Viking Stack Peptides

Sermorelin

CAS: 86168-78-7
Formula: C149H246N44O42S

Document ID: e47cd832
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Section 1 — Product and Company Identification

Product Name	Sermorelin
Synonyms	SERMORELIN; Sermorelina; 86168-78-7
CAS Number	86168-78-7
PubChem CID	16132413
Molecular Formula	C149H246N44O42S
IUPAC Name	(3S)-4-[[(2S)-1-[[(2S,3S)-1-[[(2S)-1-[[(2S,3R)-1-[[(2S)-4-amino-1-[[(2S)-1-[[(2S)-1-[[(2S)-6-amino-1-[[(2S)-1-[[(2S)-1-[[2-[[(2S)-5-amino-1-[[(2S)-1-[[(2S)-1-[[(2S)-1-[[(2S)-1-[[(2S)-6-amino-1-[[(2S)-1-[[(2S)-1-[[(2S)-5-amino-1-[[(2S)-1-[[(2S,3S)-1-[[(2S)-1-[[(2S)-1-[[(2S)-1-amino-5-carbamimidamido-1-oxopentan-2-yl]amino]-3-hydroxy-1-oxopropan-2-yl]amino]-4-methylsulfanyl-1-oxobutan-2-yl]amino]-3-methyl-1-oxopentan-2-yl]amino]-3-carboxy-1-oxopropan-2-yl]amino]-1,5-dioxopentan-2-yl]amino]-4-methyl-1-oxopentan-2-yl]amino]-4-methyl-1-oxopentan-2-yl]amino]-1-oxohexan-2-yl]amino]-5-carbamimidamido-1-oxopentan-2-yl]amino]-1-oxopropan-2-yl]amino]-3-hydroxy-1-oxopropan-2-yl]amino]-4-methyl-1-oxopentan-2-yl]amino]-1,5-dioxopentan-2-yl]amino]-2-oxoethyl]amino]-4-methyl-1-oxopentan-2-yl]amino]-3-methyl-1-oxobutan-2-yl]amino]-1-oxohexan-2-yl]amino]-5-carbamimidamido-1-oxopentan-2-yl]amino]-3-(4-hydroxyphenyl)-1-oxopropan-2-yl]amino]-3-hydroxy-1-oxopropan-2-yl]amino]-1,4-dioxobutan-2-yl]amino]-3-hydroxy-1-oxobutan-2-yl]amino]-1-oxo-3-phenylpropan-2-yl]amino]-3-methyl-1-oxopentan-2-yl]amino]-1-oxopropan-2-yl]amino]-3-[[(2S)-2-[[(2S)-2-amino-3-(4-hydroxyphenyl)propanoyl]amino]propanoyl]a… [truncated — full value in PDF metadata]
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	Viking Stack Peptides
Address	560, Fort Worth, TX 76137, United States
Phone	8178816217
Emergency Phone	8178816217

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
Sermorelin	86168-78-7	C149H246N44O42S	3357.9 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 Sermorelin (CAS 86168-78-7) only in a well-ventilated area, preferably within a certified chemical fume hood or a Class II biosafety cabinet, to minimize generation of and exposure to airborne particulates. Because no occupational exposure limits (OSHA PEL, NIOSH REL, or ACGIH TLV) have been established for this peptide, treat it as a potentially bioactive substance of unknown toxicity and apply the principles of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and OSHA Laboratory Standard (29 CFR 1910.1450), keeping exposure as low as reasonably achievable. Wear chemical-resistant nitrile gloves, a buttoned lab coat, and ANSI Z87.1-compliant safety glasses or goggles; where dust or aerosols may be generated during weighing, transfer, or reconstitution, add a NIOSH-approved particulate respirator (e.g., N95 or higher). Avoid inhalation, ingestion, and contact with skin, eyes, and clothing. Do not eat, drink, smoke, or apply cosmetics in the work area. Use anti-static, non-sparking tools and ground containers when transferring the dry powder to control electrostatic discharge. Per peptide handling guidance referenced in the published literature (see Sigma/Merck peptide handling guidelines and general PubChem entry CID 16132413), allow sealed vials of lyophilized peptide to equilibrate to room temperature before opening to prevent moisture condensation, since the material is hygroscopic. Wash hands and exposed skin thoroughly with soap and water after handling and before leaving the work area. Decontaminate work surfaces and reusable equipment after each use, and manage all waste in accordance with 40 CFR (RCRA) and applicable state/local regulations.

Storage Conditions

Store the lyophilized solid tightly sealed in its original container, protected from light, moisture, and air (an inert atmosphere such as nitrogen or argon in the headspace is preferred for opened containers). Recommended long-term storage for the dry powder is at -20 degC or below in a frost-free, manual-defrost freezer dedicated to chemicals (not a domestic/food-storage unit), consistent with general peptide stability practices described in published peptide handling guidance. Short-term storage at 2-8 degC is acceptable for working stocks of the unopened lyophilized material. After reconstitution, store aqueous solutions refrigerated at 2-8 degC and use promptly; avoid repeated freeze-thaw cycles by preparing single-use aliquots. Keep containers tightly closed when not in use and allow them to warm to room temperature in a sealed condition before opening to prevent water uptake by the hygroscopic solid. Store away from oxidizing agents, strong acids and bases, and sources of heat, sparks, or open flame. Maintain the storage area locked, clearly labeled in accordance with 29 CFR 1910.1200(f), and accessible only to trained personnel. Do not store with incompatible materials (see below) or with foodstuffs.

Incompatibilities

Specific incompatibility data for Sermorelin (CAS 86168-78-7) are not reported in authoritative regulatory compilations (OSHA, NIOSH, EPA, ECHA, PubChem CID 16132413). Based on the peptide's chemical structure (a 29-residue amidated polypeptide containing amine, amide, hydroxyl, carboxyl, indole, and thioether/methionine functionalities), avoid contact with strong oxidizing agents (which can oxidize methionine and other residues), strong reducing agents, strong acids and strong bases (which can hydrolyze peptide bonds and degrade the molecule), and reactive electrophiles such as aldehydes, acyl halides, and alkylating agents (which can modify free amine and thioether groups). The compound is moisture-sensitive and should be kept away from water and humid atmospheres during dry storage. Protect from prolonged exposure to light, elevated temperatures, and atmospheric oxygen, all of which can promote peptide degradation. Hazardous decomposition under fire or extreme thermal conditions may yield carbon oxides (CO, CO2), nitrogen oxides (NOx), and sulfur oxides (SOx).

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 Sermorelin (CAS 86168-78-7). 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. Handle within a containment device appropriate for a potentially bioactive peptide active pharmaceutical ingredient (API) - for example, a ventilated weighing enclosure, laboratory fume hood, glove box, or Class II biological safety cabinet - to minimize the generation of and exposure to airborne dust, aerosols, and powders. Where powders are handled, use HEPA-filtered local exhaust ventilation. Avoid open handling on the benchtop. Provide eyewash stations and safety showers in the immediate work area in accordance with ANSI Z358.1. Implement procedural controls such as restricted access, decontamination procedures, and training. No smoking, eating, or drinking in areas where the substance is handled or stored.

Personal Protective Equipment

Respiratory Protection: If engineering controls cannot maintain airborne concentrations as low as reasonably achievable, use a NIOSH-approved (42 CFR Part 84) air-purifying respirator equipped with N100/P100 particulate filters, or a powered air-purifying respirator (PAPR) with HEPA cartridges, for dry powder handling. For higher exposure potential or large-scale handling, use a supplied-air respirator. Respirator selection, fit-testing, training, and medical clearance must follow a written respiratory protection program compliant with OSHA 29 CFR 1910.134.

Hand Protection: Wear chemically resistant, impervious protective gloves compliant with EN 374 / ANSI-ISEA 105. Nitrile gloves (minimum 0.11 mm thickness) are generally recommended for handling laboratory quantities of peptide APIs; double-gloving is advisable when weighing or otherwise handling powders. Inspect gloves before use, replace immediately if contamination, degradation, or puncture is suspected, and remove using a technique that avoids skin contact. Wash hands thoroughly with soap and water after removing gloves.

Eye / Face Protection: Wear tight-fitting chemical safety goggles meeting ANSI Z87.1 (US) or EN 166 (EU). A face shield worn over goggles is recommended when there is a potential for splash, dust generation, or when handling open containers of powder. Contact lenses should not be worn unless protected by appropriate eyewear.

Skin Protection: Wear a long-sleeved laboratory coat or chemical-resistant gown, full-length trousers, and closed-toe chemical-resistant footwear. For operations involving larger quantities, open handling of powders, or significant splash potential, wear a disposable impervious coverall (e.g., Tyvek or equivalent) over standard work clothing. Remove and segregate contaminated clothing for laundering or disposal; do not take contaminated clothing home. Wash exposed skin promptly with soap and water following any potential contact.

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	*Not determined*
Melting Point	*Not determined*
Flash Point	*Not determined*
Auto-ignition Temperature	No data available.
Decomposition Temperature	No experimental data available.

Vapor Pressure	*Not determined*
Vapor Density	*Not determined*
Specific Gravity	*Not determined*
Partition Coefficient (log Kow)	No experimental data available.
Solubility	Soluble in water; soluble in dilute acetic acid
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	3357.9 g/mol
Molecular Formula	C149H246N44O42S

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 incompatibility data for Sermorelin (CAS 86168-78-7) are not reported in authoritative regulatory compilations (OSHA, NIOSH, EPA, ECHA, PubChem CID 16132413). Based on the peptide's chemical structure (a 29-residue amidated polypeptide containing amine, amide, hydroxyl, carboxyl, indole, and thioether/-methionine functionalities), avoid contact with strong oxidizing agents (which can oxidize methionine and other residues), strong reducing agents, strong acids and strong bases (which can hydrolyze peptide bonds and degrade the molecule), and reactive electrophiles such as aldehydes, acyl halides, and alkylating agents (which can modify free amine and thioether groups). The compound is moisture-sensitive and should be kept away from water and humid atmospheres during dry storage. Protect from prolonged exposure to light, elevated temperatures, and atmospheric oxygen, all of which can promote peptide degradation. Hazardous decomposition under fire or extreme thermal conditions may yield carbon oxides (CO, CO2), nitrogen oxides (NOx), and sulfur oxides (SOx).

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

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 data for sermorelin (CAS 86168-78-7) are limited and the toxicological properties of this substance have not been fully characterized. No authoritative LD50 or LC50 values (oral, dermal, or inhalation) have been published by ECHA, NIOSH, or in peer-reviewed literature located for this substance. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). As a synthetic 29-amino-acid amide of high molecular weight (3357.9 g/mol), systemic absorption by oral or dermal routes is expected to be limited; however, occupational exposure to airborne particulate (powder/aerosol) during handling should be controlled as a precaution.

Skin Corrosion / Irritation: No skin corrosion or irritation studies for sermorelin have been identified in ECHA, NTP, or peer-reviewed sources. The substance is not listed under any GHS skin corrosion/irritation category by an authoritative regulatory body. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). Mechanical or pH-mediated irritation from the dry powder cannot be ruled out and skin contact should be avoided.

Serious Eye Damage / Irritation: No serious eye damage or eye irritation studies for sermorelin have been identified in ECHA, NTP, or peer-reviewed sources. The substance is not listed under any GHS eye irritation/damage category by an authoritative regulatory body. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). Particulate contact with the eye may cause mechanical irritation.

Skin / Respiratory Sensitization: No respiratory or skin sensitization studies (e.g., LLNA, guinea pig maximization) for sermorelin have been identified in ECHA, NTP, or peer-reviewed sources. The substance is not listed by an authoritative body as a respiratory or skin sensitizer. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). Synthetic polypeptide active pharmaceutical ingredients are generally handled with precautions against inhalation exposure because immunogenic/sensitization potential cannot be excluded a priori.

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: Long-term carcinogenicity studies in animals have not been performed for sermorelin, as documented in the U.S. FDA-approved prescribing information for the sermorelin acetate (Geref) drug product. Sermorelin is not listed as a carcinogen by IARC, the U.S. National Toxicology Program (NTP Report on Carcinogens), OSHA (29 CFR 1910.1200 Subpart Z), or the U.S. EPA IRIS. The available genetic toxicology data referenced in the FDA labeling reported no evidence of sermorelin-induced genetic toxicity. Not classified for carcinogenicity based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4).

Reproductive Toxicity: Per the U.S. FDA-approved prescribing information for sermorelin acetate (Geref), long-term animal studies for impairment of fertility have not been performed. No reproductive or developmental toxicity studies meeting GHS classification criteria have been identified in ECHA or peer-reviewed sources for sermorelin (CAS 86168-78-7). The substance is not listed under California Proposition 65 for reproductive toxicity. Not classified for reproductive toxicity based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). The substance should not be handled by pregnant or nursing workers without a documented risk assessment.

Specific Target Organ Toxicity (STOT): Specific target organ toxicity - single exposure (STOT-SE) and repeated exposure (STOT-RE): No studies characterizing STOT-SE or STOT-RE for sermorelin have been identified in ECHA, NTP, or peer-reviewed literature, and no occupational exposure limits have been established by OSHA (PEL), NIOSH (REL), or ACGIH (TLV) for this substance. Not classified for STOT-SE or STOT-RE based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). The toxicological profile is not fully characterized; exposure by all routes should be minimized in accordance with the hierarchy of controls.

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 ecotoxicity data (e.g., fish LC50, Daphnia EC50, algal ErC50) have been identified in authoritative sources (ECHA, EPA ECOTOX, PubChem) for sermorelin (CAS 86168-78-7). Not classified as hazardous to the aquatic environment (acute or chronic) under GHS based on weight-of-evidence assessment in the absence of authoritative experimental data. As a high-molecular-weight (3357.9 g/mol) hydrophilic polypeptide, significant uptake across biological membranes of aquatic organisms is not expected; however, this conclusion is not a substitute for measured data. Release to the environment should be avoided.

Persistence and Degradability: No substance-specific ready biodegradability (e.g., OECD 301 series) or simulation test data have been identified in authoritative sources for sermorelin. Sermorelin is a 29-residue linear polypeptide (GRF 1-29); peer-reviewed literature on its pharmaceutical stability indicates that its primary abiotic degradation pathways in aqueous media include peptide bond hydrolysis (notably at Asp-X sites), deamidation of asparagine/glutamine residues, and aspartate isomerization (e.g., Esposito et al., Adv. Drug Deliv. Rev. 2003). Environmental half-lives in water, soil, and sediment have not been experimentally determined.

Bioaccumulative Potential: No experimentally determined bioconcentration factor (BCF) or octanol-water partition coefficient (log Kow) has been identified in authoritative sources (ECHA, EPA, PubChem) for sermorelin. Given its large molecular weight (3357.9 g/mol), high polarity, and ionizable functional groups characteristic of a 29-residue polypeptide, significant bioaccumulation in aquatic organisms is not anticipated; however, this is a qualitative assessment and not a substitute for measured BCF data.

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	e47cd832-6bea-44a4-ad07-bf7b79ec741a
Revision Date	2026-09-11
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: 2026-09-11
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).