



SAFETY DATA SHEET

GHS / OSHA HazCom 2012 Compliant

Minuteman Peptides, LLC

GHK

CAS: 49557-75-7

Formula: C₁₄H₂₄N₆O₄

Document ID: 26e2d6bc

Revision Date: 2026-07-18

Version: 1.0

Section 1 — Product and Company Identification

Product Name	GHK
Synonyms	glycyl-L-histidyl-L-lysine; 49557-75-7; Prezatide
CAS Number	49557-75-7
Molecular Formula	C ₁₄ H ₂₄ N ₆ O ₄
IUPAC Name	(2S)-6-amino-2-[[[(2S)-2-[(2-aminoacetyl)amino]-3-(1H-imidazol-5-yl)propanoyl]amino]hexanoic acid
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	Minuteman Peptides, LLC
Address	53 Knox Trail, Suite 200, Acton, MA 01720, US
Phone	978-596-1533
Website	https://minutemanpeptides.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

Not classified based on currently available data; however, data is limited and hazards cannot be fully characterized.

The absence of classification should not be interpreted as a determination of the absence of hazard.

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: None

GHS Pictograms:

None required based on classification.

Hazard Statements

None. This substance is not classified for any GHS hazard class based on available data.

Precautionary Statements

- P261: Avoid breathing dust, fume, gas, mist, vapors, or spray.
- P264: Wash hands and exposed skin thoroughly after handling.
- P280: Wear protective gloves, protective clothing, and eye/face protection.
- P501: Dispose of contents and container in accordance with local, regional, national, and international regulations.

Precautionary statements are provided as best practice for handling substances with limited toxicological data, and are not a declaration of GHS classification.

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
GHK	49557-75-7	C14H24N6O4	340.38 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

Rinse cautiously with water for several minutes. If irritation persists, seek medical advice.

Skin Contact

Wash with soap and water. Remove contaminated clothing and wash before reuse. If irritation persists, seek medical advice.

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 laboratory safety practices as set out in OSHA 29 CFR 1910.1450 (Occupational Exposure to Hazardous Chemicals in Laboratories) and the general requirements of 29 CFR 1910.1200. Because comprehensive toxicological data for GHK (CAS 49557-75-7) are not available, treat the substance as a potentially bioactive material of unknown toxicity and minimize all routes of exposure. Use only in a well-ventilated area; where dust or aerosol generation is possible (e.g., weighing, opening containers of the lyophilized solid, reconstitution), perform operations inside a chemical fume hood, ventilated balance enclosure, or glove box to keep airborne exposure as low as reasonably achievable, consistent with the NIOSH Hierarchy of Controls. Wear appropriate personal protective equipment as specified in Section 8, including chemical-resistant gloves, safety eyewear meeting ANSI Z87.1, and a laboratory coat. Avoid generation of dust; do not breathe dust, mist, or vapor. Avoid contact with skin, eyes, and clothing. Do not eat, drink, smoke, or apply cosmetics in areas where the substance is handled. Wash hands and exposed skin thoroughly with soap and water after handling and before breaks and at the end of the work shift. Keep containers tightly closed when not in use to prevent moisture uptake and contamination. Ground and bond containers when transferring to control any electrostatic discharge associated with fine powders. Promptly clean up any spilled material using methods that avoid dust generation (e.g., damp wiping or HEPA-filtered

vacuum) as described in Section 6. Empty containers may retain product residue and should be handled with the same precautions as the full container.

Storage Conditions

Store in the original tightly closed container, protected from light, in a cool, dry, well-ventilated area away from incompatible materials (see below). As a peptide containing free amino, carboxyl, and imidazole functional groups, the material is expected to be hygroscopic and sensitive to moisture, heat, and atmospheric oxidation; storage of the lyophilized solid at refrigerated or frozen temperatures (typically 2-8 degC, or -20 degC for long-term storage) under an inert, dry atmosphere and with desiccant is recommended to preserve integrity. Consult the manufacturer's certificate of analysis for the specific recommended storage temperature and expiration date; do not rely on shelf-life estimates not provided by the supplier. Aqueous solutions should be prepared fresh when possible, kept refrigerated, and protected from light; repeated freeze-thaw cycles should be avoided. Store away from food, drink, and animal feed. Keep out of reach of unauthorized personnel and children. Storage areas should be equipped with secondary containment, spill control materials, and emergency eyewash/safety shower facilities in accordance with 29 CFR 1910.151. Label all secondary containers in compliance with the OSHA Hazard Communication Standard (29 CFR 1910.1200(f)). No special regulatory storage class (e.g., DOT, EPA RCRA-listed) is assigned to this substance based on currently available regulatory information; however, segregate from incompatible materials as a precaution.

Incompatibilities

Specific reactivity data for GHK are not established in authoritative regulatory sources. As a general precaution for an organic tripeptide bearing primary amine (glycine N-terminus and lysine epsilon-amine), carboxylic acid (lysine C-terminus), amide, and imidazole (histidine) functional groups, avoid contact with: strong oxidizing agents (e.g., peroxides, perchlorates, nitrates, chromates, permanganates, concentrated nitric acid, hypochlorites), which can degrade peptide bonds and amine/imidazole side chains and may generate hazardous decomposition products; strong acids and strong bases, which can hydrolyze the peptide and may release heat; strong reducing agents; aldehydes and other electrophilic reagents (e.g., isocyanates, acid chlorides, anhydrides, activated esters), which can react with free amine groups; and heavy-metal salts, particularly copper(II), with which the imidazole and amine donor groups are known to form coordination complexes. Protect from heat, ignition sources, direct sunlight, and prolonged exposure to humid air. Hazardous decomposition products under fire conditions may include carbon monoxide, carbon dioxide, and nitrogen oxides (NOx), as is typical for nitrogen-containing organic compounds; refer to Section 10 for additional stability and reactivity information.

Section 8 — Exposure Controls / Personal Protection

Exposure Limits

No regulatory occupational exposure limits (OEL) have been established by OSHA, ACGIH, NIOSH, or equivalent bodies for GHK (glycyl-L-histidyl-L-lysine, CAS 49557-75-7). 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 toxicity.

Engineering Controls

Use in a well-ventilated area. Local exhaust ventilation (LEV), a chemical fume hood, ventilated balance enclosure, or glove box is recommended for weighing, transferring, or any operation that may generate dusts, aerosols, or mists, in accordance with the OSHA Laboratory Standard (29 CFR 1910.1450) and ANSI/IIHA Z9.5 ventilation guidance. Maintain face velocities and containment performance appropriate for handling powders of unknown toxicity. Provide accessible emergency eyewash and safety shower per ANSI Z358.1 in any area where the substance is handled. Minimize quantities, segregate work areas, and prohibit eating, drinking, and smoking in the work area. Implement hygiene measures consistent with 29 CFR 1910.1450 and good laboratory practice (e.g., decontamination of surfaces after use, hand washing prior to breaks).

Personal Protective Equipment

Respiratory Protection: No regulatory exposure limit has been assigned. Where engineering controls (fume hood, ventilated enclosure, or glove box) adequately prevent generation of airborne dust or aerosol, routine respiratory protection is not required. If dusts, mists, or aerosols may be generated outside containment, use a NIOSH-approved (42 CFR Part 84) air-purifying respirator equipped with N95 or higher particulate filters (e.g., N100/P100) as appropriate. For larger-scale or higher-exposure operations, use a powered air-purifying respirator (PAPR) with HEPA filters. Respirator selection, fit testing, medical clearance, and program elements must comply with the OSHA Respiratory Protection Standard (29 CFR 1910.134).

Hand Protection: Wear chemically resistant gloves compliant with EN ISO 374 / ANSI/ISEA 105. Nitrile rubber gloves of suitable thickness (typically ≥ 0.11 mm) are generally recommended for handling solid peptides and aqueous solutions. Inspect gloves before use, replace immediately if contamination, degradation, or puncture is suspected, and wash hands thoroughly after removal. Double gloving is recommended when handling bulk powder or when breakthrough data are not available, since no chemical-specific breakthrough testing has been published for GHK by an authoritative body.

Eye / Face Protection: Wear tightly fitting safety glasses with side shields meeting ANSI/ISEA Z87.1 (US) or EN 166 (EU) as a minimum. Where splashing of solutions or generation of dust is possible, wear chemical splash goggles; add a face shield (worn over goggles) for operations with risk of splash to the face. Provide an emergency eyewash station meeting ANSI Z358.1 within the work area.

Skin Protection: Wear a laboratory coat or chemically resistant long-sleeved garment, full-length trousers, and closed-toe chemically resistant footwear. For operations involving bulk powder, potential splash, or potential aerosol generation, wear a chemical-resistant apron or a disposable impervious coverall (e.g., Type 5/6 per EN 13982/EN 13034) over the lab coat. Remove and launder or dispose of contaminated clothing before reuse; do not take potentially contaminated PPE outside the work area. Wash hands, forearms, and any exposed skin thoroughly with soap and water after handling and before breaks, in line with 29 CFR 1910.1450 hygiene requirements.

Section 9 — Physical and Chemical Properties

Physical State	Solid (research-grade lyophilised powder or crystalline solid)
Appearance	White to off-white lyophilized powder
Odor	Odorless
Odor Threshold	Not available.
Boiling Point	<i>Not determined</i>
Melting Point	<i>Not determined</i>
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 K_{ow})	No experimental data available.
Solubility	Soluble in water
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	Not determined
Molecular Weight	340.38 g/mol
Molecular Formula	C14H24N6O4

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: Specific reactivity data for GHK are not established in authoritative regulatory sources. As a general precaution for an organic tripeptide bearing primary amine (glycine N-terminus and lysine epsilon-amine), carboxylic acid (lysine C-terminus), amide, and imidazole (histidine) functional groups, avoid contact with: strong oxidizing agents (e.g., peroxides, perchlorates, nitrates, chromates, permanganates, concentrated nitric acid, hypochlorites), which can degrade peptide bonds and amine/imidazole side chains and may generate hazardous decomposition products; strong acids and strong bases, which can hydrolyze the peptide and may release heat; strong reducing agents; aldehydes and other electrophilic reagents (e.g., isocyanates, acid chlorides, anhydrides, activated esters), which can react with free amine groups; and heavy-metal salts, particularly copper(II), with which the imidazole and amine donor groups are known to form coordination complexes. Protect from heat, ignition sources, direct sunlight, and prolonged exposure to humid air. Hazardous decomposition products under fire conditions may include carbon monoxide, carbon dioxide, and nitrogen oxides (NOx), as is typical for nitrogen-containing organic compounds; refer to Section 10 for additional stability and reactivity information.

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

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: Acute toxicity of GHK (CAS 49557-75-7) has not been fully characterized. No acute oral, dermal, or inhalation LD50/LC50 values for this substance are available from authoritative sources (ECHA, NIOSH, NTP, or peer-reviewed primary literature indexed in PubChem CID 73587). Not classified for acute toxicity (oral, dermal, or inhalation) based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). Handle as a substance of unknown acute toxicity and minimize all routes of exposure.

Skin Corrosion / Irritation: No standardized in vivo skin corrosion/irritation study (e.g., OECD TG 404) on GHK is available in authoritative public databases (PubChem CID 73587; ECHA registration data). The 2014 Cosmetic Ingredient Review (CIR) Safety Assessment of Tripeptide-1, Hexapeptide-12, and Related Amides reported that closely related tripeptide-containing formulations were not skin irritants at cosmetic use concentrations, but data specific to free GHK are limited. Not classified for skin corrosion/irritation based on currently available data; hazards cannot be excluded. The substance is a fine solid and mechanical/dust irritation of skin is possible.

Serious Eye Damage / Irritation: No standardized in vivo or validated in vitro eye irritation data (e.g., OECD TG 405, 437, 492) for GHK are available from authoritative sources. The CIR Safety Assessment (2014) of related tripeptide cosmetic ingredients reported no significant ocular irritation at low cosmetic use concentrations, but data specific to free GHK are limited. Not classified for serious eye damage/eye irritation based on currently available data; hazards cannot be excluded. Particulate contact with the eye may cause mechanical irritation.

Skin / Respiratory Sensitization: No guideline skin or respiratory sensitization studies (e.g., OECD TG 406, 429, 442A-442E) on GHK are available from authoritative sources. The CIR Safety Assessment (2014) of related tripeptide ingredients did not identify sensitization at cosmetic use concentrations, but data specific to free GHK are limited. Not classified for skin or respiratory sensitization based on currently available data; hazards cannot be excluded. As with other low-molecular-weight bioactive substances, the potential for sensitization in susceptible individuals cannot be ruled out.

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: GHK (CAS 49557-75-7) is not listed as a carcinogen by IARC, the U.S. National Toxicology Program (NTP) Report on Carcinogens, OSHA (29 CFR 1910 Subpart Z), or the ACGIH TLV list. The Cosmetic Ingredient Review (CIR, 2014) Safety Assessment of Tripeptide-1, Hexapeptide-12, and Related Amides explicitly noted that no carcinogenicity data were available for the reviewed tripeptide ingredients. Not classified for carcinogenicity based on currently available data; hazards cannot be excluded due to the absence of long-term bioassay data.

Reproductive Toxicity: No reproductive or developmental toxicity studies (e.g., OECD TG 414, 416, 421, 422, 443) on GHK are available from authoritative sources. The CIR Safety Assessment (2014) of related tripeptide ingredients explicitly noted the absence of reproductive and developmental toxicity data. Not classified for reproductive toxicity or effects on or via lactation based on currently available data; hazards cannot be excluded due to data gaps.

Specific Target Organ Toxicity (STOT): No specific target organs have been identified for GHK from single (STOT-SE) or repeated (STOT-RE) exposure in authoritative toxicological databases (PubChem CID 73587; ECHA; NTP). No subchronic or chronic repeated-dose toxicity studies on GHK conducted under recognized guidelines (e.g., OECD TG 407, 408, 410, 412) are publicly available; the CIR (2014) review of related tripeptide ingredients similarly noted limited repeated-dose data. Not classified for STOT-SE or STOT-RE based on currently available data; hazards cannot be excluded. The toxicological properties of this substance are not fully characterized.

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: No substance-specific experimental aquatic toxicity data (e.g., fish LC50, daphnid EC50, algal ErC50) for glycyl-L-histidyl-L-lysine (CAS 49557-75-7) have been identified in authoritative regulatory databases (ECHA, EPA CompTox, PubChem) at the time of SDS preparation. Not classified as hazardous to the aquatic environment (acute or chronic) under GHS/CLP based on a weight-of-evidence assessment in the absence of authoritative experimental data. The substance is an endogenous tripeptide (Gly-His-Lys) composed solely of proteinogenic L-amino-acid residues and is expected, on the basis of its composition, to undergo metabolism by aquatic organisms via normal peptide/amino-acid catabolic pathways; this read-across does not substitute for measured ecotoxicity data. Avoid release to the environment as a general precaution under OSHA HazCom 2012 / GHS Rev.8 good-practice guidance.

Persistence and Degradability: No standardized ready-biodegradability test data (e.g., OECD 301 series) specific to glycyl-L-histidyl-L-lysine have been identified in ECHA, EPA CompTox Chemicals Dashboard (DTXSID30197831), or PubChem (CID 73587). As a linear tripeptide consisting exclusively of the natural L-amino acids glycine, L-histidine and L-lysine joined by standard peptide bonds, the substance is expected to be susceptible to enzymatic and microbial hydrolysis in environmental matrices, yielding the constituent amino acids that enter normal biogeochemical nitrogen

and carbon cycles; this is a qualitative read-across and is not a substitute for substance-specific OECD biodegradation testing.

Bioaccumulative Potential: No experimental bioconcentration factor (BCF) or bioaccumulation factor (BAF) values for glycyl-L-histidyl-L-lysine have been identified in authoritative sources (ECHA registration dossiers, EPA CompTox, PubChem). The substance is highly hydrophilic: octanol/phosphate-buffered-saline distribution coefficients (log D) of approximately -2.38 to -2.49 over pH 4.5-7.4 have been reported in the peer-reviewed literature (Pharmaceutical Development and Technology, 2016, doi:10.3109/10837450.2014.979944). A log Kow well below the GHS bioaccumulation screening threshold of ≥ 4 , combined with the substance's zwitterionic/ionizable character at environmental pH and expected proteolytic degradation, indicates a low potential for bioaccumulation in aquatic organisms.

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

Document ID	26e2d6bc-0ed7-4f7e-b575-67738861bcf7
Revision Date	2026-07-18
Version	1.0
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: 2026-07-18
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).