



Biopure™ GLDA

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 3/20/2014 Revision date: 3/17/2023 Supersedes: 6/21/2022 Version: 2.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : Biopure™ GLDA
Product code : JAR-GLDA
Synonyms : Tetrasodium N, N-bis(carboxymethyl)-L-glutamate; L-Glutamic acid, N-N-diacetic acid tetrasodium salt (GLDA-Na4)

1.2. Recommended use and restrictions on use

Recommended use : Intermediate
Restrictions on use : None

1.3. Supplier

Aurorium
201 North Illinois Street, Suite 1800
Indianapolis, Indiana 46204
T: +1-317-247-8141
SDS@aurorium.com

1.4. Emergency telephone number

Emergency number : Aurorium: +1-317-247-8141
CHEMTREC (USA): +1-800-424-9300
CHEMTREC (International): +1-703-527-3887

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
Skin corrosion/irritation Category 2	H315	Causes skin irritation
Serious eye damage/eye irritation Category 2	H319	Causes serious eye irritation

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
H315 - Causes skin irritation
H319 - Causes serious eye irritation
Precautionary statements (GHS US) : P234 - Keep only in original container.
P264 - Wash hands, forearms and face thoroughly after handling.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 - If on skin: Wash with plenty of water.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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P321 - Specific treatment (see supplemental first aid instruction on this label).
P332+P313 - If skin irritation occurs: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.
P390 - Absorb spillage to prevent material-damage.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate	CAS-No.: 51981-21-6	46.5 – 47.5	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Acute 3, H402
Sodium Hydroxide	CAS-No.: 1310-73-2	0.7 – 0.9	Met. Corr. 1, H290 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Skin Corr. 1, H314 Eye Dam. 1, H318 Aquatic Chronic 3, H412

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 after inhalation : Remove person to fresh air and keep comfortable for breathing. Give oxygen or artificial respiration if necessary.

First-aid measures after skin contact : Wash skin with plenty of water. Take off contaminated clothing. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

First-aid measures after ingestion : Call a poison center or a doctor if you feel unwell. Do NOT induce vomiting.

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

Symptoms/effects after skin contact : Irritation.

Symptoms/effects after eye contact : Eye irritation.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

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SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Specific hazards arising from the chemical

No additional information available

5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Avoid contact with skin and eyes.

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

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Take up liquid spill into absorbent material.
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

Precautions for safe handling : Ensure good ventilation of the work station. Avoid contact with skin and eyes. Wear personal protective equipment.
Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in corrosive resistant container with a resistant inner liner. Keep only in original container. Store in a well-ventilated place. Keep cool.
Incompatible materials : Aluminum. copper. Copper alloys. Nickel. Zinc.
Storage temperature : < 25 °C
Packaging materials : Polyethylene. Polyvinylchloride (PVC). Stainless steel.

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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

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No additional information available	
Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate (51981-21-6)	
No additional information available	
Sodium Hydroxide (1310-73-2)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Sodium hydroxide
ACGIH OEL Ceiling	2 mg/m ³
Remark (ACGIH)	TLV® Basis: URT, eye, & skin irr
Regulatory reference	ACGIH 2022
USA - OSHA - Occupational Exposure Limits	
Local name	Sodium hydroxide
OSHA PEL (TWA) [1]	2 mg/m ³
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
IDLH	10 mg/m ³
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (Ceiling)	2 mg/m ³
US-NIOSH chemical category	SK: DIR(COR) Apr 2011
Water (7732-18-5)	
No additional information available	

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.
Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Eye protection:
Safety glasses

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Appearance : pale yellow. Liquid.
Color : Pale yellow Yellow
Odor : slight ammonia
Odor threshold : No data available
pH : 11 – 12 1%

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Melting point	: < -15 °C
Freezing point	: No data available
Boiling point	: 105 – 110 °C
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: No data available
Relative vapor density at 20°C	: No data available
Relative density	: No data available
Density	: 1.41 – 1.46 g/ml
Molecular mass	: 351.1 g/mol
Solubility	: Miscible with water.
Partition coefficient n-octanol/water (Log Pow)	: < 3
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: 200 mPa.s @ 25 °C
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

No additional information available

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Aluminum. copper. Copper alloys. Nickel. zinc.

10.6. Hazardous decomposition products

No additional information available

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

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Biopure™ GLDA	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rat	> 2000 mg/kg
Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate (51981-21-6)	
LD50 oral rat	> 2000 mg/kg body weight EU Method B.1 bis
LD50 dermal rat	> 2000 mg/kg body weight OECD Guideline 402, EU Method B.3, EPA OPPTS 870.1200
Sodium Hydroxide (1310-73-2)	
LD50 oral rat	325 mg/kg
LD50 dermal rabbit	1350 mg/kg
ATE US (oral)	325 mg/kg body weight
ATE US (dermal)	1350 mg/kg body weight
Skin corrosion/irritation	: Causes skin irritation. pH: 11 – 12 1%
Sodium Hydroxide (1310-73-2)	
pH	12 (conc: 0.05 % (solution))
Water (7732-18-5)	
pH	7
Serious eye damage/irritation	: Causes serious eye irritation. pH: 11 – 12 1%
Sodium Hydroxide (1310-73-2)	
pH	12 (conc: 0.05 % (solution))
Water (7732-18-5)	
pH	7
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Biopure™ GLDA	
LOAEL (oral,rat,90 days)	≈ 300 mg/kg bodyweight/day
NOAEL (oral,rat,90 days)	300 mg/kg bodyweight/day
Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate (51981-21-6)	
NOAEL (oral,rat,90 days)	300 mg/kg body weight OECD Guideline 408, EU Method B.26 , EPA OPPTS 870.3100
Aspiration hazard	: Not classified
Viscosity, kinematic	: No data available
Symptoms/effects after skin contact	: Irritation.
Symptoms/effects after eye contact	: Eye irritation.

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SECTION 12: Ecological information

12.1. Toxicity

Biopure™ GLDA	
LC50 - Fish [1]	> 100 mg/l Oncorhynchus mykiss
EC50 - Crustacea [1]	> 100 mg/l Daphnia magna
Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate (51981-21-6)	
LC50 - Fish [1]	> 100 mg/l Oncorhynchus mykiss (Salmo gairdneri)
EC50 - Crustacea [1]	> 100 mg/l Daphnia magna
LC50 - Fish [2]	> 95.26 mg/l Oncorhynchus mykiss (Salmo gairdneri)
EC50 - Crustacea [2]	> 95.26 mg/l Daphnia magna
LOEC (chronic)	> 265.7 mg/l Daphnia magna, 21 d
NOEC (chronic)	224 mg/l 21 d
Sodium Hydroxide (1310-73-2)	
LC50 - Fish [1]	45.4 mg/l Oncorhynchus mykiss
EC50 - Crustacea [1]	40.4 mg/l Ceriodaphnia

12.2. Persistence and degradability

Biopure™ GLDA	
Persistence and degradability	Readily biodegradable.
Sodium Hydroxide (1310-73-2)	
Not rapidly degradable	
Water (7732-18-5)	
Not rapidly degradable	

12.3. Bioaccumulative potential

Biopure™ GLDA	
Partition coefficient n-octanol/water (Log Kow)	< 3
Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate (51981-21-6)	
Partition coefficient n-octanol/water (Log Pow)	< 0 (27 °C (a@ pH 7)
Sodium Hydroxide (1310-73-2)	
Partition coefficient n-octanol/water (Log Pow)	-3.88 SRC
Water (7732-18-5)	
Partition coefficient n-octanol/water (Log Pow)	-1.38

12.4. Mobility in soil

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Organic Carbon Normalized Adsorption Coefficient (Log Koc)	< 1.5

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12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with DOT / IMDG / IATA

DOT	IMDG	IATA
14.1. UN number		
3267	3267	3267
14.2. Proper Shipping Name		
Corrosive liquid, basic, organic, n.o.s. (Glutamic acid N,N-diacetic acid tetrasodium salt 47% solution, Sodium hydroxide)	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Glutamic acid N,N-diacetic acid tetrasodium salt 47% solution, Sodium hydroxide)	Corrosive liquid, basic, organic, n.o.s. (Glutamic acid N,N-diacetic acid tetrasodium salt 47% solution, Sodium hydroxide)
Transport document description		
UN3267 Corrosive liquid, basic, organic, n.o.s. (Glutamic acid N,N-diacetic acid tetrasodium salt 47% solution, Sodium hydroxide), 8, III	UN 3267 CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Glutamic acid N,N-diacetic acid tetrasodium salt 47% solution, Sodium hydroxide), 8, III	UN 3267 Corrosive liquid, basic, organic, n.o.s. (Glutamic acid N,N-diacetic acid tetrasodium salt 47% solution, Sodium hydroxide), 8, III
14.3. Transport hazard class(es)		
8	8	8
 Not applicable		
14.4. Packing group		
III	III	III
14.5. Environmental hazards		
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No
No supplementary information available		

14.6. Special precautions for user

DOT

UN-No.(DOT) : UN3267

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DOT Special Provisions (49 CFR 172.102)	: IB3 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672). T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP28 - A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 154
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 203
DOT Packaging Bulk (49 CFR 173.xxx)	: 241
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 60 L
DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other	: 40 - Stow "clear of living quarters", 52 - Stow "separated from" acids

IMDG

Special provision (IMDG)	: 223, 274
Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: P001, LP01
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T7
Tank special provisions (IMDG)	: TP1, TP28
EmS-No. (Fire)	: F-A - FIRE SCHEDULE Alfa - GENERAL FIRE SCHEDULE
EmS-No. (Spillage)	: S-B - SPILLAGE SCHEDULE Bravo - CORROSIVE SUBSTANCES
Stowage category (IMDG)	: A
Stowage and handling (IMDG)	: SW2
Segregation (IMDG)	: SGG18, SG35
Properties and observations (IMDG)	: Reacts violently with acids. Causes burns to skin, eyes and mucous membranes.

IATA

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y841
PCA limited quantity max net quantity (IATA)	: 1L
PCA packing instructions (IATA)	: 852
PCA max net quantity (IATA)	: 5L
CAO packing instructions (IATA)	: 856
CAO max net quantity (IATA)	: 60L
Special provision (IATA)	: A3, A803
ERG code (IATA)	: 8L

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

Not applicable

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SECTION 15: Regulatory information

15.1. US Federal regulations

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
Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate	51981-21-6	Present	Active	PMN
Sodium Hydroxide	1310-73-2	Present	Active	
Water	7732-18-5	Exempted	Active	

This product or mixture is NOT known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Sodium Hydroxide (1310-73-2)

CERCLA RQ 1000 lb

15.2. International regulations

CANADA

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Listed on the Canadian DSL (Domestic Substances List)

Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate (51981-21-6)

Listed on the Canadian DSL (Domestic Substances List)

Sodium Hydroxide (1310-73-2)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Biopure™ GLDA

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate (51981-21-6)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Sodium Hydroxide (1310-73-2)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

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National regulations

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Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)

Tetrasodium N,N-bis(carboxylatomethyl)-L-glutamate (51981-21-6)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)

Sodium Hydroxide (1310-73-2)

Listed introduction on Australian Industrial Chemicals Introduction Scheme (AICIS Inventory)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Japanese Poisonous and Deleterious Substances Control Law
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on the NCI (Vietnam - National Chemical Inventory)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

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Revision date : 03/17/2023

Full text of H-phrases

H290	May be corrosive to metals
H302	Harmful if swallowed
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H318	Causes serious eye damage
H319	Causes serious eye irritation

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Full text of H-phrases	
H402	Harmful to aquatic life
H412	Harmful to aquatic life with long lasting effects

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Important Note: Please note that the information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. The information contained herein may change without prior notice. THIS SAFETY DATA SHEET SUPERSEDES ALL PREVIOUS EDITIONS.