Minuteman Peptides, LLC

Elamipretide

CAS: 736992-21-5
Formula: C32H49N9O5

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Version: 1.0

Section 1 — Product and Company Identification

Product Name	Elamipretide
Synonyms	Elamipretide; 736992-21-5; bendavia
CAS Number	736992-21-5
Molecular Formula	C32H49N9O5
IUPAC Name	(2S)-6-amino-2-[[(2S)-2-[[(2R)-2-amino-5-(diaminomethylideneamino)pentanoyl]amino]-3-(4-hydroxy-2,6-dimethylphenyl)propanoyl]amino]-N-[(2S)-1-amino-1-oxo-3-phenylpropan-2-yl]hexanamide
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
Elamipretide	736992-21-5	C32H49N9O5	639.8 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 (CO_2), 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 OSHA HazCom 2012 (29 CFR 1910.1200) and good laboratory/industrial hygiene practices for a bioactive substance of unknown toxicity (per OSHA 29 CFR 1910.1450 - Laboratory Standard). Avoid all routes of exposure: do not inhale dusts, mists, or aerosols, and avoid contact with skin, eyes, and clothing. Weigh and transfer the solid in a certified chemical fume hood, ventilated balance enclosure, or glovebox to minimize generation of airborne particulates; where engineering controls cannot keep airborne exposures below occupational limits, use a NIOSH-approved particulate respirator (see Section 8). Wear chemical-resistant gloves, safety eyewear meeting ANSI Z87.1, and a laboratory coat as specified in Section 8. Do not eat, drink, smoke, or apply cosmetics in work areas. Wash hands and exposed skin thoroughly after handling and before breaks (CDC/NIOSH general laboratory hygiene). Keep containers tightly closed when not in use to limit moisture uptake and exposure. Ground and bond containers when transferring to minimize static accumulation associated with fine powders. Avoid generating dust; clean spills promptly using HEPA-filtered vacuum or wet wiping rather than dry sweeping (NIOSH recommended practice for powders of unknown toxicity). Decontaminate work surfaces and reusable PPE after use. Treat as a potentially hazardous material until a full toxicological profile is established.

Storage Conditions

Store in the tightly closed original container, protected from light, in a cool, dry, well-ventilated area away from incompatible materials (see below) and away from heat, sparks, and open flame. As a synthetic peptide containing primary amine, guanidino, phenol, and amide functionalities, the solid should be kept under inert gas (e.g., nitrogen or argon) where feasible and stored with desiccant to limit hygroscopic moisture uptake and oxidative/hydrolytic degradation. Refrigerated or frozen storage of the solid is appropriate for laboratory quantities; reconstituted aqueous solutions are typically stored frozen in aliquots to minimize freeze-thaw cycles. Specific manufacturer-recommended temperatures and shelf-life should be followed as stated on the container label; this SDS does not assign a numerical shelf life beyond what is provided by the supplier. Keep out of reach of unauthorized personnel and children (PubChem GHS precautionary statement P102). Store in secondary containment to contain leaks. Storage areas should be constructed of chemically resistant materials and equipped with adequate ventilation. Segregate from food, feed, and incompatible chemicals. Periodically inspect containers for integrity, and label all secondary containers in accordance with 29 CFR 1910.1200(f).

Incompatibilities

Avoid contact with strong oxidizing agents (e.g., peroxides, perchlorates, permanganates, concentrated nitric acid, hypochlorites), which can react exothermically with organic peptides and generate hazardous decomposition products. Strong acids and strong bases may catalyze hydrolysis of the peptide (amide) bonds and ionize the basic amine and guanidino groups. Strong reducing agents and electrophilic reagents (e.g., aldehydes, acyl halides, alkylating agents) may react with the free alpha-amino, epsilon-amino (lysine), guanidino (arginine), and phenolic (tyrosine analog) functional groups. Avoid prolonged exposure to moisture, heat, direct sunlight, and ultraviolet light, which can promote hydrolytic and oxidative degradation. Hazardous decomposition products on thermal breakdown or combustion may include carbon monoxide, carbon dioxide, and nitrogen oxides (NOx), as expected for compounds containing C, H, N, and O (see Section 10). No specific incompatibility data for Elamipretide are published by OSHA, NIOSH, EPA, ECHA, or PubChem; the above list reflects general reactivity expected from the functional groups present in the molecule.

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. Weighing, transfer, and manipulation of the dry solid should be performed inside a ventilated containment device such as a chemical fume hood, ventilated balance enclosure, glove box, or Class II biosafety cabinet that has been qualified for handling potent pharmaceutical active ingredients. Where dust or aerosols may be generated, use local exhaust ventilation (LEV) at the point of release to keep airborne concentrations as low as reasonably achievable. Provide an accessible eyewash station and safety shower in the work area, as required by ANSI Z358.1 and OSHA 29 CFR 1910.151(c). Avoid generation of dust or aerosols; do not handle on the open bench. Maintain good industrial hygiene practices: no eating, drinking, smoking, or storing of food in the work area (29 CFR 1910.141 and 1910.1200).

Personal Protective Equipment

Respiratory Protection: Respiratory protection is not normally required when material is handled inside a properly functioning fume hood or other containment device. If handling outside containment, or if airborne particulates, dusts, mists, or aerosols may be generated, use a NIOSH-approved (42 CFR Part 84) air-purifying particulate respirator equipped with at least an N95 filter; for larger-scale operations or when exposure potential is uncertain, use a NIOSH-approved powered air-purifying respirator (PAPR) with HEPA (P100) filters. Respirator use must be implemented under a written respiratory protection program meeting OSHA 29 CFR 1910.134, including medical clearance, fit testing, and training.

Hand Protection: Wear chemically resistant, impervious protective gloves compliant with EN ISO 374 / ANSI-ISEA 105. Nitrile rubber gloves of at least 0.11 mm thickness are generally recommended for handling solid pharmaceutical active ingredients and their solutions; double-gloving is recommended when handling the neat solid or when extended contact is possible. Inspect gloves before use, replace immediately if torn, punctured, or contaminated, and wash hands thoroughly after removal. Glove selection and breakthrough time should be verified for the specific solvent system in use.

Eye / Face Protection: Wear tight-fitting safety glasses with side shields meeting ANSI/ISEA Z87.1. Where splash, spray, or generation of dust or aerosols is possible, wear indirectly vented chemical splash goggles. A face shield (worn over goggles) is recommended for operations with significant splash potential or when handling larger quantities, in accordance with OSHA 29 CFR 1910.133.

Skin Protection: Wear a long-sleeved laboratory coat or chemically resistant coverall over clothing that covers the legs, plus closed-toe, chemically resistant footwear, in accordance with OSHA 29 CFR 1910.132 and 1910.138. A disposable, chemically resistant outer garment (e.g., Tyvek or equivalent) and disposable sleeve covers are recommended when handling the neat solid or when significant contact potential exists. Remove and launder or dispose of contaminated clothing before reuse; do not take contaminated clothing home. Wash exposed skin promptly after handling and before breaks or leaving the work area.

Section 9 — Physical and Chemical Properties

Physical State	Solid (research-grade lyophilised powder or crystalline solid)
Appearance	White to off-white powder
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 Kow)	No experimental data available.
Solubility	Soluble in water; soluble in DMSO
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	639.8 g/mol
Molecular Formula	C32H49N9O5

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, perchlorates, permanganates, concentrated nitric acid, hypochlorites), which can react exothermically with organic peptides and generate hazardous decomposition products. Strong acids and strong bases may catalyze hydrolysis of the peptide (amide) bonds and ionize the basic amine and guanidino groups. Strong reducing agents and electrophilic reagents (e.g., aldehydes, acyl halides, alkylating agents) may react with the free alpha-amino, epsilon-amino (lysine), guanidino (arginine), and phenolic (tyrosine analog) functional groups. Avoid prolonged exposure to moisture, heat, direct sunlight, and ultraviolet light, which can promote hydrolytic and oxidative degradation. Hazardous decomposition products on thermal breakdown or combustion may include carbon monoxide, carbon dioxide, and nitrogen oxides (NOx), as expected for compounds containing C, H, N, and O (see Section 10). No specific incompatibility data for Elamipretide are published by OSHA, NIOSH, EPA, ECHA, or PubChem; the above list reflects general reactivity expected from the functional groups present in the molecule.

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 data for elamipretide (CAS 736992-21-5) in humans and animals have not been fully characterized in publicly available authoritative regulatory databases. No quantitative LD50 or LC50 values have been published by ECHA, NIOSH, or in indexed peer-reviewed literature for the oral, dermal, or inhalation routes. Acute toxicity is therefore not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). Clinical investigations administering elamipretide by subcutaneous and intravenous routes have reported transient injection-site reactions (pruritus, erythema, induration, bruising) as the most common treatment-emergent adverse events (Allingham et al., ReCLAIM Phase 1 trial, published in Ophthalmology Science, 2022; PMC9560633). Handle as a substance of unknown acute toxicity and avoid all routes of exposure.

Skin Corrosion / Irritation: No data from authoritative sources (ECHA, OSHA, NIOSH, peer-reviewed literature) are available regarding skin corrosion or irritation potential of elamipretide. Skin corrosion/irritation is not classified based

on currently available data; hazards cannot be excluded. Reports of local injection-site erythema and induration in clinical studies indicate the potential for local cutaneous reactions following parenteral exposure. Avoid skin contact and use impervious gloves.

Serious Eye Damage / Irritation: No authoritative data (ECHA, OSHA, NIOSH, peer-reviewed literature) are available characterizing serious eye damage or eye irritation potential of elamipretide. Serious eye damage/eye irritation is not classified based on currently available data; hazards cannot be excluded. Avoid eye contact and use appropriate eye protection in accordance with Section 8.

Skin / Respiratory Sensitization: No authoritative data (ECHA, OSHA, NIOSH, peer-reviewed literature) are available evaluating respiratory or skin sensitization potential of elamipretide in validated assays (e.g., LLNA, GPMT, human repeat-insult patch testing). Respiratory and skin sensitization endpoints are not classified based on currently available data; hazards cannot be excluded. The toxicological properties of this substance are not fully characterized for these endpoints.

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: Elamipretide (CAS 736992-21-5) is not listed by IARC (Monographs Volumes 1-141), the U.S. National Toxicology Program (NTP Report on Carcinogens, 15th Edition), OSHA (29 CFR 1910 Subpart Z), or the ACGIH TLV carcinogen classification. No long-term rodent bioassays for this substance are reported in publicly available authoritative sources. Carcinogenicity is not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). Absence from regulatory carcinogen lists does not constitute a determination of non-carcinogenicity.

Reproductive Toxicity: No authoritative data from ECHA, U.S. EPA, NIOSH, NTP, or indexed peer-reviewed studies are available characterizing effects of elamipretide on fertility, embryo-fetal development, or lactation. Reproductive and developmental toxicity is not classified based on currently available data; hazards cannot be excluded. As a precaution, exposure should be avoided by women who are pregnant, planning pregnancy, or breastfeeding, and by men capable of fathering children.

Specific Target Organ Toxicity (STOT): Specific Target Organ Toxicity - Single Exposure (STOT-SE): No authoritative data identifying specific target organs following a single exposure to elamipretide are available from ECHA, NIOSH, or peer-reviewed literature. STOT-SE is not classified based on currently available data; hazards cannot be excluded. Specific Target Organ Toxicity - Repeated Exposure (STOT-RE): No subchronic or chronic repeated-dose toxicity studies for elamipretide have been published in authoritative regulatory sources sufficient to establish target organs or a guidance-value-based classification under GHS Rev.8. STOT-RE is not classified based on currently available data; hazards cannot be excluded. The toxicological properties of this substance are not fully characterized for these endpoints; minimize occupational exposure in accordance with Section 8 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 aquatic toxicity data (e.g., fish LC50, Daphnia EC50, algal ErC50) have been identified for elamipretide (CAS 736992-21-5) in authoritative sources including ECHA, EPA ECOTOX, or PubChem. The substance is not listed on the ECHA Candidate List or EPA priority pollutant lists. Not classified

as hazardous to the aquatic environment (acute or chronic) under GHS based on a weight-of-evidence assessment in the absence of authoritative experimental data. Release to the environment should nonetheless be avoided; as a pharmacologically active substance, it should be handled in accordance with good pharmaceutical and laboratory environmental stewardship practices.

Persistence and Degradability: No substance-specific experimental data on ready biodegradability (e.g., OECD 301 series), hydrolysis, or photolysis have been identified for elamipretide in authoritative sources. The molecule contains hydrolytically and proteolytically labile amide (peptide) bonds and ionizable basic groups (guanidine, primary amines) and a phenolic hydroxyl; however, no quantitative degradation half-lives in environmental compartments have been established by authoritative sources. Environmental persistence cannot be definitively assigned in the absence of such data.

Bioaccumulative Potential: No experimentally determined bioconcentration factor (BCF) or measured log Kow has been identified in authoritative sources (ECHA, EPA, PubChem) for elamipretide. The substance is highly water-soluble, polycationic at environmental pH (multiple protonatable amine and guanidine groups), and of relatively high molecular weight (639.8 g/mol), physicochemical properties that are generally not consistent with significant bioaccumulation potential. A definitive bioaccumulation classification cannot be assigned in the absence of substance-specific 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	29cea4a0-b3ff-4420-a385-333765e6d83a
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).