



# Safety Data Sheet

Original Preparation Date: 24-Aug-2009

Revision Date: 10-May-2017

Revision Number: 1

## 1. Identification

**Product Name:**

L-Threonine 98.5%

**Synonyms:**

l-2-Amino-3-hydroxybutyric acid, L-Thr, IFN: 5-08-092

**Product Code:**

035600

**Use of the Substance / Preparation:**

Animal feed ingredient

**Contact Manufacturer:**

Archer Daniels Midland Company

4666 Faries Parkway

Decatur, IL 62526, USA

Telephone Number: (+1) 217-424-5200

**Emergency response telephone number:**

Chemtrec 1-800-424-9300 (CCN 1635)

## 2. Hazard(s) identification

### Emergency Overview

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

**Appearance**

White

**Physical State**

Granules

**Odor**

Fermentation

**This product IS classified as hazardous according to the criteria contained in the Hazard Communication Standard 29 CFR 1910.1200 (known as HCS 2012) and the Hazardous Products Regulations SOR/2015-17 (known as WHMIS 2015).**

OSHA Defined Hazard(s)	Combustible Dust
------------------------	------------------

HPR Defined Hazard(s)	Combustible Dust
-----------------------	------------------

Signal Word:	Warning
--------------	---------

Hazard Statement(s):	May form combustible dust concentrations in air.
----------------------	--

## 3. Composition/information on ingredients

**Common Name** L-Threonine

**Chemical Family** Amino acid

**Non-hazardous Components**

Chemical Name	CAS-No	Weight %	North American Substance Hazard Class
L-Threonine	72-19-5	98.5	None known
Water	7732-18-5	1.5	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. Health injuries are not known or expected under normal use.

**Main Symptoms** Repeated or prolonged exposure may cause irritation of eyes and skin. Inhalation of dust may cause breathing difficulties.

### Indication of any immediate medical attention and special treatment needed

**Notes to Physician** Special forms of treatment and immediate medical attention are not specified. Treat Symptomatically.

## 5. Fire-fighting measures

### Flammable Properties

Fine dust dispersed in air may ignite. 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.

### Extinguishing media

**Suitable Extinguishing Media** Water. Foam. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media** None known.

### Special hazards arising from the substance or mixture

**Hazardous Combustion Products** Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Nitrogen oxides (NO<sub>x</sub>).

**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, Protective Equipment, and Emergency Procedures

Avoid dust formation. Ensure adequate ventilation. Avoid sparks, flames, static electricity discharges, etc. in the presence of dust. Use appropriate personal protective equipment. For personal protection see section 8.

### Environmental Precautions

Prevent further leakage or spillage if safe to do so.

### Methods and Materials for Containment and Cleaning Up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation. After cleaning, flush away traces with water. For disposal information see section 13.

## 7. Handling and storage

### Handling

Ensure adequate ventilation. Fine dust dispersed in air may ignite. Avoid dust formation in confined areas. Refer to NFPA 61, "Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities". Handle in accordance with good industrial hygiene and safety practice.

### Storage

Keep containers dry and tightly closed to avoid moisture absorption and contamination.

## 8. Exposure controls/Personal protection

### Exposure Limits

Where exposure limits have not been established for specific components of this material, please observe the OSHA and ACGIH established limits for particulates not otherwise classified (PNOC). OSHA PEL: [15 mg/m<sup>3</sup> (total dust) 8-hr TWA], [5 mg/m<sup>3</sup> (respirable) 8-hr TWA]. ACGIH TLV: [10 mg/m<sup>3</sup> (inhalable) 8-hr TWA], [3 mg/m<sup>3</sup> (respirable) 8-hr TWA].

### Biological Limit Values

No biological limit values have been listed for the component(s) of this product.

**Appropriate Engineering Controls** 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.

#### 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

<b>Appearance</b>	White
<b>Physical State</b>	Granules
<b>Odor</b>	Fermentation
<b>Odor Threshold</b>	No information available
<b>pH</b>	Neutral (10 g/l H <sub>2</sub> O)
<b>Flash Point</b>	No data available Not applicable
<b>Autoignition Temperature</b>	No data available
<b>Boiling point</b>	Not applicable
<b>Melting/Freezing Point</b>	Decomposes on heating
<b>Decomposition temperature</b>	253 °C / 487 °F
<b>Oxidizing Properties</b>	No information available
<b>Flammability Limits in Air</b>	No information available
<b>Explosion Limits</b>	No information available
<b>Water Solubility</b>	Soluble 90.3 g/l
<b>Solubility(ies)</b>	Insoluble in: Alcohol. Ether. and Chloroform
<b>Evaporation Rate</b>	Not applicable
<b>Vapor Pressure</b>	Not applicable
<b>Vapor Density</b>	Not applicable
<b>Specific Gravity / Relative Density</b>	No information available
<b>Bulk Density</b>	[0.74-0.79 g/cm <sup>3</sup> ] 46-49 lb./cu. ft.
<b>Viscosity (kinematic)</b>	Not applicable
<b>Partition Coefficient (n-octanol/water)</b>	No information available
<b>Explosive Properties</b>	Dust explosibility class = 2 [Kst value (bar-m/sec) = 208] Strongly explosive

## 10. Stability and reactivity

**Reactivity** Stable under recommended use and storage conditions.

**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<sub>2</sub>). Nitrogen oxides (NO<sub>x</sub>).

## 11. Toxicological information

### Information on toxicological effects

<b>Acute toxicity</b>	Based on available data, no evidence of acute toxicity.
<b>Method</b>	• LD50
<b>Species</b>	<i>Rat</i>
<b>Dose</b>	3098 mg/kg
<b>Routs of administration</b>	(Intraperitoneal)
<b>Skin corrosion/irritation</b>	Based on available data, the classification criteria are not met.
<b>Serious eye damage/eye irritation</b>	Based on available data, no evidence of serious eye damage / irritation.
<b>Respiratory or skin sensitisation</b>	Based on available data, not expected to be a skin or respiratory sensitiser.
<b>Germ cell mutagenicity</b>	Not classified. Based on available data, the classification criteria are not met.
<b>Carcinogenicity</b>	Based on available data, the classification criteria are not met.
<b>Reproductive toxicity</b>	Based on available data, the classification criteria are not met
<b>STOT - single exposure</b>	Based on available data, the classification criteria are not met.
<b>STOT - repeated exposure</b>	Based on available data, the classification criteria are not met.
<b>Aspiration hazard</b>	Based on available data, no known aspiration hazard.

### Potential health effects

<b>Eyes</b>	Dust may cause mechanical irritation to eyes resulting in redness or watering.
<b>Skin</b>	Product dust may cause mild, mechanical irritation.
<b>Inhalation</b>	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".
<b>Ingestion</b>	Not for human consumption. Health injuries are not known or expected under normal use.
<b>Main Symptoms</b>	Repeated or prolonged exposure may cause irritation of eyes and skin. Inhalation of dust may cause breathing difficulties.

## 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.

<b>Persistence/Degradability</b>	Readily biodegradable
<b>Mobility</b>	Soluble in water
<b>PBT and vPvB assessment</b>	No information available.
<b>Other adverse effects</b>	Nothing specific known.

## 13. Disposal considerations

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

<b>Waste Disposal Methods</b>	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.
<b>Contaminated Packaging</b>	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**

Refer to the OSHA hazard classification(s) provided in section 2 of this SDS.

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	Yes (when in the form of combustible dust)
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.

**Canada****(NPRI) Canadian National Pollutant Release Inventory**

No known component is listed on NPRI.

**Mexico****Mexico - Grade**

Slight risk, Grade 1

**16. Other information****Prepared By:**

ADM Bio-Products

**Original Preparation Date:**

24-Aug-2009

**Revision Date:** 10-May-2017  
**Revision Number:** 1  
**Reason for revision:** New SDS format.

**Literature References:**

- TOXNET HSDB: a database of the National Library of Medicine's TOXNET system (<http://toxnet.nlm.nih.gov>)
- International Programme on Chemical Safety (IPCS) INCHEM website, which is provided in cooperation with the Canadian Centre for Occupational Health and Safety (CCOHS) (<http://www.inchem.org>)
- European Chemicals Agency (<http://echa.europa.eu>)
- CSST Répertoire toxicologique: 2015 WHMIS classification of chemical substances (<http://www.csst.qc.ca/en/prevention/reptox/Pages/list-whmis-2015-a.aspx>)
- GESTIS-DUST-EX combustion and explosion characteristics database (Institute for Occupational Safety and Health of the German Social Accident Insurance) <http://staubex.ifa.dguv.de/explosuche.aspx?lang=e>

**Abbreviations and acronyms**

A1 - Known Human Carcinogen  
A2 - Suspected Human Carcinogen  
A3 - Animal Carcinogen  
A4 - Not classifiable as a human carcinogen  
ACGIH TLV - American Conference of Governmental Industrial Hygienists Threshold Limit Values  
CAS - Chemical Abstract Service  
Ceiling - Ceiling Limit Value: Concentrations that should never be exceeded at any given time (instantaneous)  
CHINA - Chinese Inventory of Existing Chemical Substances (China)  
CLP - Classification, Labelling and Packaging, Regulation (EC)1272/2008  
CSA - Chemical Safety Assessment  
CSR - Chemical Safety Report  
Delisted - Substances Delisted from Report on Carcinogens  
DNEL - Derived No Effect Level  
DOT - U.S. Department of Transportation  
DSL - Domestic Substance List (Canada)  
EC - European Commission  
EC No. - European Community number  
EC50 - Half maximal effective concentration  
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)  
EPCRA - Emergency Planning and Community Right-to-Know Act of 1986 (USA)  
FOSFA - The Federation of Oils, Seeds and Fats Associations  
GHS - Globally Harmonized System of Classification and Labelling of Chemicals  
Group 1 - Carcinogenic to Humans  
Group 2A - Probably Carcinogenic to Humans  
Group 2B - Possibly Carcinogenic to Humans  
Group 3 - Not Classifiable  
IARC - International Agency for Research on Cancer  
IATA - International Air Transport Association Dangerous Goods Regulations  
IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk  
ICAO - International Civil Aviation Organisation  
ICL - In Commerce List (Canada)  
IDLH - Immediately Dangerous to Life or Health  
IMDG - International Maritime Dangerous Goods Code

IMO - International Maritime Organization  
IUB - International Union of Biochemistry and Molecular Biology  
KECL - Korean Existing and Evaluated Chemical Substances (Korea)  
Known - Known Carcinogen  
LC50 - Lethal concentration that produces fatalities in 50% of a given test population  
LD50 - Median lethal dose of a given test population  
Marpol - International Convention for the Prevention of Pollution From Ships  
MEPC - Marine Environment Protection Committee  
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  
NOAEL - No Observed Adverse Effect Level  
NTP - National Toxicology Program  
NZIoC - New Zealand Inventory of Chemicals (New Zealand)  
OECD - Organisation for Economic Co-operation and Development  
OSHA - Occupational Safety & Health Administration  
OSHA PEL - Occupational Safety and Health Administration Permissible Exposure Limits  
PICCS - Inventory of Chemicals and Chemical Substances (Philippines)  
PNEC - Predicted No-Effect Concentration  
Present - Carcinogen or potential carcinogen to be identified under OSHA's Hazard Communication Standard  
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen  
SEN - Sensitizer notation. May reflect risk of dermal and/or inhalation sensitization (consult ACGIH documentation).  
Skin notation - Potential for cutaneous absorption  
STEL - Short Term Exposure Limit: Concentrations that should not be exceeded except for short periods of time ( usually 15-minutes)  
STOT - Specific Target Organ Toxicity  
STV - Short Term Value (same as STEL)  
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)  
Under Consideration - Under Consideration by the National Toxicology Program  
vPvB - Very Persistent and Very Bioaccumulative  
WHMIS - Workplace Hazardous Materials Information System

**The information provided on this 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