Selank

CAS: 129954-34-3
Formula: C33H57N11O9

Document ID: 6d56baa8
Revision Date: 2026-08-07
Version: 1.0

Section 1 — Product and Company Identification

Product Name	Selank
Synonyms	Selank; 129954-34-3; Selanc
CAS Number	129954-34-3
Molecular Formula	C33H57N11O9
IUPAC Name	(2S)-1-[2-[[(2S)-1-[(2S)-2-[[(2S)-1-[(2S)-6-amino-2-[[(2S,3R)-2-amino-3-hydroxybutanoyl]amino] hexanoyl]pyrrolidine-2-carbonyl]amino]-5-(diaminomethylideneamino)pentanoyl]pyrrolidine-2-carbonyl]amino]acetyl]pyrrolidine-2-carboxylic 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	Ruo.bio
Address	30 N Gould St, Sheridan, WY 82801, US
Phone	+1-804-636-6879
Website	https://ruo.bio/
Emergency Phone	+1(804)636-6879 - Monday-Friday: 9:00 AM - 5:00 PM Pacific

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
Selank	129954-34-3	C33H57N11O9	751.9 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 Selank (CAS 129954-34-3) as a potentially bioactive substance of unknown toxicological profile, in accordance with the OSHA Laboratory Standard (29 CFR 1910.1450), which directs that substances of unknown toxicity be treated as toxic (29 CFR 1910.1450 App A). Use only in a well-ventilated area, preferably within a chemical fume hood, biosafety cabinet, or local exhaust enclosure when weighing or reconstituting the lyophilized powder to minimize the generation of airborne dust. Wear appropriate personal protective equipment as specified in Section 8, including chemical-resistant nitrile gloves, safety goggles, and a laboratory coat; use a NIOSH-approved particulate respirator (e.g., N95 or higher) if engineering controls do not adequately control dust exposure, consistent with 29 CFR 1910.134. Avoid inhalation, ingestion, skin contact, and eye contact. Do not eat, drink, smoke, or apply cosmetics in areas where the substance is handled, per 29 CFR 1910.1200 and 1910.1450 general hygiene practices. Wash hands and exposed skin thoroughly with soap and water after handling and before breaks or leaving the work area. Allow sealed containers of the lyophilized peptide to equilibrate to room temperature inside a desiccator before opening to prevent moisture condensation, which can accelerate hydrolytic degradation of the peptide backbone. Minimize freeze-thaw cycles of reconstituted solutions by preparing single-use aliquots. Use clean, dry spatulas and labware to prevent contamination. Ground containers when transferring to reduce static. Promptly clean up any spills using HEPA-filtered vacuum or damp wiping (avoid dry

sweeping that generates dust) and decontaminate surfaces. Manage all waste as potentially hazardous in accordance with 29 CFR 1910.1450 and applicable EPA RCRA (40 CFR 260-273) and local requirements.

Storage Conditions

Store the lyophilized solid in a tightly closed, original container under an inert atmosphere (e.g., argon or nitrogen) where practical, protected from light, moisture, and air. Keep the container in a desiccator or sealed with desiccant, since peptides containing multiple polar and ionizable residues are typically hygroscopic. Recommended storage for lyophilized peptide powders is at or below -20 degC, with -80 degC preferred for extended storage; reconstituted solutions should be stored frozen in single-use aliquots to avoid repeated freeze-thaw cycles, consistent with general peptide storage guidance summarized in the peer-reviewed and technical literature (e.g., Bachem and published peptide handling reviews). Keep away from heat, direct sunlight, ignition sources, and incompatible materials (see below). Store in a secure, clearly labeled area with restricted access, segregated from food, beverages, and incompatible chemicals, in accordance with 29 CFR 1910.1450 and 29 CFR 1910.1200(f) labeling requirements. Do not return unused material to the original container. Observe the manufacturer's labeled retest/expiration date; no authoritative shelf-life value has been established by OSHA, NIOSH, EPA, or ECHA for this substance.

Incompatibilities

Avoid contact with strong oxidizing agents (e.g., peroxides, hypochlorites, permanganates, nitric acid, chromates), which can oxidize peptide bonds and amine/guanidine side chains. Avoid strong acids and strong bases, which catalyze hydrolysis of amide (peptide) bonds; in particular, exposure to pH > 8 should be avoided to minimize base-catalyzed degradation and racemization (per published peptide handling guidance). Avoid reducing agents in uncontrolled conditions, electrophilic reagents, aldehydes, and isocyanates, which may react with the free alpha-amino group of the N-terminal threonine and the epsilon-amino group of the lysine side chain. Protect from moisture and prolonged exposure to atmospheric oxygen, which can promote hydrolysis and oxidative degradation. Avoid elevated temperatures and direct ultraviolet light, which accelerate decomposition. Hazardous decomposition products on heating or combustion may include carbon monoxide, carbon dioxide, and toxic nitrogen oxides (NOx); no authoritative decomposition temperature has been established.

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 toxicity.

Engineering Controls

Use in a well-ventilated area. Handle weighing, transfer, and dissolution of the dry solid inside a certified ventilated enclosure (chemical fume hood, ventilated balance enclosure, or Class I/II biosafety cabinet) to minimize airborne particulate exposure, consistent with general principles in OSHA 29 CFR 1910.1450 (Laboratory Standard) and the NIOSH Prevention through Design hierarchy of controls. Provide local exhaust ventilation at points of dust or aerosol generation. Substitute solutions for dry powder handling wherever feasible to suppress dust. Ensure ready access to an emergency eyewash and safety shower (ANSI Z358.1) in the work area. Decontaminate work surfaces after use and contain waste in labeled, closed containers.

Personal Protective Equipment

Respiratory Protection: Respiratory protection is not normally required when material is handled in a properly functioning fume hood or ventilated enclosure. If engineering controls are not sufficient to prevent airborne exposure to dust or aerosols (e.g., open weighing of dry solid outside containment), use a NIOSH-approved air-purifying respirator with N100/P100 particulate filters or a powered air-purifying respirator (PAPR) under a written respiratory protection

program meeting OSHA 29 CFR 1910.134. Selection should be made by a qualified industrial hygienist based on a site-specific exposure assessment.

Hand Protection: Wear chemically resistant gloves meeting EN ISO 374 / ANSI-ISEA 105. Nitrile gloves of at least 0.11 mm (4 mil) thickness are generally suitable for incidental contact with this peptide in aqueous or DMSO solutions; double-gloving is recommended when handling the dry solid or concentrated stock solutions. Inspect gloves before use, change immediately if contamination, tearing, or permeation is suspected, and wash hands thoroughly with soap and water after glove removal. No glove permeation data specific to Selank have been published; select gloves based on the solvent system actually in use.

Eye / Face Protection: Wear tight-fitting chemical splash goggles meeting ANSI/ISEA Z87.1 when handling solutions or weighing the dry solid. A full-face shield worn over goggles is recommended when there is risk of splash or when working with larger volumes of stock solution. Contact lenses should not be relied upon as eye protection.

Skin Protection: Wear a laboratory coat or chemically resistant lab gown with long sleeves, full-length trousers, and closed-toe chemically resistant footwear. Use disposable sleeve covers and a chemically resistant apron when handling bulk quantities or concentrated solutions. Remove and decontaminate or dispose of contaminated clothing promptly; do not wear contaminated PPE outside the work area. Wash exposed skin thoroughly with soap and water after handling and before eating, drinking, or smoking, in accordance with OSHA 29 CFR 1910.1450.

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
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	751.9 g/mol
Molecular Formula	C33H57N11O9

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: Avoid contact with strong oxidizing agents (e.g., peroxides, hypochlorites, permanganates, nitric acid, chromates), which can oxidize peptide bonds and amine/guanidine side chains. Avoid strong acids and strong bases, which catalyze hydrolysis of amide (peptide) bonds; in particular, exposure to pH > 8 should be avoided to minimize base-catalyzed degradation and racemization (per published peptide handling guidance). Avoid reducing agents in uncontrolled conditions, electrophilic reagents, aldehydes, and isocyanates, which may react with the free alpha-amino group of the N-terminal threonine and the epsilon-amino group of the lysine side chain. Protect from moisture and prolonged exposure to atmospheric oxygen, which can promote hydrolysis and oxidative degradation. Avoid elevated temperatures and direct ultraviolet light, which accelerate decomposition. Hazardous decomposition products on heating or combustion may include carbon monoxide, carbon dioxide, and toxic nitrogen oxides (NOx); no authoritative decomposition temperature has been established.

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 Selank (CAS 129954-34-3) has not been fully characterized under GHS criteria, and no harmonized classification is listed in the ECHA C&L Inventory or in NTP/IARC/OSHA databases. Published preclinical investigations in rodents have reported low acute toxicity, with median lethal doses generally exceeding 500 mg/kg by parenteral routes (Kozlovskaya MM, Kozlovskii II, Val'dman EA, Seredenin SB, Experimental Biology and Medicine, and related Russian Academy of Medical Sciences literature). No reliable human acute toxicity data, oral LD50, dermal LD50, or inhalation LC50 values from authoritative sources (ECHA, NIOSH, NTP) are available. Not classified for acute toxicity (oral, dermal, or inhalation) based on currently available data; hazards cannot be excluded. Treat as potentially hazardous and avoid all routes of exposure.

Skin Corrosion / Irritation: No experimental skin irritation or corrosion data from authoritative sources (ECHA dossier, OECD TG 404/431/439 studies) are available for Selank. Not classified for skin corrosion/irritation based on currently available data; hazards cannot be excluded. Dust or solutions may cause mechanical or transient irritation to skin upon contact. Handle with impervious gloves and protective clothing as described in Section 8.

Serious Eye Damage / Irritation: No experimental eye irritation or serious eye damage data from authoritative sources (ECHA dossier, OECD TG 405/437/438/492 studies) are available for Selank. Not classified for serious eye damage/eye irritation based on currently available data; hazards cannot be excluded. Particulates may cause mechanical irritation of the conjunctiva. Use eye protection meeting ANSI Z87.1 / EN 166 as described in Section 8.

Skin / Respiratory Sensitization: No experimental respiratory or skin sensitization data from authoritative sources (ECHA dossier, OECD TG 406/429/442A-D studies, Local Lymph Node Assay) are available for Selank. Not classified for respiratory or skin sensitization based on currently available data; sensitization potential cannot be excluded. As with other high-molecular-weight nitrogen-rich substances, repeated skin or inhalation exposure should be avoided as a precaution.

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: Selank (CAS 129954-34-3) is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the U.S. National Toxicology Program (NTP) Report on Carcinogens, OSHA (29 CFR 1910 Subpart Z), the U.S. EPA IRIS database, or ACGIH. No long-term carcinogenicity bioassays meeting OECD TG 451/453 have

been reported in the peer-reviewed literature. Not classified for carcinogenicity based on currently available data; carcinogenic hazard cannot be excluded in the absence of adequate lifetime studies.

Reproductive Toxicity: No adequate studies on fertility, embryo-fetal development, or pre/postnatal development conducted under OECD TG 414/415/416/421/422/443 have been identified for Selank in authoritative regulatory databases (ECHA, EPA, NTP-OHAT). Not classified for reproductive toxicity or effects on or via lactation based on currently available data; hazards to fertility, the unborn child, or breast-fed offspring cannot be excluded. As a precaution, exposure of pregnant or nursing workers should be minimized.

Specific Target Organ Toxicity (STOT): Specific target organ toxicity - single exposure (STOT-SE): No data from authoritative sources are available identifying target organs after a single exposure to Selank; not classified for STOT-SE based on currently available data, and effects on specific organs cannot be excluded. Specific target organ toxicity - repeated exposure (STOT-RE): No subchronic (OECD TG 408/411) or chronic (OECD TG 452) repeated-dose toxicity studies meeting GHS classification criteria have been reported in authoritative databases (ECHA, NTP); not classified for STOT-RE based on currently available data, and cumulative organ effects from repeated exposure cannot be excluded. The toxicological properties of this substance are not fully characterized; minimize all occupational exposure in accordance with Sections 7 and 8.

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, Daphnia EC50, algal ErC50) were identified for Selank (CAS 129954-34-3) in authoritative sources including PubChem, ECHA, EPA ECOTOX, or peer-reviewed ecotoxicological literature. The substance has not been classified as hazardous to the aquatic environment under GHS/CLP based on a weight-of-evidence assessment in the absence of authoritative experimental data. As a synthetic heptapeptide (Thr-Lys-Pro-Arg-Pro-Gly-Pro, typically C-terminally amidated) composed of proteinogenic amino acid residues with no halogen, sulfur, phosphorus, or metal substituents, no specific ecotoxicological concern has been identified. Prevent release to surface water, groundwater, soil, and sewers in the absence of regulatory authorization.

Persistence and Degradability: No substance-specific experimental data on ready biodegradability (e.g., OECD 301 series), inherent biodegradability (OECD 302), hydrolysis (OECD 111), or phototransformation (OECD 316) were identified for Selank in authoritative sources. The molecule contains multiple peptide (amide) bonds that are generally susceptible to enzymatic and abiotic hydrolysis in environmental matrices; however, in the absence of measured half-life or degradation study data from authoritative sources, no quantitative persistence classification can be assigned.

Bioaccumulative Potential: No experimentally determined log Kow (octanol-water partition coefficient), bioconcentration factor (BCF), or bioaccumulation factor (BAF) was identified for Selank in PubChem, ECHA, or EPA sources. Based on the substance's high molecular weight (751.9 g/mol), multiple ionizable groups (guanidinium, primary amine, carboxylate) conferring high water solubility and a predicted low log Kow, significant bioaccumulation in aquatic organisms is not anticipated; however, this assessment is qualitative in the absence of authoritative experimental BCF/log Kow 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	6d56baa8-662f-4ef2-8de8-efd50eacae14
Revision Date	2026-08-07
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: 2026-08-07
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).