



METABOLOMICS AMINO ACID MIX STANDARD

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 9/10/2014 Revision date: 4/21/2023 Supersedes: 6/29/2018 Version: 6.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : METABOLOMICS AMINO ACID MIX STANDARD
Product code : MSK-A2-S

1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier

Cambridge Isotope Laboratories, Inc.
50 Frontage Rd
01810
ANDOVER, MA, 01810
USA
T 1-800-322-1174
cilsales@isotope.com - www.isotope.com

1.4. Emergency telephone number

Emergency number : 1-703-741-5970
Chemtrec 1-800-424-9300 24 hours

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Corrosive to metals Category 1 H290 May be corrosive to metals
Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Warning
Hazard statements (GHS US) : H290 - May be corrosive to metals
Precautionary statements (GHS US) : P234 - Keep only in original container.
P390 - Absorb spillage to prevent material-damage.
P406 - Store in corrosive resistant container with a resistant inner liner.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
WATER UNLABELED	CAS-No.: 7732-18-5	98.9981	Not classified
HYDROCHLORIC ACID	CAS-No.: 7647-01-0	0.3613	Met. Corr. 1, H290 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335
L-ALANINE (13C3, 99%; 15N, 99%)	CAS-No.: 202407-38-3	0.238	Not classified
L-LYSINE:2HCL (13C6, 99%; 15N2, 99%)	CAS-No.: 657-26-1 (Unlabeled)	0.0574	Skin Sens. 1B, H317
L-HISTIDINE:HCL:H2O (<5% D) (13C6, 97-99%; 15N3, 97-99%)	CAS-No.: 202468-43-7	0.0554	Not classified
L-ARGININE:HCL (13C6, 99%; 15N4, 99%)	CAS-No.: 202468-25-5	0.0554	Skin Irrit. 2, H315 Eye Irrit. 2A, H319
L-TYROSINE (13C9, 99%; 15N, 99%)	CAS-No.: 202407-26-9	0.0485	Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
L-PHENYLALANINE (13C9, 99%; 15N, 99%)	CAS-No.: 63-91-2 (Unlabeled)	0.0445	Not classified
L-METHIONINE (13C5, 99%; 15N, 99%)	CAS-No.: 63-68-3 (Unlabeled)	0.0396	Not classified
L-GLUTAMIC ACID (13C5, 99%; 15N, 99%)	CAS-No.: 56-86-0 (Unlabeled)	0.0386	Not classified
L-ASPARTIC ACID (13C4, 99%; 15N, 99%)	-	0.0346	Not classified
L-LEUCINE (13C6, 99%; 15N, 99%)	CAS-No.: 202406-52-8	0.0346	Not classified
L-ISOLEUCINE (13C6, 99%; 15N, 99%)	CAS-No.: 202468-35-7	0.0346	Not classified
L-VALINE (13C5, 99%; 15N, 99%)	CAS-No.: 72-18-4 (Unlabeled)	0.0317	Not classified
L-THREONINE (13C4, 97-99%; 15N, 97-99%)	CAS-No.: 202468-39-1	0.0317	Not classified
L-CYSTINE (13C6, 99%; 15N2, 99%)	CAS-No.: 1252803-65-8	0.0317	Not classified
L-PROLINE (13C5, 99%; 15N, 99%)	CAS-No.: 147-85-3 (Unlabeled)	0.0307	Not classified
L-SERINE (13C3, 99%; 15N, 99%)	CAS-No.: 202407-34-9	0.0277	Not classified

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Name	Product identifier	%	GHS US classification
GLYCINE (13C2, 99%; 15N, 99%)	CAS-No.: 211057-02-2	0.0198	Not classified

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general	: If you feel unwell, seek medical advice (show the label where possible). Evacuate danger area.
First-aid measures after inhalation	: When symptoms occur: go into open air and ventilate suspected area. If not breathing, give artificial respiration. Get medical advice/attention.
First-aid measures after skin contact	: Wash with plenty of soap and water. Get immediate medical advice/attention.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes.
First-aid measures after ingestion	: Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get medical advice/attention.

4.2. Most important symptoms and effects (acute and delayed)

Potential Adverse human health effects and symptoms	: This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.
Symptoms/effects after inhalation	: May be harmful if inhaled. May cause respiratory irritation.
Symptoms/effects after skin contact	: May be harmful in contact with skin. May cause moderate irritation.
Symptoms/effects after eye contact	: May cause eye irritation.
Symptoms/effects after ingestion	: May be harmful if swallowed.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Foam. Dry powder. Carbon dioxide. Water spray. Sand.
Unsuitable extinguishing media	: Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard	: May be corrosive to metals.
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5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures	: Avoid breathing vapors, mist, gas. Avoid dust formation. Ensure adequate air ventilation. Evacuate unnecessary personnel.
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6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent entry to sewers and public waters. Do not allow to enter drains or water courses. Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Dike and contain spill. Clean up any spills as soon as possible, using an absorbent material to collect it. For large spills, confine the spill in a dike and charge it with wet sand or earth for subsequent safe disposal. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal.

Methods for cleaning up : This material and its container must be disposed of in a safe way, and as per local legislation.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : May be corrosive to metals.

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor.

Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Store in a well-ventilated place. Keep container tightly closed.

Storage conditions : Store refrigerated (-5 °C to 5 °C). Protect from light.

Incompatible products : Strong bases. Strong acids.

Incompatible materials : Sources of ignition. Direct sunlight.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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No additional information available	
L-ASPARTIC ACID (13C4, 99%; 15N, 99%)	
No additional information available	
L-LEUCINE (13C6, 99%; 15N, 99%) (202406-52-8)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.

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L-LYSINE:2HCL (13C6, 99%; 15N2, 99%) (657-26-1 (Unlabeled))	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-PROLINE (13C5, 99%; 15N, 99%) (147-85-3 (Unlabeled))	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-VALINE (13C5, 99%; 15N, 99%) (72-18-4 (Unlabeled))	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-HISTIDINE:HCL:H2O (<5% D) (13C6, 97-99%; 15N3, 97-99%) (202468-43-7)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-PHENYLALANINE (13C9, 99%; 15N, 99%) (63-91-2 (Unlabeled))	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-THREONINE (13C4, 97-99%; 15N, 97-99%) (202468-39-1)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
HYDROCHLORIC ACID (7647-01-0)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH OEL C [ppm]	2 ppm USA. ACGIH Threshold Limit Values (TLV)
Remark (ACGIH)	Upper Respiratory Tract irritation Not classifiable as a human carcinogen
USA - OSHA - Occupational Exposure Limits	
OSHA PEL C	7 mg/m ³ USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants The value in mg/m ³ is approximate.
OSHA PEL C [ppm]	5 ppm USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
Remark (OSHA)	Ceiling limit is to be determined from breathing-zone air samples.
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL C	7 mg/m ³ USA. NIOSH Recommended Exposure Limits
NIOSH REL C [ppm]	5 ppm USA. NIOSH Recommended Exposure Limits
Remark (NIOSH)	Often used in an aqueous solution.
WATER UNLABELED (7732-18-5)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.

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L-ISOLEUCINE (13C6, 99%; 15N, 99%) (202468-35-7)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-CYSTINE (13C6, 99%; 15N2, 99%) (1252803-65-8)	
No additional information available	
L-GLUTAMIC ACID (13C5, 99%; 15N, 99%) (56-86-0 (Unlabeled))	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
GLYCINE (13C2, 99%; 15N, 99%) (211057-02-2)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-METHIONINE (13C5, 99%; 15N, 99%) (63-68-3 (Unlabeled))	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-SERINE (13C3, 99%; 15N, 99%) (202407-34-9)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-TYROSINE (13C9, 99%; 15N, 99%) (202407-26-9)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-ARGININE:HCL (13C6, 99%; 15N4, 99%) (202468-25-5)	
USA - ACGIH - Occupational Exposure Limits	
ACGIH chemical category	No component of this product present at levels greater than or equal to 0.1% is identifiable as a carcinogen or potential carcinogen by ACGIH.
L-ALANINE (13C3, 99%; 15N, 99%) (202407-38-3)	
No additional information available	

8.2. Appropriate engineering controls

Appropriate engineering controls	: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
Environmental exposure controls	: Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.

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Materials for protective clothing:
Wear suitable protective clothing and gloves
Hand protection:
Wear suitable protective clothing and gloves
Eye protection:
Wear eye protection. Chemical goggles or face shield with safety glasses
Skin and body protection:
Wear suitable protective clothing, gloves and eye/face protection
Respiratory protection:
In case of inadequate ventilation wear respiratory protection. Approved supplied air respirator

Personal protective equipment symbol(s):



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Liquid.
Color	: Colorless
Odor	: characteristic
Odor threshold	: No data available
pH	: 6 – 8 at 25 °C (77 °F)
Melting point	: 0 °C (32.0 °F)
Freezing point	: No data available
Boiling point	: 100 °C (212.0 °F)
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Non flammable.
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Relative density	: No data available
Density	: 1 g/ml at 20 °C (68 °F)
Molecular mass	: 18.02 g/mol
Solubility	: No data available
Partition coefficient n-octanol/water (Log Pow)	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

No additional information available

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SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Two years after date of manufacture.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong acids. Strong bases. metals. May be corrosive to metals.

10.6. Hazardous decomposition products

Carbon oxides (CO, CO₂).

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

L-ASPARTIC ACID (13C4, 99%; 15N, 99%)	
LD50 oral rat	5000 mg/kg
LD50 dermal rabbit	5000 mg/kg
ATE US (oral)	5000 mg/kg body weight
ATE US (dermal)	5000 mg/kg body weight
L-LEUCINE (13C6, 99%; 15N, 99%) (202406-52-8)	
LD50 oral rat	> 16000 mg/kg male and female
L-VALINE (13C5, 99%; 15N, 99%) (72-18-4 (Unlabeled))	
LD50 oral rat	> 2000 mg/kg female
LD50 dermal rat	5390 mg/kg
LC50 Inhalation - Rat	> 5260 mg/m ³ (OECD Test Guideline 403)
HYDROCHLORIC ACID (7647-01-0)	
Additional information	Inhalation Inhalation may provoke the following symptoms: Respiratory irritation Cough Difficulty in breathing Pneumonia (Hydrochloric acid)
L-GLUTAMIC ACID (13C5, 99%; 15N, 99%) (56-86-0 (Unlabeled))	
LD50 oral rat	> 5110 mg/kg male and female - Remarks: (ECHA)Symptoms: Possible damages:, Nausea
LD50 dermal rat	> 2000 mg/kg male and female - (OECD Test Guideline 402)

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GLYCINE (13C2, 99%; 15N, 99%) (211057-02-2)	
LD50 oral rat	7930 mg/kg
L-METHIONINE (13C5, 99%; 15N, 99%) (63-68-3 (Unlabeled))	
LD50 oral rat	36000 mg/kg Remarks: Behavioral: Change in motor activity (specific assay). Skin and Appendages: Allergic (Multiple organ involvement) Anaphylaxis.
L-SERINE (13C3, 99%; 15N, 99%) (202407-34-9)	
LD50 oral rat	14000 mg/kg male and female
ATE US (oral)	14000 mg/kg body weight
L-ARGININE:HCL (13C6, 99%; 15N4, 99%) (202468-25-5)	
LD50 oral rat	12400 mg/kg
ATE US (oral)	12000 mg/kg body weight
L-ALANINE (13C3, 99%; 15N, 99%) (202407-38-3)	
LD50 oral rat	> 5110 mg/kg male and female
Skin corrosion/irritation	: Not classified pH: 6 – 8 at 25 °C (77 °F)
L-ASPARTIC ACID (13C4, 99%; 15N, 99%)	
pH	2.8 at 4.5 g/l at 20 °C (68 °F)
L-PROLINE (13C5, 99%; 15N, 99%) (147-85-3 (Unlabeled))	
pH	6 – 7 at 115 g/l at 25 °C (77 °F)
L-HISTIDINE:HCL:H2O (<5% D) (13C6, 97-99%; 15N3, 97-99%) (202468-43-7)	
pH	3 – 4 at 105 g/l at 25 °C (77 °F)
L-PHENYLALANINE (13C9, 99%; 15N, 99%) (63-91-2 (Unlabeled))	
pH	5 – 7 at 16.5 g/l at 25 °C (77 °F)
L-THREONINE (13C4, 97-99%; 15N, 97-99%) (202468-39-1)	
pH	5 – 6 at 59.6 g/l at 25 °C (77 °F)
WATER UNLABELED (7732-18-5)	
pH	6 – 8 at 25 °C (77 °F)
L-ARGININE:HCL (13C6, 99%; 15N4, 99%) (202468-25-5)	
pH	5.5 – 7 at 211 g/l at 25 °C (77 °F)
L-ALANINE (13C3, 99%; 15N, 99%) (202407-38-3)	
pH	5.5 – 7 at 89.1 g/l at 25 °C (77 °F)
Serious eye damage/irritation	: Not classified pH: 6 – 8 at 25 °C (77 °F)
L-ASPARTIC ACID (13C4, 99%; 15N, 99%)	
pH	2.8 at 4.5 g/l at 20 °C (68 °F)
L-PROLINE (13C5, 99%; 15N, 99%) (147-85-3 (Unlabeled))	
pH	6 – 7 at 115 g/l at 25 °C (77 °F)

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L-HISTIDINE:HCL:H2O (<5% D) (13C6, 97-99%; 15N3, 97-99%) (202468-43-7)	
pH	3 – 4 at 105 g/l at 25 °C (77 °F)
L-PHENYLALANINE (13C9, 99%; 15N, 99%) (63-91-2 (Unlabeled))	
pH	5 – 7 at 16.5 g/l at 25 °C (77 °F)
L-THREONINE (13C4, 97-99%; 15N, 97-99%) (202468-39-1)	
pH	5 – 6 at 59.6 g/l at 25 °C (77 °F)
WATER UNLABELED (7732-18-5)	
pH	6 – 8 at 25 °C (77 °F)
L-ARGININE:HCL (13C6, 99%; 15N4, 99%) (202468-25-5)	
pH	5.5 – 7 at 211 g/l at 25 °C (77 °F)
L-ALANINE (13C3, 99%; 15N, 99%) (202407-38-3)	
pH	5.5 – 7 at 89.1 g/l at 25 °C (77 °F)
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
HYDROCHLORIC ACID (7647-01-0)	
IARC group	3 - Not classifiable
L-TYROSINE (13C9, 99%; 15N, 99%) (202407-26-9)	
National Toxicology Program (NTP) Status	No component of this product present at levels greater than or equal to 0.1 % is identified as a known or anticipated carcinogen by NTP.
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
HYDROCHLORIC ACID (7647-01-0)	
STOT-single exposure	May cause respiratory irritation.
L-TYROSINE (13C9, 99%; 15N, 99%) (202407-26-9)	
STOT-single exposure	May cause respiratory irritation.
STOT-repeated exposure	: Not classified
L-LEUCINE (13C6, 99%; 15N, 99%) (202406-52-8)	
NOAEL (oral,rat,90 days)	3840 mg/kg bodyweight/day female
L-SERINE (13C3, 99%; 15N, 99%) (202407-34-9)	
NOAEL (oral,rat,90 days)	3000 mg/kg bodyweight/day male and female - OECD Test Guideline 408
Aspiration hazard	: Not classified
Viscosity, kinematic	: No data available
Potential Adverse human health effects and symptoms	: This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.
Symptoms/effects after inhalation	: May be harmful if inhaled. May cause respiratory irritation.
Symptoms/effects after skin contact	: May be harmful in contact with skin. May cause moderate irritation.
Symptoms/effects after eye contact	: May cause eye irritation.
Symptoms/effects after ingestion	: May be harmful if swallowed.

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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

L-VALINE (13C5, 99%; 15N, 99%) (72-18-4 (Unlabeled))	
LC50 - Fish [1]	> 10 g/l Danio rerio (Zebra fish) - 96 h
EC50 - Crustacea [1]	> 10 g/l Daphnia magna (Water flea) - Immobilization - 24 h

HYDROCHLORIC ACID (7647-01-0)	
LC50 - Fish [1]	24.6 mg/l - Lepomis macrochirus (Bluegill) - 96 h (Hydrochloric acid)
EC50 - Crustacea [1]	4.91 mg/l - Daphnia magna (Water flea) - 48 h (Hydrochloric acid)

L-GLUTAMIC ACID (13C5, 99%; 15N, 99%) (56-86-0 (Unlabeled))	
LC50 - Fish [1]	> 100 mg/l Cyprinus carpio (Carp) - 96 h - static test (OECD Test Guideline 203)
EC50 - Crustacea [1]	> 100 g/l Daphnia magna (Water flea) - 48 h (OECD Test Guideline 202)
EC50 - Other aquatic organisms [1]	> 31 mg/l Pseudokirchneriella subcapitata (green algae) - 72 h - static test (OECD Test Guideline 201)

L-SERINE (13C3, 99%; 15N, 99%) (202407-34-9)	
EC50 - Crustacea [1]	> 83 mg/l Daphnia magna (Water flea) - 48 h (OECD Test Guideline 202)
ErC50 algae	> 83 mg/l Daphnia magna (Water flea) - 48 h
NOEC chronic algae	1000 mg/l static test NOEC - Pseudokirchneriella subcapitata (green algae) - 72 h (OECD Test Guideline 201)

L-ALANINE (13C3, 99%; 15N, 99%) (202407-38-3)	
EC50 - Crustacea [1]	> 100 g/l static test - Daphnia magna (Water flea) - 48 h (OECD Test Guideline 202)

12.2. Persistence and degradability

L-VALINE (13C5, 99%; 15N, 99%) (72-18-4 (Unlabeled))	
Persistence and degradability	Biodegradability aerobic - Exposure time 28 d.
Biodegradation	82 % Readily biodegradable

L-GLUTAMIC ACID (13C5, 99%; 15N, 99%) (56-86-0 (Unlabeled))	
Persistence and degradability	Aerobic - exposure time: 28 d.
Biodegradation	97 % Readily biodegradable

L-SERINE (13C3, 99%; 15N, 99%) (202407-34-9)	
Persistence and degradability	Aerobic - exposure time: 28 d.
Biodegradation	81 % Readily biodegradable (OECD Test Guideline 301)

12.3. Bioaccumulative potential

L-VALINE (13C5, 99%; 15N, 99%) (72-18-4 (Unlabeled))	
Partition coefficient n-octanol/water (Log Pow)	-2.259 at 20 °C (68 °F)

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L-PHENYLALANINE (13C9, 99%; 15N, 99%) (63-91-2 (Unlabeled))	
Bioaccumulative potential	Not available.
L-ISOLEUCINE (13C6, 99%; 15N, 99%) (202468-35-7)	
Partition coefficient n-octanol/water (Log Pow)	-1.58
L-GLUTAMIC ACID (13C5, 99%; 15N, 99%) (56-86-0 (Unlabeled))	
Partition coefficient n-octanol/water (Log Pow)	< -4 at 20 °C (68 °F)
L-SERINE (13C3, 99%; 15N, 99%) (202407-34-9)	
Partition coefficient n-octanol/water (Log Pow)	-3.069 at 20 °C (68 °F)
L-TYROSINE (13C9, 99%; 15N, 99%) (202407-26-9)	
Partition coefficient n-octanol/water (Log Pow)	-2.26 at 25 °C (77 °F)
L-ALANINE (13C3, 99%; 15N, 99%) (202407-38-3)	
Partition coefficient n-octanol/water (Log Pow)	-2.74 at 20 °C (68 °F)

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Regional legislation (waste) : Waste materials should be disposed of under conditions which meet Federal, State, and local environmental control regulations.

Product/Packaging disposal recommendations : Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Ecology - waste materials : Dispose of as unused product.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

14.1. UN number

Not regulated for transport

14.2. UN proper shipping name

Proper Shipping Name (DOT) : Not applicable
Proper Shipping Name (TDG) : Not applicable
Proper Shipping Name (IMDG) : Not applicable
Proper Shipping Name (IATA) : Not applicable

14.3. Transport hazard class(es)

DOT

Transport hazard class(es) (DOT) : Not applicable

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TDG

Transport hazard class(es) (TDG) : Not applicable

IMDG

Transport hazard class(es) (IMDG) : Not applicable

IATA

Transport hazard class(es) (IATA) : Not applicable

14.4. Packing group

Packing group (DOT) : Not applicable
Packing group (TDG) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable

14.5. Environmental hazards

Other information : No supplementary information available.

14.6. Special precautions for user

Special transport precautions : Not classified as dangerous in the meaning of transport regulations

DOT

No data available

TDG

No data available

IMDG

No data available

IATA

No data available

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

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

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SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
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Commercial status of components according to the United States Environmental Protection Agency's Toxic Substances Control Act (TSCA):

Name	CAS-No.	Listing	Commercial status	Flags
L-ASPARTIC ACID (13C4, 99%; 15N, 99%)		Not present	-	
L-LEUCINE (13C6, 99%; 15N, 99%)	202406-52-8	Not present	-	
L-LYSINE:2HCL (13C6, 99%; 15N2, 99%)	657-26-1 (Unlabeled)	Not present	-	
L-PROLINE (13C5, 99%; 15N, 99%)	147-85-3 (Unlabeled)	Not present	-	
L-VALINE (13C5, 99%; 15N, 99%)	72-18-4 (Unlabeled)	Not present	-	

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Name	CAS-No.	Listing	Commercial status	Flags
L-HISTIDINE:HCL:H2O (<5% D) (13C6, 97-99%; 15N3, 97-99%)	202468-43-7	Not present	-	
L-PHENYLALANINE (13C9, 99%; 15N, 99%)	63-91-2 (Unlabeled)	Not present	-	
L-THREONINE (13C4, 97-99%; 15N, 97-99%)	202468-39-1	Not present	-	
HYDROCHLORIC ACID	7647-01-0	Present	Active	
WATER UNLABELED	7732-18-5	Not present	-	
L-ISOLEUCINE (13C6, 99%; 15N, 99%)	202468-35-7	Not present	-	
L-CYSTINE (13C6, 99%; 15N2, 99%)	1252803-65-8	Not present	-	
L-GLUTAMIC ACID (13C5, 99%; 15N, 99%)	56-86-0 (Unlabeled)	Not present	-	
GLYCINE (13C2, 99%; 15N, 99%)	211057-02-2	Not present	-	
L-METHIONINE (13C5, 99%; 15N, 99%)	63-68-3 (Unlabeled)	Not present	-	
L-SERINE (13C3, 99%; 15N, 99%)	202407-34-9	Not present	-	
L-TYROSINE (13C9, 99%; 15N, 99%)	202407-26-9	Not present	-	
L-ARGININE:HCL (13C6, 99%; 15N4, 99%)	202468-25-5	Not present	-	
L-ALANINE (13C3, 99%; 15N, 99%)	202407-38-3	Not present	-	

L-ASPARTIC ACID (13C4, 99%; 15N, 99%)

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
--	--

L-LEUCINE (13C6, 99%; 15N, 99%) (202406-52-8)

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
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L-LYSINE:2HCL (13C6, 99%; 15N2, 99%) (657-26-1 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
--	--

L-PROLINE (13C5, 99%; 15N, 99%) (147-85-3 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
--	--

L-VALINE (13C5, 99%; 15N, 99%) (72-18-4 (Unlabeled))

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
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L-HISTIDINE:HCL:H2O (<5% D) (13C6, 97-99%; 15N3, 97-99%) (202468-43-7)

SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
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L-PHENYLALANINE (13C9, 99%; 15N, 99%) (63-91-2 (Unlabeled))	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.

L-THREONINE (13C4, 97-99%; 15N, 97-99%) (202468-39-1)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.

HYDROCHLORIC ACID (7647-01-0)	
Not subject to reporting requirements of the United States SARA Section 313 Subject to reporting requirements of United States SARA Section 313 Listed on EPA Hazardous Air Pollutant (HAPS)	
CERCLA RQ	5000 lb
RQ (Reportable quantity, section 304 of EPA's List of Lists)	5000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

WATER UNLABELED (7732-18-5)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.

L-ISOLEUCINE (13C6, 99%; 15N, 99%) (202468-35-7)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302

L-CYSTINE (13C6, 99%; 15N2, 99%) (1252803-65-8)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.

L-GLUTAMIC ACID (13C5, 99%; 15N, 99%) (56-86-0 (Unlabeled))	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.

GLYCINE (13C2, 99%; 15N, 99%) (211057-02-2)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.

L-METHIONINE (13C5, 99%; 15N, 99%) (63-68-3 (Unlabeled))	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302

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L-SERINE (13C3, 99%; 15N, 99%) (202407-34-9)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
L-TYROSINE (13C9, 99%; 15N, 99%) (202407-26-9)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302.
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
L-ARGININE:HCL (13C6, 99%; 15N4, 99%) (202468-25-5)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
L-ALANINE (13C3, 99%; 15N, 99%) (202407-38-3)	
SARA Section 302 Threshold Planning Quantity (TPQ)	Not subject to reporting requirements of the United States SARA Section 302
15.2. International regulations	
CANADA	
L-LEUCINE (13C6, 99%; 15N, 99%) (202406-52-8)	
Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)	
L-LYSINE:2HCL (13C6, 99%; 15N2, 99%) (657-26-1 (Unlabeled))	
Listed on the Canadian DSL (Domestic Substances List)	
L-HISTIDINE:HCL:H2O (<5% D) (13C6, 97-99%; 15N3, 97-99%) (202468-43-7)	
Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)	
L-THREONINE (13C4, 97-99%; 15N, 97-99%) (202468-39-1)	
Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)	
HYDROCHLORIC ACID (7647-01-0)	
Listed on the Canadian DSL (Domestic Substances List)	
WATER UNLABELED (7732-18-5)	
Listed on the Canadian DSL (Domestic Substances List)	
L-ISOLEUCINE (13C6, 99%; 15N, 99%) (202468-35-7)	
Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)	
L-CYSTINE (13C6, 99%; 15N2, 99%) (1252803-65-8)	
Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)	

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GLYCINE (13C2, 99%; 15N, 99%) (211057-02-2)

Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)

L-SERINE (13C3, 99%; 15N, 99%) (202407-34-9)

Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)

L-TYROSINE (13C9, 99%; 15N, 99%) (202407-26-9)

Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)

L-ARGININE:HCL (13C6, 99%; 15N4, 99%) (202468-25-5)

Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)

L-ALANINE (13C3, 99%; 15N, 99%) (202407-38-3)

Not listed on the Canadian DSL (Domestic Substances List)/NDSL (Non-Domestic Substances List)

EU-Regulations

No additional information available

National regulations

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CAUTION: This material is supplied for research and development purposes subject to the R&D exemption under TSCA, 40 CFR 720.36, and must meet the requirements of the exemption, including supervision by a "technically qualified individual" as defined by 40 CFR 720.3(ee). The use of this material for "commercial purposes" as defined by 40 CFR 720.3(r) is not permitted in the United States.

HYDROCHLORIC ACID (7647-01-0)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

Component	State or local regulations
HYDROCHLORIC ACID(7647-01-0)	U.S. - Massachusetts - Right To Know List; U.S. - New Jersey - Right to Know Hazardous Substance List; U.S. - Pennsylvania - RTK (Right to Know) List
WATER UNLABELED(7732-18-5)	U.S. - Pennsylvania - RTK (Right to Know) List; U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Revision date

: 04/21/2023

Data sources

: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information

: This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

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Full text of H-phrases	
H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H319	Causes serious eye irritation
H335	May cause respiratory irritation

Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.