



Lab Rats Collective

Thyamilin

CAS: 63958-90-7
Formula: C33H54N12O15

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Section 1 — Product and Company Identification

Product Name	Thyamilin
Synonyms	Nonathymulin; 63958-90-7; Nonathymulin [INN]
CAS Number	63958-90-7
Molecular Formula	C33H54N12O15
IUPAC Name	(2S)-4-amino-2-[[[(2S)-2-[[2-[[[(2S)-5-amino-2-[[[(2S)-2-[[[(2S)-6-amino-2-[[[(2S)-2-[[[(2S)-5-oxopyrrolidine-2-carbonyl]amino]propanoyl]amino]hexanoyl]amino]-3-hydroxypropanoyl]amino]-5-oxopentanoyl]amino]acetyl]amino]acetyl]amino]-3-hydroxypropanoyl]amino]-4-oxobutanoic 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	Lab Rats Collective
Address	5900 Balcones Dr, Ste 100, Austin, TX 78731, US
Phone	9728370284
Website	https://labratsco.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
Thyamlin	63958-90-7	C33H54N12O15	858.9 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 only in a well-ventilated laboratory area by trained personnel following the general principles of OSHA 29 CFR 1910.1450 (Occupational Exposure to Hazardous Chemicals in Laboratories) and the guidance in OSHA 29 CFR 1910.1450 Appendix A, which states that substances of unknown toxicity should be assumed to be toxic. Because no occupational exposure limit has been established by OSHA, NIOSH, or ACGIH for this synthetic nonapeptide, treat it as a bioactive compound of unknown toxicity and minimize all routes of exposure (inhalation, skin/eye contact, ingestion). Weigh and manipulate the dry solid inside a chemical fume hood, ventilated balance enclosure, or glove box to control airborne particulates; avoid generating dust or aerosols. Wear appropriate personal protective equipment as specified in Section 8 (chemical-resistant gloves, safety eyewear, and a laboratory coat); use a NIOSH-approved particulate respirator if engineering controls do not adequately control airborne exposure. Do not eat, drink, smoke, or apply cosmetics in areas where the substance is handled. Wash hands and exposed skin thoroughly with soap and water after handling and before leaving the work area. Keep containers tightly closed when not in use to prevent moisture uptake, as lyophilized peptides are typically hygroscopic. Allow sealed vials removed from cold storage to warm to room temperature in a desiccator before opening to prevent condensation on the solid. Avoid contact with strong oxidizers.

and other incompatibles listed below. Decontaminate work surfaces and equipment after use, and manage waste in accordance with 40 CFR 260-273 (EPA RCRA) and applicable state and local regulations.

Storage Conditions

Store the lyophilized solid in the original tightly closed container under an inert, dry atmosphere (e.g., argon or nitrogen) with desiccant, protected from light and moisture. Peptides of this class are best stored refrigerated or frozen; unless the manufacturer's certificate of analysis specifies otherwise, long-term storage of the dry powder at -20 degC or lower in a sealed, desiccated container is recommended, consistent with general laboratory practice for lyophilized peptides described by peer-reviewed peptide chemistry references (e.g., Bachem/NCBI Prudent Practices in the Laboratory, NAP, 2011). Avoid repeated freeze-thaw cycles; prepare working aliquots of reconstituted solutions and store frozen. Keep away from heat, direct sunlight, and ignition sources. Store separately from strong oxidizers, strong acids and bases, and incompatible materials (see below). Storage area should be cool, dry, well-ventilated, and secured against unauthorized access, in accordance with OSHA 29 CFR 1910.1450(e) Chemical Hygiene Plan requirements. Label containers in compliance with OSHA HazCom 2012 (29 CFR 1910.1200(f)). No specific shelf-life is established in authoritative regulatory sources; observe the expiration date provided on the container label.

Incompatibilities

Avoid contact with strong oxidizing agents (e.g., peroxides, perchlorates, permanganates, chlorates, concentrated nitric acid), which can react with the amide, amine, hydroxyl, and carboxylic acid functionalities present in the peptide. Strong acids and strong bases can catalyze hydrolysis of peptide bonds and cleavage of the pyroglutamate and side-chain amide groups. Moisture and high humidity promote hydrolytic degradation of the peptide backbone. Elevated temperatures and prolonged exposure to light may accelerate decomposition. Microbial contamination of aqueous solutions can degrade the peptide; use sterile technique when preparing solutions. Hazardous decomposition products upon thermal breakdown may include carbon monoxide, carbon dioxide, and oxides of nitrogen (NO_x), as expected from combustion of nitrogen-containing organic compounds; refer to Section 10 for further stability and reactivity information.

Section 8 — Exposure Controls / Personal Protection

Exposure Limits

No regulatory occupational exposure limits (OEL) have been established by OSHA, ACGIH, NIOSH, or equivalent bodies for Nonathymulin (CAS 63958-90-7). 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 chemical fume hood, ventilated balance enclosure, or Class II biosafety cabinet when weighing, opening containers, or preparing solutions to minimize the generation of airborne dust or aerosols of this peptide powder. For larger-scale operations, use closed transfer systems or local exhaust ventilation (LEV) with HEPA filtration. General laboratory ventilation should follow ANSI/AIHA Z9.5 and ASHRAE 110 recommendations for laboratory fume hood performance. Provide readily accessible emergency eyewash stations and safety showers in accordance with ANSI Z358.1 in the work area. Do not eat, drink, or smoke in areas where this substance is handled. Wash hands and exposed skin thoroughly after handling.

Personal Protective Equipment

Respiratory Protection: No respiratory protection is required under normal handling conditions when adequate engineering controls (fume hood, glove box, or ventilated enclosure) are in place. If engineering controls are insufficient, if airborne dust, mist, or aerosols may be generated, or if handling large quantities outside containment, use a NIOSH-approved (42 CFR Part 84) particulate respirator, such as an N95 filtering facepiece for low-level exposures or a half/full-face respirator equipped with P100 (HEPA) filters for higher potential exposures. Respirator selection,

fit-testing, and use must follow the OSHA Respiratory Protection Standard (29 CFR 1910.134). For unknown airborne concentrations or emergency response, use a supplied-air respirator or SCBA operated in pressure-demand mode.

Hand Protection: Wear chemically resistant, disposable gloves compliant with EN ISO 374-1 / ASTM D6978 (for handling hazardous drugs). Nitrile gloves of ≥ 4 mil (0.10 mm) thickness are generally recommended for handling peptide powders and aqueous peptide solutions. Double-gloving is advised when handling neat material or when contamination potential is elevated. Inspect gloves before use, replace immediately if damaged or contaminated, and remove using proper aseptic technique to avoid skin contact. Wash hands thoroughly with soap and water after glove removal. Selection should follow OSHA 29 CFR 1910.138 (Hand Protection).

Eye / Face Protection: Wear tightly fitting safety glasses with side shields meeting ANSI/ISEA Z87.1 as a minimum. Where splash potential exists (e.g., preparing solutions, pipetting, sonication), wear chemical splash goggles and/or a full face shield worn over goggles, in accordance with OSHA 29 CFR 1910.133 (Eye and Face Protection). Contact lenses should not be worn when handling this material unless additional eye protection is used.

Skin Protection: Wear a laboratory coat with long sleeves (or a chemical-resistant apron/coverall for larger quantities) and full-length trousers. Closed-toe, chemically resistant shoes are required; do not wear sandals or open footwear. For operations with elevated splash or aerosol potential, wear a fluid-resistant disposable gown, sleeve covers, and shoe covers. Contaminated clothing should be removed promptly and laundered or disposed of as chemical waste before reuse. Skin protection selection should follow OSHA 29 CFR 1910.132 (General Requirements for PPE). Handle as a potentially bioactive substance of unknown toxicity and avoid all direct skin contact.

Section 9 — Physical and Chemical Properties

Physical State	Solid (research-grade lyophilised powder or crystalline solid)
Appearance	White lyophilized powder
Odor	Odorless
Odor Threshold	Not available.
Boiling Point	<i>Not determined</i>
Melting Point	<i>Not determined</i>
Flash Point	<i>Not determined</i>
Auto-ignition Temperature	No data available.
Decomposition Temperature	No experimental data available.
Vapor Pressure	<i>Not determined</i>
Vapor Density	<i>Not determined</i>
Specific Gravity	<i>Not determined</i>
Partition Coefficient (log 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	<i>Not determined</i>
Molecular Weight	858.9 g/mol
Molecular Formula	C33H54N12O15

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, chlorates, concentrated nitric acid), which can react with the amide, amine, hydroxyl, and carboxylic acid functionalities present in the peptide. Strong acids and strong bases can catalyze hydrolysis of peptide bonds and cleavage of the pyroglutamate and side-chain amide groups. Moisture and high humidity promote hydrolytic degradation of the peptide backbone. Elevated temperatures and prolonged exposure to light may accelerate decomposition. Microbial contamination of aqueous solutions can degrade the peptide; use sterile technique when preparing solutions. Hazardous decomposition products upon thermal breakdown may include carbon monoxide, carbon dioxide, and oxides of nitrogen (NO_x), as expected from combustion of nitrogen-containing organic compounds; refer to Section 10 for further stability and reactivity information.

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 of nonathymulin (CAS 63958-90-7) has not been fully characterized. No quantitative acute toxicity values (oral, dermal, or inhalation LD₅₀/LC₅₀) from authoritative sources such as ECHA, NIOSH, or peer-reviewed literature were identified for this substance. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). Handle as a substance of unknown acute toxicity and avoid ingestion, inhalation of dust or aerosols, and skin contact.

Skin Corrosion / Irritation: No experimental skin corrosion or irritation data for nonathymulin were located in ECHA, NIOSH, or peer-reviewed sources. The toxicological properties of this substance are not fully characterized with respect to dermal effects. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). Direct skin contact should be avoided as a precaution.

Serious Eye Damage / Irritation: No experimental serious eye damage or eye irritation data for nonathymulin were located in ECHA, NIOSH, or peer-reviewed sources. The toxicological properties with respect to ocular effects are not fully characterized. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). Eye contact with dust, solutions, or aerosols should be avoided.

Skin / Respiratory Sensitization: No respiratory or skin sensitization studies (e.g., LLNA, guinea pig maximization, human patch data) for nonathymulin were located in authoritative sources. Sensitization potential is not fully characterized. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). As with other biologically active substances of undefined sensitizing potential, repeated or prolonged exposure should be avoided.

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: Nonathymulin (CAS 63958-90-7) is not listed by IARC (Monographs Volumes 1-142), 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 carcinogenicity bioassays for this substance were identified in the peer-reviewed literature. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4).

Reproductive Toxicity: No reproductive, developmental, or fertility toxicity studies for nonathymulin were located in ECHA, NTP, EPA, or peer-reviewed sources. Reproductive toxicity is not fully characterized. Not classified based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). Exposure of pregnant or nursing individuals should be avoided as a precaution.

Specific Target Organ Toxicity (STOT): Specific Target Organ Toxicity - Single Exposure (STOT-SE) and Repeated Exposure (STOT-RE): No single-dose or repeated-dose systemic toxicity studies (subacute, subchronic, or chronic) for nonathymulin were identified in ECHA registration dossiers, NIOSH documentation, or peer-reviewed literature. Target organs of toxicity following single or repeated exposure have not been established, and the toxicological profile is not fully characterized. Not classified for STOT-SE or STOT-RE based on currently available data; hazards cannot be excluded (GHS Rev.8, Chapter 1.3.2.4). Occupational exposure should be minimized in accordance with OSHA 29 CFR 1910.1200 and general good industrial hygiene practice.

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 nonathymulin (CAS 63958-90-7) in authoritative sources including the U.S. EPA CompTox Chemicals Dashboard (DTXSID10213801), PubChem (CID 3085284), ECHA, or peer-reviewed ecotoxicology literature. The substance is not listed on the U.S. EPA Toxic Substances Control Act (TSCA) ecotoxicity inventories or the ECHA harmonised classification list for aquatic hazards. Not classified as hazardous to the aquatic environment (acute or chronic) based on a weight-of-evidence assessment, in the absence of authoritative experimental data. As a hydrophilic nonapeptide with multiple ionizable functional groups, releases to the environment should nevertheless be avoided and handled in accordance with good laboratory practice.

Persistence and Degradability: No substance-specific experimental biodegradation studies (e.g., OECD 301 series) have been identified for nonathymulin in authoritative databases (U.S. EPA CompTox, PubChem, ECHA). The molecule is a linear nonapeptide composed exclusively of naturally occurring L-alpha-amino-acid residues (pyroGlu-Ala-Lys--Ser-Gln-Gly-Gly-Ser-Asn) linked by standard peptide bonds and contains no halogens, sulfur, phosphorus, or aromatic ring systems. Peptides of this structural class are generally expected to undergo hydrolytic and enzymatic cleavage by ubiquitous environmental peptidases/proteases into constituent amino acids, which are then assimilated through normal biogeochemical nitrogen and carbon cycles. Definitive persistence classification cannot be assigned without substance-specific ready-biodegradability testing.

Bioaccumulative Potential: No experimentally determined bioconcentration factor (BCF) or measured log Kow has been identified in authoritative sources (U.S. EPA CompTox Chemicals Dashboard DTXSID10213801, PubChem CID 3085284, ECHA). Given the high molecular weight (858.9 g/mol), highly polar/zwitterionic character (multiple amide, hydroxyl, carboxyl and amine functionalities), expected low predicted log Kow, and susceptibility to enzymatic degradation, significant bioaccumulation in aquatic organisms is not anticipated. A definitive bioaccumulation classification cannot be assigned in the absence of substance-specific experimental BCF or partition-coefficient 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	332d7d09-b5e0-45ea-8ea3-51aac9a799bc
Revision Date	2026-08-02
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: 2026-08-02
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).