Minuteman Peptides, LLC

Melanotan II

CAS: 121062-08-6
Formula: C50H69N15O9

Document ID: 89a3e09e
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Version: 1.0

Section 1 — Product and Company Identification

Product Name	Melanotan II
Synonyms	Melanotan II; 121062-08-6; Melanotan-II
CAS Number	121062-08-6
Molecular Formula	C50H69N15O9
IUPAC Name	(3S,6S,9R,12S,15S,23S)-15-[[(2S)-2-acetamidohexanoyl]amino]-9-benzyl-6-[3-(diaminomethylideneamino)propyl]-12-(1H-imidazol-5-ylmethyl)-3-(1H-indol-3-ylmethyl)-2,5,8,11,14,17-hexaoxo-1,4,7,10,13,18-hexazacyclotricosane-23-carboxamide
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
Melanotan II	121062-08-6	C50H69N15O9	1024.2 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 Melanotan II (CAS 121062-08-6) only in a well-ventilated area, preferably within a chemical fume hood or laminar-flow enclosure, using engineering controls that minimize the generation of airborne dust or aerosols from the lyophilized powder. Because toxicological data for this synthetic cyclic peptide are limited, treat it as a potentially bioactive substance of unknown toxicity and apply the precautionary principle described in OSHA 29 CFR 1910.1450 (Laboratory Standard) and the principles of prudent practice outlined by the NIH/NRC 'Prudent Practices in the Laboratory.' Required personal protective equipment includes chemical-resistant nitrile gloves (inspected before use and changed immediately upon contamination), a buttoned laboratory coat, and ANSI Z87.1-compliant safety eyewear; where weighing or transferring dry powder may generate dust, wear a NIOSH-approved particulate respirator (e.g., N95 or higher) in accordance with the OSHA Respiratory Protection Standard (29 CFR 1910.134). Avoid all routes of exposure - do not breathe dust, mist, or vapor; avoid contact with skin, eyes, and clothing; and do not taste, swallow, or pipette by mouth. Do not eat, drink, smoke, or apply cosmetics in areas where the material is handled. Keep containers tightly closed when not in use, and re-seal under an inert atmosphere (e.g., dry nitrogen or argon) where practicable to limit exposure to atmospheric moisture and oxygen. Use anti-static and grounded equipment when handling fine

powders. Wash hands, forearms, and face thoroughly with soap and water immediately after handling and before leaving the work area. Decontaminate work surfaces and reusable equipment after use, and manage all waste, contaminated PPE, and residues as hazardous chemical waste in accordance with the EPA Resource Conservation and Recovery Act (RCRA, 40 CFR 260-273) and applicable state and local regulations.

Storage Conditions

Store the lyophilized solid in its original tightly closed container, protected from light, in a cool, dry location away from sources of heat, ignition, and direct sunlight. Consistent with general best practice for synthetic peptides containing labile residues (e.g., tryptophan, histidine, arginine), long-term storage of the dry powder is recommended at -20 degC or colder; storage at -80 degC is preferred for extended periods. Allow sealed containers to equilibrate to room temperature in a desiccator before opening to prevent condensation of atmospheric moisture onto the hygroscopic solid. Where practical, store under an inert gas headspace (nitrogen or argon) and include desiccant. Once reconstituted in aqueous or organic solvent, dispense into single-use aliquots and store frozen to avoid repeated freeze-thaw cycles, which can promote peptide degradation; avoid prolonged exposure to solutions at pH > 8. Segregate from incompatible materials (see below) in accordance with NFPA 45 and OSHA 29 CFR 1910.1450 storage guidance for laboratory chemicals. Keep out of reach of unauthorized personnel, and label containers clearly with identity, CAS number, date of receipt, and date of opening, consistent with the labeling requirements of OSHA HazCom 2012 (29 CFR 1910.1200(f)). No specific shelf-life or expiration data are established by an authoritative regulatory source; follow the dating on the container of record.

Incompatibilities

Keep separated from strong oxidizing agents (e.g., peroxides, perchlorates, permanganates, concentrated nitric acid, hypochlorites), which can oxidize susceptible amino acid side chains (notably the tryptophan indole, histidine imidazole, and methionine-type sulfur centers in related peptides). Avoid contact with strong acids and strong bases, which can hydrolyze the peptide (amide) backbone and side-chain functional groups; exposure to alkaline conditions (pH > 8) in particular should be avoided. Avoid strong reducing agents and electrophilic reagents (e.g., aldehydes, acid chlorides, alkylating agents) that can modify free amine, guanidino, or imidazole functionalities. The compound is hygroscopic; protect from moisture, atmospheric carbon dioxide, and prolonged exposure to air, light, and elevated temperatures, all of which can accelerate decomposition. Hazardous decomposition products on combustion or strong thermal/oxidative degradation may include carbon monoxide, carbon dioxide, and nitrogen oxides (NOx), as is typical for nitrogen-rich organic compounds; no compound-specific decomposition data have been published by an authoritative regulatory source (OSHA, NIOSH, EPA, ECHA, or PubChem) for CAS 121062-08-6.

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 Melanotan II (CAS 121062-08-6). 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 only in a well-ventilated area. Weighing, transferring, and other manipulations of the dry lyophilized powder should be performed inside a ventilated enclosure such as a certified chemical fume hood, a ventilated balance enclosure, or a Class II biological safety cabinet to prevent generation and inhalation of airborne particulates. Where feasible, work with the material in solution to minimize dust generation. Follow the Prudent Practices in the Laboratory (National Research Council, 2011) hierarchy of controls: substitution, engineering controls, administrative controls, then PPE. Provide readily accessible eyewash stations and safety showers in work areas (ANSI Z358.1). Do not eat, drink, smoke, or apply cosmetics in the work area. Wash hands thoroughly after handling.

Personal Protective Equipment

Respiratory Protection: Under normal laboratory use within a properly functioning fume hood or ventilated enclosure, respiratory protection is not typically required. If airborne particulates, dusts, mists, or aerosols may be generated outside of containment (e.g., weighing of bulk powder on the open bench, sonication, lyophilization), wear a NIOSH-approved air-purifying respirator equipped with N100/P100 particulate filters, in accordance with the OSHA Respiratory Protection Standard (29 CFR 1910.134). Respirator use requires a written program including medical evaluation, fit testing, and training. For large-scale or unknown-exposure scenarios, use a powered air-purifying respirator (PAPR) with HEPA filters.

Hand Protection: Wear chemically resistant, disposable protective gloves compliant with EN 374 / ANSI/ISEA 105. Nitrile examination gloves (minimum 0.11 mm thickness) are recommended for incidental contact; for prolonged or repeated contact, consider double-gloving or selecting a glove with a documented breakthrough time appropriate to the solvent system in use (e.g., DMSO, aqueous buffers). No specific permeation data are available for Melanotan II; select gloves based on the carrier solvent. Inspect gloves before use, change immediately if contamination, tearing, or puncture is suspected, and wash hands thoroughly with soap and water after removal.

Eye / Face Protection: Wear tightly fitting safety glasses with side shields meeting ANSI/ISEA Z87.1 as a minimum. When splashes, sprays, or aerosols are possible (e.g., when reconstituting, sonicating, or pipetting solutions outside containment), wear chemical splash goggles. A face shield (worn over goggles, not in place of them) is recommended for operations with a significant splash or implosion risk.

Skin Protection: Wear a laboratory coat (flame-resistant or chemically resistant as appropriate to other co-handled materials), closed-toe shoes, and full-length pants or equivalent skin coverage. For operations that may generate aerosols or for handling of bulk quantities, wear a chemically resistant disposable apron or sleeve covers over the lab coat. Remove and launder contaminated clothing before reuse; do not take contaminated PPE outside the laboratory. Follow the OSHA Laboratory Standard (29 CFR 1910.1450) and institutional Chemical Hygiene Plan for additional skin-protection requirements.

Section 9 — Physical and Chemical Properties

Physical State	Solid (research-grade lyophilised powder or crystalline solid)
Appearance	White to off-white lyophilized powder
Odor	Odorless
Odor Threshold	Not available.
Boiling Point	*Not determined*
Melting Point	*Not determined*
Flash Point	*Not determined*
Auto-ignition Temperature	No data available.
Decomposition Temperature	No experimental data available.
Vapor Pressure	*Not determined*
Vapor Density	*Not determined*
Specific Gravity	*Not determined*
Partition Coefficient (log Kow)	No experimental data available.
Solubility	Soluble in water; soluble in dilute acetic acid
Stability in Solution	Subject to hydrolytic and oxidative degradation typical of the chemical class; store reconstituted solutions refrigerated or frozen, protect from light, and use within the stability window indicated on the Certificate of Analysis.

pH	*Not determined*
Molecular Weight	1024.2 g/mol
Molecular Formula	C50H69N15O9

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: Keep separated from strong oxidizing agents (e.g., peroxides, perchlorates, permanganates, concentrated nitric acid, hypochlorites), which can oxidize susceptible amino acid side chains (notably the tryptophan indole, histidine imidazole, and methionine-type sulfur centers in related peptides). Avoid contact with strong acids and strong bases, which can hydrolyze the peptide (amide) backbone and side-chain functional groups; exposure to alkaline conditions (pH > 8) in particular should be avoided. Avoid strong reducing agents and electrophilic reagents (e.g., aldehydes, acid chlorides, alkylating agents) that can modify free amine, guanidino, or imidazole functionalities. The compound is hygroscopic; protect from moisture, atmospheric carbon dioxide, and prolonged exposure to air, light, and elevated temperatures, all of which can accelerate decomposition. Hazardous decomposition products on combustion or strong thermal/oxidative degradation may include carbon monoxide, carbon dioxide, and nitrogen oxides (NOx), as is typical for nitrogen-rich organic compounds; no compound-specific decomposition data have been published by an authoritative regulatory source (OSHA, NIOSH, EPA, ECHA, or PubChem) for CAS 121062-08-6.

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: No authoritative acute toxicity values (oral, dermal, or inhalation LD50/LC50) for Melanotan II (CAS 121062-08-6) have been located in NIOSH, ECHA, EPA, or peer-reviewed toxicology databases. The acute toxicological profile is not fully characterized. Peer-reviewed clinical case reports have, however, documented systemic toxicity in humans following self-administration by injection, including sympathomimetic symptoms, nausea and vomiting, rhabdomyolysis, and acute renal dysfunction (Devoto et al., Clin Toxicol 2012, PMID 23121206), and a case of renal infarction (Ong et al., 2020, PMID 31953620). On a weight-of-evidence basis under GHS Rev.8 Chapter 1.3.2.4, acute hazards cannot be excluded and the material should be handled as if acutely toxic until further data become available.

Skin Corrosion / Irritation: No standardized in vivo or in vitro dermal corrosion/irritation studies (e.g., OECD TG 404, 431, 439) for Melanotan II have been identified in ECHA, EPA, or peer-reviewed sources. Skin corrosion/irritation potential is not fully characterized. Not classified based on currently available data; hazards cannot be excluded. As a synthetic bioactive substance of unknown dermal toxicity, skin contact should be avoided.

Serious Eye Damage / Irritation: No standardized ocular irritation data (e.g., OECD TG 405, 437, 492) for Melanotan II have been identified in authoritative regulatory sources. Serious eye damage/eye irritation potential is not fully characterized. Not classified based on currently available data; hazards cannot be excluded. Eye contact with the solid or solutions should be avoided.

Skin / Respiratory Sensitization: No respiratory or skin sensitization studies (e.g., OECD TG 406, 429, 442A-D) for Melanotan II have been located in ECHA, NIOSH, or peer-reviewed literature. Sensitization potential is not fully characterized. Not classified based on currently available data; hazards cannot be excluded. As a synthetic high--

molecular-weight nitrogen-rich substance with no human exposure history outside unregulated self-use, sensitization potential should be considered when handling.

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: Melanotan II is not listed as a carcinogen by IARC, the U.S. National Toxicology Program (NTP) Report on Carcinogens, OSHA (29 CFR 1910.1003), or the ACGIH TLV list. No long-term carcinogenicity bioassays compliant with OECD TG 451/453 have been identified. The peer-reviewed clinical literature has, however, raised unresolved concerns regarding effects on pigmented lesions, including reports of darkening of pre-existing nevi, new atypical melanocytic nevi, and case reports of melanoma in users; a direct causal relationship has not been established (see, e.g., Cousen et al., Br J Dermatol 2009; Paurobally et al., J Eur Acad Dermatol Venereol 2011; and the review by Habbema et al., J Eur Acad Dermatol Venereol). Not classified based on currently available data; hazards cannot be excluded.

Reproductive Toxicity: No OECD TG 414, 416, 421/422, or 443 reproductive or developmental toxicity studies for Melanotan II have been identified in ECHA, EPA, or NTP databases. Reproductive and developmental toxicity are not fully characterized. Not classified based on currently available data; hazards cannot be excluded. Exposure of pregnant or nursing workers should be avoided as a precaution.

Specific Target Organ Toxicity (STOT): No formal STOT-SE or STOT-RE classification under GHS has been established by an authoritative regulatory body, and no repeated-dose toxicity studies (OECD TG 407, 408, 410, 411, 413) for Melanotan II have been located. Not classified based on currently available data; hazards cannot be excluded. Peer-reviewed human case reports following single or short-term parenteral self-administration have described adverse effects involving the kidneys (acute kidney injury, renal infarction) and skeletal muscle (rhabdomyolysis), as well as gastrointestinal and cardiovascular (sympathomimetic) effects (Devoto et al., 2012, PMID 23121206; Ong et al., 2020, PMID 31953620). These reports support handling the substance with controls appropriate to a material with potential effects on the kidney, skeletal muscle, and cardiovascular system until further data are available.

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 or terrestrial toxicity data (e.g., fish LC50, Daphnia EC50, algal ErC50) have been identified for Melanotan II (CAS 121062-08-6) in authoritative databases including PubChem (CID 92432), ECHA, EPA ECOTOX, or peer-reviewed literature. The substance is not listed on the ECHA C&L Inventory with an environmental hazard classification. Based on weight-of-evidence assessment in the absence of authoritative experimental data, Melanotan II is not classified as hazardous to the aquatic environment under GHS Rev.8 / 29 CFR 1910.1200. Releases to surface water, soil, drains, or the wider environment should nevertheless be avoided as a precautionary measure.

Persistence and Degradability: No substance-specific experimental data on ready biodegradability (e.g., OECD 301 series), hydrolysis (OECD 111), or phototransformation have been identified for Melanotan II in authoritative sources (PubChem CID 92432, ECHA, EPA). The cyclic lactam structure containing guanidino, imidazole, and indole functionalities precludes reliable read-across from linear-peptide biodegradability assumptions. Persistence in environmental compartments cannot be quantitatively characterized in the absence of measured data.

Bioaccumulative Potential: No experimentally determined octanol/water partition coefficient (log Kow), bioconcentration factor (BCF), or bioaccumulation factor (BAF) has been identified for Melanotan II in authoritative sources (PubChem CID 92432, ECHA dossiers, EPA). Given the high molecular weight (1024.2 g/mol), multiple ionizable groups (guanidine, imidazole, primary carboxamide), and expected low membrane permeability, significant bioaccumulation is not anticipated; however, this prediction is not supported by 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	89a3e09e-9be7-4ba1-a1de-51c8f130bd57
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).