 8 of this sheet for exposure limits pertaining to nuisance dust or "particulates not otherwise regulated".
Ingestion	Not for human consumption. May be harmful if swallowed.

12. ECOLOGICAL INFORMATION

Ecotoxicity
Contains no substances known to be hazardous to the environment. Contains no substances known to be not degradable in waste water treatment plants.

Persistence/Degradability	Biodegradable.
Mobility	Soluble in water

13. DISPOSAL CONSIDERATIONS

Whenever possible, as rules and regulations allow, please recycle or manage materials to minimize waste.

Waste Disposal Methods	Can be landfilled or incinerated, when in compliance with local regulations. Dispose of in compliance with the laws and regulations pertaining to this product in your jurisdiction.
Contaminated Packaging	Empty containers should be decontaminated and taken for local recycling, recovery or waste disposal.

14. TRANSPORT INFORMATION

Domestic transport regulations (USA)
DOT Not regulated

Domestic transport regulations (Canada)
TDG Not regulated

Domestic transport regulations (Mexico)
MEX Not regulated

International transport regulations
ICAO Not regulated
IATA Not regulated
IMDG/IMO Not regulated

15. REGULATORY INFORMATION

International Inventories

As animal feed, this product is exempted from the following inventories: U.S.A. (TSCA). China (IECSC). Japan (ENCS/ISHL). Korea (ECL). When used as "feed" defined in the Canadian Feeds Act 1995 and the Feeds Regulations (SOR/83-592), this product is exempted from the following inventory: Canada (DSL).

USA

Federal Regulations

Ozone Depleting Substances:

No Class I or Class II material is known to be used in the manufacture of, or contained in, this product.

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 372.

CERCLA/SARA 103-302

Sections 103-302 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 103-302.

SARA 311/312 Hazardous Categorization

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 63)

This product is not known to contain any HAPS.

State Regulations

State Right-to-Know

No known components subject to "Right-To-Know" legislation in the following States:.

Chemical Name	Weight %	Massachusetts	Minnesota	New Jersey	Pennsylvania
(S)-2,6-Diaminohexanoic Acid Monohydrochloride	100	No	No	No	No

Canada

WHMIS Product Classification

Not a WHMIS controlled product.

WHMIS Ingredient Disclosure List IDL

No known component is listed on the WHMIS ingredients disclosure list.

(NPRI) Canadian National Pollutant Release Inventory

No known component is listed on NPRI.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR.

Mexico

Mexico - Grade Slight risk, Grade 1

16. OTHER INFORMATION

Prepared By: ADM Bio-Products
Original Preparation Date: 06-May-2010
Revision Date: 25-Sep-2013
Revision Number: 1
Reason for revision: New SDS format. This version replaces all previous versions.
Abbreviations and acronyms
ACGIH TLV - American Conference of Governmental Industrial Hygienists Threshold Limit Values
AICS - Australian Inventory of Chemical Substances (Australia)
CAS - Chemical Abstract Service
CHINA - Chinese Inventory of Existing Chemical Substances (China)
DOT - U.S. Department of Transportation
DSL - Domestic Substance List (Canada)
EINECS - European Inventory of Existing Commercial Chemical Substances (EU)
ELINCS - European List of Notified Chemical Substances (EU)
ENCS - Existing and New Chemical Substances (Japan) / ISHL - Industrial Health and Safety Law (Japan)
GHS - Globally Harmonized System of Classification and Labelling of Chemicals
IATA - International Air Transport Association Dangerous Goods Regulations
ICL - In Commerce List (Canada)
IMDG - International Maritime Dangerous Goods Code
IMO - International Maritime Organization
KECL - Korean Existing and Evaluated Chemical Substances (Korea)
LC50 - Lethal concentration that produces fatalities in 50% of a given test population
LD50 - Median lethal dose of a given test population
MEX - NOM-002-SCT/2003 List of Hazardous Substances and Materials Most Commonly Transported
MEXICO - Mexico Occupational Exposure Limits
NDSL - Non Domestic Substances List (Canada)
NFPA - National Fire Protection Association
NIOSH - National Institute of Occupational Safety and Health
NZIoC - New Zealand Inventory of Chemicals (New Zealand)
OSHA - Occupational Safety & Health Administration
OSHA PEL - Occupational Safety and Health Administration Permissible Exposure Limits
PICCS - Inventory of Chemicals and Chemical Substances (Philippines)
STOT - Specific Target Organ Toxicity
TDG - Transportation of Dangerous Goods (Transport Canada)
TSCA - Toxic Substances Control Act, Section 8(b) Inventory (USA)
TWA - Time Weighted Average: Average concentration that should not be exceeded during a work day (usually 8-hours)
WHMIS - Workplace Hazardous Materials Information System

The information provided on this (M)SDS 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 as 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 material or in any process, unless specified in the text.

End of sheet

ADM L-LYSINE HCl

L-Lysine Monohydrochloride 98.5% Feed Grade

ADM Feed Ingredients Division
SpecialtyFeedIngredients@adm.com

Description

ADM L-Lysine monohydrochloride is a high quality, granular product specifically designed for the feed industry. Produced from advanced technology, this product is composed of 100% isomerically pure L-Lysine, which translates into 100% bioavailability for swine, poultry, and other animals.

Ingredients

L-Lysine monohydrochloride

Guarantee

L-Lysine monohydrochloride *(minimum)*	98.5%
L-Lysine *(minimum)*	78.8%
Moisture *(maximum)*	1.5%

Chemical Characteristics

Formula	$C_6H_{14}N_2O_2$-HCl
Molecular Weight	182.65
Nitrogen, %	15.34

$[NH_3^+\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CH\text{-}COO^-]Cl^-$

|

NH_3^+

General Characteristics (as is basis)

Appearance	Tan colored granules
Loss on Drying	1.5%
Purity,	98.5%
Solubility	500-600 g/liter in H_2O at 25°C
Typical Bulk Density	.64-.71 g/cm³ [40-44 lb/cu. ft.]
Typical Particle Size	85% < 1.19mm [No.16 U.S. Standard]
	5% < 0.17mm [No.80 U.S. Standard]

CAS Number	657-27-2
EINECS Number	211-519-9
IFN Number	5-19-118
AAFCO Definition	6.11 L-Lysine monohydrochloride
EU Feed Additive Register	3.2.3

Nutritional Specifications

L-Lysine Content	78.8%
HCl Content	19.7%
Crude Protein [N x 6.25]	94.4%

Metabolizable Energy

	kcal/kg	MJ/kg	kcal/lb
Poultry	3990	16.7	1810
Swine	4250	17.8	1932

Storage

Store in unopened original packaging in cool, dry area.
Shelf life is 2 years from date of manufacture.

Packaging & Product Code

25 kg bags (035150)
1000 kg totes
Bulk trucks

Manufactured by

Archer Daniels Midland Company
ADM Specialty Feed Ingredients Division
4666 Faries Parkway
Decatur, Illinois 62526 USA
Phone: 217-451-8177
www.adm.com

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