



SAFETY DATA SHEET

GHS / OSHA HazCom 2012 Compliant

Viking Stack Peptides

LL320

CAS: 2672496-32-9

Formula: C₂₄H₂₈N₈O₆

Document ID: b1449a3b

Revision Date: 2026-09-11

Version: 1.0

Section 1 — Product and Company Identification

Product Name	LL320
Synonyms	LL320; ChEMBL4445337; 2672496-32-9
CAS Number	2672496-32-9
PubChem CID	155517779
Molecular Formula	C ₂₄ H ₂₈ N ₈ O ₆
IUPAC Name	(2S)-2-amino-4-[[[(2R,3S,4R,5R)-5-(6-aminopurin-9-yl)-3,4-dihydroxyoxolan-2-yl]methyl-[3-(3-carbamoylphenyl)prop-2-ynyl]amino]butanoic 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	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
LL320	2672496-32-9	C24H28N8O6	524.5 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 LL320 (CAS 2672496-32-9) in accordance with good laboratory practice and the general principles of OSHA 29 CFR 1910.1200 and 29 CFR 1910.1450 (Occupational Exposure to Hazardous Chemicals in Laboratories). Because complete toxicological data for this substance are not established, treat it as a potentially bioactive compound of unknown toxicity and apply the precautionary approach recommended by the NRC's Prudent Practices in the Laboratory (NIH/NCBI Bookshelf NBK55878). Handle only in a well-ventilated area, preferably within a certified chemical fume hood or ventilated weighing enclosure to minimize the generation and inhalation of dust or aerosols. Wear appropriate personal protective equipment consistent with Section 8, including chemical-resistant gloves, safety eyewear meeting ANSI Z87.1 (or equivalent EN 166), and a laboratory coat; use a NIOSH-approved particulate respirator (e.g., N95 or higher) when engineering controls cannot adequately limit airborne exposure. Avoid contact with skin, eyes, and clothing, and avoid inhalation or ingestion. Do not eat, drink, smoke, or apply cosmetics in areas where the substance is handled. Use non-sparking tools and take precautions against electrostatic discharge when transferring dry powder. Wash hands, forearms, and face thoroughly after handling and before breaks or leaving the work area. Promptly clean up spills using HEPA vacuuming or damp wiping to prevent dust dispersion, and decontaminate work surfaces after use. Keep containers tightly closed when not in use and clearly labeled per the OSHA HazCom labeling requirements of 29 CFR 1910.1200(f).

Storage Conditions

Store LL320 in the tightly closed original container, protected from light, moisture, and air. As specific stability data for this compound have not been published in authoritative sources, storage of the solid at reduced temperature (typically refrigerated at 2-8 degC, or frozen at -20 degC for long-term storage) is a common laboratory practice for amino-acid/nucleoside-containing research compounds; verify specific conditions with the manufacturer's product documentation prior to use. Keep in a cool, dry, well-ventilated area away from direct sunlight, heat sources, and ignition sources. Store separately from strong oxidizers, strong acids, and strong bases (see Incompatibilities). Solutions in aqueous or DMSO vehicles should be aliquoted to minimize freeze-thaw cycles and stored frozen; avoid prolonged storage of dilute aqueous solutions, which may be susceptible to hydrolysis or microbial contamination. Restrict access to trained personnel, and store in a location that complies with institutional chemical-hygiene-plan requirements under 29 CFR 1910.1450. Ensure containers are properly labeled in accordance with OSHA HazCom 2012 / GHS Rev. 8.

Incompatibilities

No specific incompatibility data for LL320 (CAS 2672496-32-9) are reported in authoritative regulatory sources (OSHA, NIOSH, EPA, ECHA, PubChem). Based on the functional groups present in the molecule (primary amine, secondary amine, carboxylic acid, primary carboxamide, vicinal diol, purine/adenine moiety, and internal alkyne), the substance should be considered potentially reactive with: strong oxidizing agents (risk of exothermic oxidation of amines, alcohols, and the alkyne); strong acids and strong bases (potential for hydrolysis of the amide and glycosidic linkages and for salt formation with the amino/carboxylic acid groups); electrophilic reagents such as acyl halides, aldehydes, isocyanates, and alkylating agents (may react with the free amine); reactive metal ions and heavy-metal catalysts (may complex with the diol and amine functionalities or activate the alkyne). Avoid contact with heat, open flame, and other sources of ignition, and protect from prolonged exposure to moisture and air. Incompatible container materials have not been identified; glass or inert polymer (e.g., polypropylene) containers are generally suitable for laboratory-scale 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 for LL320 (CAS 2672496-32-9). No biological exposure indices (BEIs) have been established. Handle as a potentially bioactive substance of unknown toxicity and control exposure to the lowest level reasonably achievable (ALARA) using the engineering controls and PPE specified below.

Engineering Controls

Use in a well-ventilated laboratory area equipped with local exhaust ventilation. Perform all weighing, transfer, and solution-preparation operations that could generate dusts, aerosols, or mists inside a certified chemical fume hood, ventilated balance enclosure, or Class II Biological Safety Cabinet meeting the design/performance principles described in the NIOSH Alert on Preventing Occupational Exposures to Antineoplastic and Other Hazardous Drugs in Health Care Settings (DHHS/NIOSH Publication No. 2004-165) and the general laboratory ventilation guidance in ANSI/AIHA Z9.5 and OSHA 29 CFR 1910.1450 (Laboratory Standard). Provide an accessible eyewash station and safety shower in the immediate work area (ANSI Z358.1). Prohibit eating, drinking, smoking, and cosmetic application in areas where the substance is handled. Decontaminate work surfaces after use and provide hand-washing facilities at the exit of the work area.

Personal Protective Equipment

Respiratory Protection: Under normal handling with adequate engineering controls (fume hood or containment enclosure), routine respiratory protection is not required. If operations may generate airborne dust, aerosols, or mists outside of containment, wear a NIOSH-approved (42 CFR Part 84) air-purifying respirator with N100/P100 particulate filters, or a powered air-purifying respirator (PAPR) with HEPA filters for higher-exposure tasks. Respirator selection, fit-testing, and use must comply with the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

Hand Protection: Wear chemical-resistant gloves meeting EN 374 / ASTM D6978 (the ASTM standard used by NIOSH and USP <800> for chemotherapy/hazardous-drug glove testing). Nitrile gloves of ≥ 4 -8 mil (0.1-0.2 mm) thickness are appropriate for incidental contact with the solid and with aqueous or DMSO stock solutions; double-gloving is recommended when handling the neat solid or concentrated stock solutions, consistent with NIOSH Publication 2004-165 and USP General Chapter <800>. Inspect gloves before use, change immediately if contamination, degradation, or puncture is suspected, and wash hands thoroughly after glove removal.

Eye / Face Protection: Wear tightly fitting chemical safety goggles meeting ANSI/ISEA Z87.1 whenever there is any potential for splash, dust, or aerosol contact. A full face shield worn over goggles is recommended for operations with a splash hazard or when handling larger quantities. Do not wear contact lenses when working with this material. An emergency eyewash station meeting ANSI Z358.1 must be immediately accessible.

Skin Protection: Wear a laboratory coat with knit cuffs or a chemical-resistant, low-permeability disposable gown (ASTM F739 tested) over standard laboratory clothing, closed-toe chemical-resistant shoes, and long trousers. For weighing the neat solid or handling concentrated stocks outside of an isolator, wear a fluid-resistant disposable gown as recommended by USP <800> for hazardous drug handling. Remove and containerize contaminated PPE immediately; do not launder contaminated garments at home. Wash hands, forearms, and any potentially exposed skin thoroughly with soap and water after handling and before leaving the work area (29 CFR 1910.1450).

Section 9 — Physical and Chemical Properties

Physical State	Solid (research-grade lyophilised powder or crystalline solid)
Appearance	Solid (appearance not specified in authoritative sources; typically supplied as a powder for research-use compounds of this class)
Odor	Not available.
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 K _{ow})	No experimental data available.
Solubility	Not determined
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	524.5 g/mol
Molecular Formula	C ₂₄ H ₂₈ N ₈ O ₆

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: No specific incompatibility data for LL320 (CAS 2672496-32-9) are reported in authoritative regulatory sources (OSHA, NIOSH, EPA, ECHA, PubChem). Based on the functional groups present in the molecule (primary amine, secondary amine, carboxylic acid, primary carboxamide, vicinal diol, purine/adenine moiety, and internal alkyne), the substance should be considered potentially reactive with: strong oxidizing agents (risk of exothermic oxidation of amines, alcohols, and the alkyne); strong acids and strong bases (potential for hydrolysis of the amide and glycosidic linkages and for salt formation with the amino/carboxylic acid groups); electrophilic reagents such as acyl halides, aldehydes, isocyanates, and alkylating agents (may react with the free amine); reactive metal ions and heavy-metal catalysts (may complex with the diol and amine functionalities or activate the alkyne). Avoid contact with heat, open flame, and other sources of ignition, and protect from prolonged exposure to moisture and air. Incompatible container materials have not been identified; glass or inert polymer (e.g., polypropylene) containers are generally suitable for laboratory-scale 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: Acute toxicity data specific to LL320 (CAS 2672496-32-9) have not been located in authoritative sources (NIOSH RTECS, ECHA registration dossiers, NTP, or peer-reviewed literature indexed in PubMed/PubChem). No LD₅₀ or LC₅₀ values are available for oral, dermal, or inhalation routes. In the absence of substance-specific studies, acute toxicity is not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Ch. 1.3.2.4). The toxicological profile of this substance is not fully characterized. Handle as a substance of unknown acute toxicity and avoid all routes of exposure (ingestion, inhalation of dust/aerosol, skin and eye contact).

Skin Corrosion / Irritation: No experimental skin irritation or corrosion studies (e.g., OECD TG 404, 431, or 439) have been identified for LL320 in authoritative sources. Skin corrosion/irritation is not classified based on currently available data; hazards cannot be excluded. The presence of an alpha-amino carboxylic acid and free amine functionalities suggests potential for mild irritation on prolonged contact, but this has not been experimentally verified. Treat as potentially irritating and prevent skin contact.

Serious Eye Damage / Irritation: No experimental eye irritation or serious eye damage data (e.g., OECD TG 405, 437, 438, or 492) are available for LL320 from authoritative sources. Serious eye damage/eye irritation is not classified based on currently available data; hazards cannot be excluded. Particulates of any substance may cause mechanical irritation to the eye. Prevent eye contact and use appropriate eye protection during handling.

Skin / Respiratory Sensitization: No data from Local Lymph Node Assay (OECD TG 429), Guinea Pig Maximization Test (OECD TG 406), or in chemico/in vitro key event assays (OECD TG 442C/D/E) have been identified for LL320. Respiratory or skin sensitization is not classified based on currently available data; hazards cannot be excluded. Sensitization potential of this substance has not been fully characterized.

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: LL320 (CAS 2672496-32-9) is not listed as a carcinogen by IARC, the U.S. National Toxicology Program (NTP) Report on Carcinogens, OSHA (29 CFR 1910 Subpart Z), ACGIH, or the EU CLP Annex VI harmonised classification list. No carcinogenicity bioassays have been located in peer-reviewed literature. Carcinogenicity is not classified based on currently available data; hazards cannot be excluded due to the absence of long-term studies.

Reproductive Toxicity: No reproductive or developmental toxicity studies (e.g., OECD TG 414, 416, 421, 422, or 443) have been located for LL320 in authoritative sources (ECHA, NTP, EPA, or peer-reviewed literature). Reproductive toxicity is not classified based on currently available data; hazards cannot be excluded. As a precaution, exposure of pregnant or nursing workers should be avoided.

Specific Target Organ Toxicity (STOT): No studies characterizing single-exposure (STOT-SE) or repeated-exposure (STOT-RE) systemic target-organ toxicity have been located for LL320 in authoritative sources such as ECHA, NTP, or peer-reviewed literature. Specific target organ toxicity (single and repeated exposure) is not classified based on currently available data; hazards cannot be excluded. No occupational exposure limits (OSHA PEL, NIOSH REL, or ACGIH TLV) have been established for this substance. Because target-organ effects have not been fully characterized, minimize all occupational exposure using engineering controls and appropriate PPE.

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) have been identified in authoritative sources (US EPA ECOTOX, ECHA registration dossiers, or peer-reviewed literature) for LL320 (CAS 2672496-32-9). The compound is a research-use adenosine/SAM-mimetic bisubstrate inhibitor of nicotinamide N-methyltransferase (NNMT) and has not been the subject of standardized OECD ecotoxicity testing. Not classified as hazardous to the aquatic environment (acute or chronic) under GHS/OSHA HazCom 2012 based on a weight-of-evidence assessment in the absence of authoritative experimental data. As a biologically active small molecule, release to the environment should nonetheless be avoided; prevent entry into drains, surface water, and groundwater.

Persistence and Degradability: No substance-specific experimental data on ready biodegradability (e.g., OECD 301 series), hydrolysis (OECD 111), or phototransformation have been identified in authoritative sources for CAS 2672496-32-9. The molecule contains an adenine nucleoside moiety, an alkyne-linked benzamide, and a free alpha-amino acid function; structural features such as the ribose diol, secondary/tertiary amines, and amide bonds are potentially susceptible to microbial and hydrolytic transformation, while the aromatic benzamide and purine rings are expected to be more recalcitrant. In the absence of measured data, environmental persistence cannot be reliably estimated and no definitive classification is assigned.

Bioaccumulative Potential: No experimental log Kow (octanol/water partition coefficient, OECD 107/117) or bioconcentration factor (BCF, OECD 305) values have been identified in authoritative sources for LL320 (CAS 2672496-32-9). The substance is a polar small molecule (MW ~524.5 g/mol, formula C₂₄H₂₈N₈O₆) bearing a free carboxylic acid, primary amine, primary amide, hydroxyl groups, and multiple nitrogen-containing heterocycles, features generally associated with high water solubility and low predicted log Kow. On this qualitative basis, significant bioaccumulation in aquatic organisms is not anticipated, but a definitive bioaccumulation classification cannot be assigned in the absence of authoritative experimental 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	b1449a3b-a4cf-4b6e-9b46-1ed6ecaceeb0
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.

