



Lab Rats Collective

L-Carnitine

CAS: 7634-98-2
Formula: C7H15NO3

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Section 1 — Product and Company Identification

Product Name	L-Carnitine
Synonyms	L-carnitine; Levocarnitine; 541-15-1
CAS Number	7634-98-2
Molecular Formula	C7H15NO3
IUPAC Name	(3R)-3-hydroxy-4-(trimethylazaniumyl)butanoate
Identified Uses	Research laboratory chemical for in vitro scientific research and development use only.
Restriction on Use	Not for human or veterinary use. Not for food, drug, cosmetic, household, agricultural, clinical, therapeutic, or diagnostic applications.

Manufacturer / Supplier

Company	Lab Rats Collective
Address	5900 Balcones Dr, Ste 100, Austin, TX 78731, US
Phone	9728370284
Website	https://labratsco.com/
Emergency Contact	CHEMTREC
Emergency Phone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/ week

Section 2 — Hazard Identification

Classification of the substance

Classified under GHS Rev.8 / OSHA HazCom 2012 — see hazard statements below.

Classification has been conducted in accordance with 29 CFR 1910.1200 (OSHA HazCom 2012) and GHS Rev.8 using all available data and scientifically valid weight-of-evidence approaches (GHS Rev.8 Chapter 1.3.2.4), including read-across from chemical class and structural considerations where substance-specific study data is not available.

Signal Word: **WARNING**

GHS Pictograms:



Hazard Statements

- H315: Causes skin irritation [Warning Skin corrosion/irritation]
- H319: Causes serious eye irritation [Warning Serious eye damage/eye irritation]

Precautionary Statements

- P264
- P264+P265
- P280
- P302+P352
- P305+P351+P338
- P321
- P332+P317
- P337+P317
- P362+P364

Hazards Not Otherwise Classified (HNOC)

None known based on available data and weight-of-evidence assessment. The toxicological properties of this substance have not been fully characterized; handle as a potentially bioactive substance of unknown toxicity.

Section 3 — Composition / Information on Ingredients

Single-substance product. Chemical identity:

Ingredient	CAS Number	Mol. Formula	Mol. Weight	Concentration
L-Carnitine	7634-98-2	C7H15NO3	161.2 g/mol	>98% (research grade)

Impurities

No hazardous impurities known to be present above the GHS classification thresholds specified in 29 CFR 1910.1200 Appendix A. Residual synthesis reagents, solvents, and counter-ions may be present at levels consistent with research-grade (>98% purity) material. Balance: non-hazardous impurities. Refer to the accompanying Certificate of Analysis (CoA) for the lot-specific impurity profile.

Section 4 — First Aid Measures

Eye Contact

Immediately flush eyes with large amounts of water for at least 15 minutes, lifting the upper and lower eyelids. Remove contact lenses if present and easy to do. Seek immediate medical attention.

Skin Contact

Remove contaminated clothing immediately. Wash affected area with soap and water for at least 15 minutes. Seek medical attention if irritation or symptoms develop.

Inhalation

Move affected person to fresh air. If symptoms develop, seek medical advice.

Ingestion

Rinse mouth thoroughly with water. If large amounts are swallowed or if symptoms develop, seek medical advice. Do not induce vomiting unless directed by medical personnel.

Note to Physician

Treat symptomatically. No specific antidote known.

Section 5 — Fire Fighting Measures

Flash Point: *Not determined*

Suitable Extinguishing Media

Use extinguishing media appropriate to the surrounding fire conditions. Carbon dioxide (CO₂), dry chemical powder, foam, or water spray.

Special Hazards

May produce toxic gases upon combustion. Carbon monoxide and other combustion products may be generated.

Protective Equipment for Firefighters

Wear self-contained breathing apparatus (SCBA) and full protective gear. Do not enter fire area without proper protective equipment.

Section 6 — Accidental Release Measures

Personal Precautions

Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Use personal protective equipment as described in Section 8.

Environmental Precautions

Prevent further leakage or spillage if safe to do so. Do not allow the product to enter drains, sewers, or waterways.

Containment and Cleanup

Sweep up and shovel. Keep in suitable, closed containers for disposal. Avoid raising dust. Clean contaminated surface thoroughly. Dispose of waste in accordance with local regulations (see Section 13).

Section 7 — Handling and Storage

Handling Precautions

Handle in accordance with good industrial hygiene and safety practice as required under OSHA HazCom 2012 (29 CFR 1910.1200). Because occupational toxicity data are limited, treat L-carnitine as a potentially bioactive substance of unknown toxicological profile and minimize all routes of exposure (inhalation, skin/eye contact, ingestion). Handle in a well-ventilated area; use local exhaust ventilation (a fume hood or ventilated weighing enclosure) when weighing, opening containers, or performing operations that may generate dust. Wear appropriate personal protective equipment as specified in Section 8, including chemical-resistant gloves, safety eyewear, and a laboratory coat; use an appropriate NIOSH-approved particulate respirator if engineering controls do not adequately control airborne dust. Avoid formation and inhalation of dust; do not taste or swallow. No occupational exposure limit (OSHA PEL, NIOSH REL, or ACGIH TLV) has been established for this substance; apply the ACGIH guidance for particulates not otherwise specified as a conservative default. Prohibit eating, drinking, and smoking in areas where the substance is handled. Wash hands

and exposed skin thoroughly after handling and before breaks and at the end of the workday. Remove and launder contaminated clothing before reuse. Keep containers tightly closed when not in use, as the material is reported to be hygroscopic (ChemicalBook; Beilstein). Ground and bond containers if transferring bulk powder to minimize dust accumulation and static discharge. Do not allow release to the environment; manage waste in accordance with Section 13 and applicable EPA/RCRA and local regulations.

Storage Conditions

Store in the original tightly closed container in a cool, dry, well-ventilated area away from direct sunlight, heat, and sources of ignition. Protect from moisture: L-carnitine is reported to be hygroscopic (crystallizes from ethanol/acetone as a hygroscopic solid; ChemicalBook, Beilstein 4 III 1632-5), so storage under desiccation or with a desiccant is recommended, and containers may be stored under an inert atmosphere (e.g., nitrogen or argon) to further limit moisture uptake and oxidative degradation. Store below the reported decomposition point (literature melting/-decomposition ~197-200 degC, ChemicalBook); for laboratory quantities, refrigerated storage (typically 2-8 degC) or storage at the temperature recommended on the product label/certificate of analysis is appropriate to preserve integrity. Allow containers to warm to room temperature in a desiccator before opening to avoid condensation onto the solid. Keep separated from incompatible materials (see below) and away from foodstuffs, feedstuffs, and drinking water. Store in a secure location accessible only to trained and authorized personnel, with clear GHS labeling in accordance with 29 CFR 1910.1200(f). Storage areas should have impervious, chemically resistant flooring and provisions for spill containment as described in Section 6.

Incompatibilities

Incompatible with strong oxidizing agents. Also avoid contact with strong acids and strong bases, which can promote hydrolysis of the carboxylate/quaternary ammonium (betaine) functionalities, and with strong reducing agents. Avoid exposure to excess heat, open flame, moisture, and prolonged exposure to air/light, which may accelerate degradation of this hygroscopic solid. Hazardous decomposition products on strong heating or combustion may include carbon monoxide, carbon dioxide, and nitrogen oxides (NOx) (per PubChem CID 10917 hazard information consistent with the elemental composition). No polymerization is expected under normal conditions of handling and storage.

Section 8 — Exposure Controls / Personal Protection

Exposure Limits

No regulatory occupational exposure limits (OEL) have been established by OSHA, ACGIH, NIOSH, or equivalent bodies. No biological exposure indices (BEIs) have been established. Control exposure to the lowest level reasonably achievable (ALARA) using the engineering controls and PPE specified below. Handle as a potentially bioactive substance of unknown occupational toxicity.

Engineering Controls

Use in a well-ventilated area. Handle weighing and transfer operations involving the solid powder inside a certified chemical fume hood, ventilated enclosure, or containment device (e.g., glove box or powder-handling isolator) sufficient to keep airborne concentrations as low as reasonably achievable. General dilution ventilation is typically insufficient for dusty operations. Provide readily accessible eyewash stations and safety showers in the work area in accordance with ANSI/ISEA Z358.1. Avoid generation of dust and aerosols. Follow good laboratory/industrial hygiene practice: no eating, drinking, smoking, or storage of food in the work area; wash hands and exposed skin thoroughly after handling and before breaks.

Personal Protective Equipment

Respiratory Protection: Not required under conditions of adequate engineering control (fume hood or local exhaust ventilation). Where dust, mists, or aerosols may be generated outside of containment, use a NIOSH-approved (42 CFR Part 84) air-purifying particulate respirator with N95 filters at a minimum; use N100/P100 or a powered air-purifying

respirator (PAPR) for higher-exposure or extended tasks. Respirator use must comply with the OSHA Respiratory Protection Standard (29 CFR 1910.134), including a written program, fit testing, and medical clearance.

Hand Protection: Wear chemically resistant protective gloves conforming to EN ISO 374 / ANSI-ISEA 105. Nitrile rubber gloves of appropriate thickness (typically ≥ 0.11 mm) are generally suitable for handling this solid. Inspect gloves before use; replace immediately if torn, punctured, or contaminated. Follow the double-glove practice when handling the neat compound or concentrated solutions. Wash hands with soap and water after removing gloves. Glove selection should be verified against the specific formulation and solvent system in use, since permeation data specific to L-carnitine are not published by an authoritative body.

Eye / Face Protection: Wear tightly fitting chemical splash goggles meeting ANSI/ISEA Z87.1 (or EN 166) when handling the solid or its solutions. A face shield worn over goggles is recommended when there is a risk of splashing, spraying, or dust dispersion. Do not wear contact lenses when handling the material unless goggles are worn over them.

Skin Protection: Wear a laboratory coat or chemical-resistant long-sleeved protective garment, full-length trousers, and closed-toe chemical-resistant footwear. For tasks with significant splash or dust potential, add a chemical-resistant apron or coverall (e.g., Tyvek or equivalent). Remove and launder contaminated clothing before reuse; do not take contaminated clothing home. Cover any broken skin with an occlusive dressing before donning PPE.

Section 9 — Physical and Chemical Properties

Physical State	Solid (research-grade lyophilised powder or crystalline solid)
Appearance	White crystalline powder
Odor	Odorless
Odor Threshold	Not available.
Boiling Point	<i>Not determined</i>
Melting Point	195-198 197 °C (dec)
Flash Point	<i>Not determined</i>
Auto-ignition Temperature	No data available.
Decomposition Temperature	No experimental data available.
Vapor Pressure	<i>Not determined</i>
Vapor Density	<i>Not determined</i>
Specific Gravity	<i>Not determined</i>
Partition Coefficient (log Kow)	No experimental data available.
Solubility	Very soluble in water; soluble in hot ethanol; practically insoluble in acetone and diethyl ether
Stability in Solution	Subject to hydrolytic and oxidative degradation typical of the chemical class; store reconstituted solutions refrigerated or frozen, protect from light, and use within the stability window indicated on the Certificate of Analysis.
pH	5.5-9.5 (5% aqueous solution)
Molecular Weight	161.2 g/mol
Molecular Formula	C7H15NO3

Section 10 — Stability and Reactivity

Chemical Stability: Stable under normal conditions of use, storage, and transport.

Conditions to Avoid: Excessive heat, open flames, sparks, incompatible materials.

Incompatible Materials: Incompatible with strong oxidizing agents. Also avoid contact with strong acids and strong bases, which can promote hydrolysis of the carboxylate/quaternary ammonium (betaine) functionalities, and with strong reducing agents. Avoid exposure to excess heat, open flame, moisture, and prolonged exposure to air/light, which may accelerate degradation of this hygroscopic solid. Hazardous decomposition products on strong heating or combustion may include carbon monoxide, carbon dioxide, and nitrogen oxides (NO_x) (per PubChem CID 10917 hazard information consistent with the elemental composition). No polymerization is expected under normal conditions of handling and storage.

Hazardous Decomposition Products: Upon combustion or decomposition may produce: carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x).

Hazardous Polymerization: Will not occur.

Section 11 — Toxicological Information

The toxicological properties of this substance have not been fully characterized. Where no authoritative study data was identified, endpoint classifications are based on a weight-of-evidence approach using read-across from the compound's chemical class and structural features, per GHS Rev.8 Chapter 1.3.2.4. "Not classified" entries below mean "not classified based on currently available data" — hazards cannot be excluded.

Acute Toxicity: Not classified based on currently available data; hazards cannot be excluded. Weight-of-evidence assessment applied using read-across from chemical class and structural considerations (GHS Rev.8 Chapter 1.3.2.4); no authoritative substance-specific study data identified.

Skin Corrosion / Irritation: Not classified based on currently available data; hazards cannot be excluded. Weight-of-evidence assessment applied using read-across from chemical class and structural considerations (GHS Rev.8 Chapter 1.3.2.4); no authoritative substance-specific study data identified.

Serious Eye Damage / Irritation: Not classified based on currently available data; hazards cannot be excluded. Weight-of-evidence assessment applied using read-across from chemical class and structural considerations (GHS Rev.8 Chapter 1.3.2.4); no authoritative substance-specific study data identified.

Skin / Respiratory Sensitization: Not classified based on currently available data; hazards cannot be excluded. Weight-of-evidence assessment applied using read-across from chemical class and structural considerations (GHS Rev.8 Chapter 1.3.2.4); no authoritative substance-specific study data identified.

Germ Cell Mutagenicity / Genotoxicity: Not classified based on currently available data; hazards cannot be excluded. Weight-of-evidence assessment applied using read-across from chemical class and structural considerations (GHS Rev.8 Chapter 1.3.2.4); no authoritative substance-specific study data identified.

Carcinogenicity: No indication of carcinogenicity to humans (not listed by IARC).

Reproductive Toxicity: Not classified based on currently available data; hazards cannot be excluded. Weight-of-evidence assessment applied using read-across from chemical class and structural considerations (GHS Rev.8 Chapter 1.3.2.4); no authoritative substance-specific study data identified.

Specific Target Organ Toxicity (STOT): Not classified based on currently available data; hazards cannot be excluded. Weight-of-evidence assessment applied using read-across from chemical class and structural considerations (GHS Rev.8 Chapter 1.3.2.4); no authoritative substance-specific study data identified.

Aspiration Hazard: Not classified based on currently available data; hazards cannot be excluded. Weight-of-evidence assessment applied using read-across from chemical class and structural considerations (GHS Rev.8 Chapter 1.3.2.4); no authoritative substance-specific study data identified.

Derived No-Effect Level (DNEL): No data available — no substance-specific DNEL has been derived.

Predicted No-Effect Concentration (PNEC): No data available — no substance-specific PNEC has been derived.

Section 12 — Ecological Information

No authoritative substance-specific ecotoxicity study data was identified. In the absence of experimental data, adverse environmental effects cannot be fully excluded.

Ecotoxicity: While data specific to L-carnitine were not located(SRC, 2008), the literature suggests that some pharmaceutically active compounds originating from human and veterinary therapy are not eliminated completely in municipal sewage treatment plants and are therefore discharged into receiving waters(1). Wastewater treatment processes often were not designed to remove them from the effluent(2). Selected organic waste compounds may be degrading to new and more persistent compounds that may be released

Persistence and Degradability: No substance-specific biodegradation data identified. Not experimentally verified.

Bioaccumulative Potential: No substance-specific bioaccumulation data (e.g., BCF, log Kow) identified. Not experimentally verified.

Mobility in Soil: No substance-specific experimental data identified.

Other Adverse Effects: No other adverse environmental effects identified. The substance is not included on the Montreal Protocol list of ozone-depleting substances.

Section 13 — Disposal Considerations

Dispose of contents and container in accordance with all local, state, and federal regulations. Do not dispose of this material into sewers or waterways. Contact a licensed waste disposal company for disposal guidance.

US: Dispose in accordance with 40 CFR Parts 261-270 (RCRA). **EU:** Dispose according to Directive 2008/98/EC (Waste Framework Directive).

Section 14 — Transport Information

DOT (US)	Not regulated as dangerous goods under DOT (49 CFR) based on current classification.
IATA	Not regulated as dangerous goods under IATA Dangerous Goods Regulations based on current classification.
IMDG	Not regulated as dangerous goods or as a marine pollutant under the IMDG Code based on current classification.
UN Number	Not applicable.

Transport classifications above are based on the substance's intrinsic hazard classification; the shipper must independently verify the classification, packaging, labelling, and documentation requirements for their specific shipment configuration, quantity, and carrier (including airline policies) prior to dispatch.

Section 15 — Regulatory Information

United States

TSCA (Toxic Substances Control Act): May be eligible for exemption from TSCA inventory listing requirements under the R&D provisions of 40 CFR 720.36, depending on actual conditions of use. This substance is supplied solely for use in scientific research and development in small quantities; it is not intended for, and shall not be used for, any commercial manufacturing, processing, or distribution in commerce. The importer/end user is responsible for confirming that the R&D exemption criteria are met for their specific use. **OSHA HazCom 2012:** This SDS was prepared in accordance

with 29 CFR 1910.1200 (HazCom 2012), aligned with the Globally Harmonized System (GHS) Rev. 8. **CERCLA / SARA Title III:** Not listed as a CERCLA Hazardous Substance (40 CFR 302.4); not subject to SARA 313 reporting based on available classification data. Users must independently verify applicability for their facility.

European Union

REACH (EC 1907/2006): Supplied solely for Scientific Research and Development (SR&D) use in quantities below 1 tonne per year per legal entity. Where applicable, this use may be exempt from REACH registration obligations under the scientific research and development provisions of REACH Article 3(23) and the conditions of Article 26(3); importers/users should independently verify the applicable exemption pathway for their specific use. If the substance is used as part of a formally notified Product and Process Oriented Research and Development (PPORD) programme, the separate notification procedure under REACH Article 9 (with a 5-year exemption renewable once) may apply instead. **CLP (EC 1272/2008):** Not classified under CLP based on available data; no harmonized classification entry identified in Annex VI of CLP or the ECHA Classification and Labelling (C&L) Inventory.

Canada

WHMIS 2015 / HPR: Not classified as a hazardous product under the Hazardous Products Act and Hazardous Products Regulations (SOR/2015-17) based on available data and weight-of-evidence assessment. Supplied for laboratory research use only. **DSL/NDSL:** Research-use exemption applies; substance is not intended for commercial import or manufacture in Canada.

Note: The regulatory statements above reflect the intended use of this substance for scientific research and development only and do not constitute a legal determination of regulatory status. If the substance is used outside the R&D exemption scope, users are solely responsible for independently verifying applicable regulatory obligations (TSCA, REACH, WHMIS, state, and local) for their specific use and jurisdiction prior to any such use.

Section 16 — Other Information

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Prepared By	Prepared in accordance with GHS Rev.8 and OSHA HazCom 2012 (29 CFR 1910.1200). Independent review by a qualified chemical safety professional is recommended prior to use.

Revision History

Revision date: 2026-08-03

Version: 1.0

Change description: Initial issue. Document prepared in 16-section GHS Rev.8 / OSHA HazCom 2012 format.

Sources Used

- PubChem (U.S. National Library of Medicine / NCBI) — <https://pubchem.ncbi.nlm.nih.gov>
- Peer-reviewed chemistry and toxicology literature (class-based read-across and weight-of-evidence assessment per GHS Rev.8 Chapter 1.3.2.4)
- OSHA HazCom 2012 / 29 CFR 1910.1200 Appendix A–C; GHS Rev.8; OECD Test Guidelines

Key to Abbreviations

CAS = Chemical Abstracts Service; GHS = Globally Harmonized System of Classification and Labelling of Chemicals; OSHA = U.S. Occupational Safety and Health Administration; HazCom = Hazard Communication Standard; REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals; CLP = Classification, Labelling and Packaging Regulation; TSCA = Toxic Substances Control Act; WHMIS = Workplace Hazardous Materials Information System; OEL = Occupational Exposure Limit; PEL = Permissible Exposure Limit; TLV = Threshold Limit Value; REL = Recommended Exposure Limit; STOT = Specific Target Organ Toxicity; LD50 = Median Lethal Dose; LC50 = Median Lethal Concentration; PPE = Personal Protective Equipment; SCBA = Self-Contained Breathing Apparatus; R&D = Research and Development.

Disclaimer

DISCLAIMER: The information in this Safety Data Sheet is compiled from the authoritative sources cited above, supplemented by weight-of-evidence assessment based on the compound's chemical class and published literature. It is believed to be accurate as of the revision date but is provided "as is" without warranty of any kind, express or implied, including fitness for a particular purpose. The preparer of this document has not independently tested the substance described herein. Users bear sole responsibility for verifying all information, ensuring safe handling, and compliance with all applicable federal, state, provincial, and local regulations. This SDS is not a substitute for independent chemical safety assessment by a qualified professional. This product is intended for scientific research and development use only and is not for human consumption, drug, food, cosmetic, agricultural, or household use.

This SDS complies with GHS Revision 8 / UN GHS Rev.8 and OSHA HazCom 2012 (29 CFR 1910.1200).