



ARCANE

Arcane Peptides

SAFETY DATA SHEET

GHS / OSHA HazCom 2012 Compliant

GHK-Cu

CAS: 130120-56-8

Formula: C₂₈H₄₆CuN₁₂O₈

Document ID: ccc58b7a

Revision Date: 2026-05-28

Version: 1.0

Section 1 — Product and Company Identification

Product Name	GHK-Cu
Synonyms	Bisprezatide copper; Bis-prezatide copper; DL1TR6W6VM
CAS Number	130120-56-8
Molecular Formula	C ₂₈ H ₄₆ CuN ₁₂ O ₈
IUPAC Name	copper bis((2S)-6-amino-2-[[[(2S)-2-[(2-aminoacetyl)amino]-3-(1H-imidazol-5-yl)propanoyl]amino]hexanoate)
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	Arcane Peptides
Address	30 N Gould St, Sheridan, WY 82801, US
Phone	+1-801-306-4955
Website	https://arcanepeptides.com/
Emergency Contact	CHEMTREC
Emergency Phone	800-424-9300 CHEMTREC (USA) 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
GHK-Cu	130120-56-8	C28H46CuN12O8	742.3 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 in accordance with good industrial hygiene and safety practice as outlined in OSHA 29 CFR 1910.1200 and 29 CFR 1910.132-138. Treat GHK-Cu as a potentially bioactive substance of incompletely characterized toxicity; minimize all routes of exposure (inhalation of dust, skin/eye contact, and ingestion). Conduct weighing and transfer operations in a chemical fume hood, ventilated balance enclosure, or glove box to control airborne particulate, consistent with NIOSH guidance for handling powders without established occupational exposure limits (NIOSH Current Intelligence Bulletin 68; control-banding approach). Wear chemically resistant nitrile gloves, protective laboratory clothing, and ANSI Z87.1-compliant eye protection; use a NIOSH-approved particulate respirator (e.g., N95 or higher) if engineering controls do not adequately control airborne dust. Avoid generation and inhalation of dust or aerosols. Do not eat, drink, smoke, or apply cosmetics in work areas. Wash hands and exposed skin thoroughly with soap and water after handling and before breaks. Keep containers tightly closed when not in use and clearly labeled per the OSHA HazCom 2012 standard. Ground and bond containers when transferring to prevent static accumulation in dusty environments. Promptly clean up spills using HEPA vacuum or damp wiping to avoid dust dispersal; do not dry-sweep. Remove contaminated clothing and laundry before reuse. Ensure eyewash stations and safety showers are accessible in the work area.

Storage Conditions

Store in the original, tightly closed container in a cool, dry, well-ventilated area away from direct sunlight and incompatible materials, consistent with OSHA 29 CFR 1910.1450 requirements for laboratory chemical storage. Protect from moisture (copper-peptide complexes are typically hygroscopic) and from light, which can promote oxidation and degradation of histidine- and copper-containing peptides (per peer-reviewed literature on peptide and metal-peptide stability, e.g., Manning et al., Pharm. Res., on peptide degradation pathways). Recommended storage is refrigerated (2-8 degC) or frozen (-20 degC) for long-term stability; allow sealed containers to equilibrate to room temperature before opening to prevent condensation. Keep away from heat, ignition sources, and oxidizers. Store segregated from foodstuffs, strong acids, strong bases, and strong oxidizing agents. Maintain inventory controls and periodic inspection of containers for integrity. No specific shelf life is established by an authoritative regulatory source; follow the date assigned by the manufacturer on the certificate of analysis.

Incompatibilities

Incompatible with strong oxidizing agents, strong acids, and strong bases, which may cause decomposition of the peptide backbone or displacement/reduction of the coordinated copper(II) center. Avoid contact with strong reducing agents (e.g., dithionite, borohydrides), which may reduce Cu(II) to Cu(I)/Cu(0) and destabilize the complex. Avoid chelating agents (e.g., EDTA, DTPA) that can sequester copper and dissociate the complex. Avoid prolonged exposure to moisture, elevated temperatures, and direct light, all of which can accelerate hydrolysis and oxidative degradation of the glycyl-histidyl-lysine peptide. Hazardous decomposition products under fire conditions may include carbon oxides (CO, CO₂), nitrogen oxides (NO_x), and copper-containing fumes/oxides, per general guidance for combustion of copper-amino acid complexes.

Section 8 — Exposure Controls / Personal Protection

Exposure Limits

No regulatory occupational exposure limits (OEL) have been established specifically for GHK-Cu (CAS 130120-56-8) by OSHA, ACGIH, NIOSH, or equivalent bodies. No biological exposure indices (BEIs) have been established for this substance. Because GHK-Cu is a copper(II)-tripeptide complex, exposure limits for the copper content may be considered as a reference point: OSHA PEL - 1 mg/m³ TWA (as Cu, dusts and mists; 29 CFR 1910.1000 Table Z-1); NIOSH REL - 1 mg/m³ TWA (as Cu, dusts and mists; NIOSH Pocket Guide to Chemical Hazards); ACGIH TLV - 1 mg/m³ TWA (as Cu, dusts and mists). Per NIOSH and OSHA notes, these limits apply to copper compounds (as Cu) other than copper fume. 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 area. Handle in a chemical fume hood, ventilated enclosure, or laminar-flow containment device whenever weighing, opening containers, or otherwise generating dusts, aerosols, or mists of the solid or its solutions. For routine bench-scale handling of small quantities, a certified laboratory fume hood meeting ANSI/AIHA Z9.5 face-velocity recommendations (typically 80-120 fpm) is appropriate. For larger quantities or repeated operations involving the dry powder, use local exhaust ventilation (LEV) such as a glove box, ventilated balance enclosure, or powder-handling isolator to keep airborne concentrations as low as reasonably achievable (ALARA) and below the applicable copper-compound limit (1 mg/m³ as Cu). Ensure that emergency eyewash stations and safety showers meeting ANSI Z358.1 are accessible within 10 seconds of work areas. Do not eat, drink, smoke, or apply cosmetics in areas where this substance is handled. Wash hands and exposed skin thoroughly after handling and before breaks.

Personal Protective Equipment

Respiratory Protection: Respiratory protection is not required where engineering controls (fume hood, glove box, or local exhaust ventilation) keep airborne concentrations below the applicable copper-compound limits (OSHA PEL/NIOSH REL/ACGIH TLV of 1 mg/m³ as Cu). When such controls are not feasible, or when weighing, transferring, or otherwise generating dusts or aerosols outside containment, wear a NIOSH-approved air-purifying respirator with

N95 or higher-efficiency particulate filters (42 CFR Part 84). For higher anticipated exposures or when the airborne concentration is unknown, use a NIOSH-approved P100 filtering facepiece, full-facepiece air-purifying respirator with P100 cartridges, or a powered air-purifying respirator (PAPR) with HEPA filters. Respirator use must follow a written respiratory protection program meeting OSHA 29 CFR 1910.134, including medical clearance, fit testing, and training.

Hand Protection: Wear chemically resistant, impermeable protective gloves compliant with EN 374 / ANSI/ISEA 105. Nitrile rubber gloves of at least 0.11 mm thickness are generally recommended for handling solid pharmaceutical-grade peptides and aqueous solutions of copper complexes; for prolonged or repeated contact, butyl rubber or neoprene gloves may provide improved performance. Because no specific permeation data are published for GHK-Cu, double-gloving is recommended when handling the dry solid or concentrated solutions. Inspect gloves before use, replace immediately if torn, punctured, or contaminated, and remove using a technique that avoids skin contact with the outer surface. Wash hands thoroughly with soap and water after glove removal.

Eye / Face Protection: Wear tight-fitting safety glasses with side shields meeting ANSI/ISEA Z87.1 (or EN 166) as a minimum. When handling the dry powder, performing operations that may generate dusts or splashes, or working with solutions in volumes that present a splash hazard, wear chemical splash goggles. Use a full-face shield worn over goggles when there is a risk of splashing, projectiles, or aerosol generation outside a fume hood. Do not wear contact lenses when handling this material unless splash goggles are also worn. Ensure an ANSI Z358.1-compliant emergency eyewash is immediately accessible in the work area.

Skin Protection: Wear a long-sleeved laboratory coat or chemical-resistant lab gown that fully covers the arms and torso, closed-toe chemical-resistant shoes, and full-length trousers. For handling of bulk quantities, repeated operations, or when splashing is foreseeable, wear a chemical-resistant apron or a disposable/coated coverall (e.g., Tyvek-type) over the lab coat. Remove and segregate contaminated clothing promptly; launder or dispose of as chemical waste rather than re-wearing. Do not take contaminated clothing or PPE out of the work area or home. Wash exposed skin thoroughly with soap and water after handling and before eating, drinking, smoking, or using the restroom. Handle as a potentially bioactive substance of unknown toxicity and minimize all routes of skin contact.

Section 9 — Physical and Chemical Properties

Physical State	Solid (research-grade lyophilised powder or crystalline solid)
Appearance	Blue to deep blue 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 K _{ow})	No experimental data available.
Solubility	Soluble in water; slightly soluble in ethanol
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	742.3 g/mol
Molecular Formula	C28H46CuN12O8

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: Incompatible with strong oxidizing agents, strong acids, and strong bases, which may cause decomposition of the peptide backbone or displacement/reduction of the coordinated copper(II) center. Avoid contact with strong reducing agents (e.g., dithionite, borohydrides), which may reduce Cu(II) to Cu(I)/Cu(0) and destabilize the complex. Avoid chelating agents (e.g., EDTA, DTPA) that can sequester copper and dissociate the complex. Avoid prolonged exposure to moisture, elevated temperatures, and direct light, all of which can accelerate hydrolysis and oxidative degradation of the glycyl-histidyl-lysine peptide. Hazardous decomposition products under fire conditions may include carbon oxides (CO, CO₂), nitrogen oxides (NO_x), and copper-containing fumes/oxides, per general guidance for combustion of copper-amino acid complexes.

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 GHK-Cu (CAS 130120-56-8) has not been fully characterized. No reliable acute oral, dermal, or inhalation LD50/LC50 values for this specific substance are available from authoritative regulatory sources (OSHA, NIOSH, ECHA, EPA, NTP) or the peer-reviewed literature indexed in PubChem. Not classified for acute toxicity based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). The substance contains copper coordinated to glycyl-L-histidyl-L-lysine; soluble copper(II) species are reported to be harmful if swallowed and can cause gastrointestinal irritation following ingestion, and dust may be irritating if inhaled. Handle as a substance of unknown acute toxicity and avoid ingestion, inhalation of dust, and skin/eye contact.

Skin Corrosion / Irritation: Skin corrosion/irritation data specific to GHK-Cu are not available from authoritative regulatory sources. Not classified for skin corrosion or irritation based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). The toxicological profile is not fully characterized. Copper(II) complexes can cause mild to moderate skin irritation in some individuals; mechanical irritation from dust is also possible. Avoid prolonged or repeated skin contact and use suitable protective gloves (see Section 8).

Serious Eye Damage / Irritation: Serious eye damage/eye irritation data specific to GHK-Cu are not available from authoritative regulatory sources. Not classified for serious eye damage or eye irritation based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). Particulates of any kind, including this substance, may cause mechanical irritation upon eye contact. Use appropriate eye protection (see Section 8) and avoid contact with the eyes.

Skin / Respiratory Sensitization: No respiratory or skin sensitization data specific to GHK-Cu have been identified in authoritative sources (ECHA, NTP, NIOSH) or the peer-reviewed literature indexed in PubChem. Not classified for respiratory or skin sensitization based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). The toxicological properties are not fully characterized. Copper-containing substances have occasionally been associated with contact sensitization in predisposed individuals; minimize skin contact and inhalation exposure.

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: GHK-Cu (CAS 130120-56-8) 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 U.S. EPA IRIS database. No carcinogenicity bioassays specific to this substance have been identified in the peer-reviewed literature. Not classified for carcinogenicity based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). The toxicological profile is not fully characterized.

Reproductive Toxicity: No reproductive toxicity, developmental toxicity, or fertility studies specific to GHK-Cu have been identified in authoritative sources (ECHA, NTP, EPA) or in the peer-reviewed literature indexed in PubChem. GHK-Cu is not listed on the California Proposition 65 list of chemicals known to cause reproductive toxicity. Not classified for reproductive toxicity based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). The toxicological properties are not fully characterized; women who are pregnant or nursing should avoid exposure as a precaution.

Specific Target Organ Toxicity (STOT): Specific Target Organ Toxicity - Single Exposure (STOT-SE): No data specific to GHK-Cu from a single exposure have been identified in authoritative regulatory sources or the peer-reviewed literature. Not classified for STOT-SE based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). Specific Target Organ Toxicity - Repeated Exposure (STOT-RE): No subchronic or chronic repeat-dose toxicity studies specific to GHK-Cu have been identified in authoritative sources. Not classified for STOT-RE based on currently available data; hazards cannot be excluded. Chronic excessive systemic exposure to copper is reported in the toxicological literature to affect the liver; however, no STOT-RE target organ is established for this specific substance, and its toxicological properties are not fully characterized. Minimize all routes of occupational exposure.

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 GHK-Cu (CAS 130120-56-8) in authoritative regulatory databases (ECHA, EPA, PubChem). However, the substance is a copper(II) coordination complex containing approximately 8.6% copper by mass. Dissociation in aqueous media can release Cu²⁺ ions, which are recognized by ECHA and the International Copper Association as the toxicologically relevant moiety driving aquatic hazard for copper substances. ECHA registration dossiers for copper compounds report acute and chronic ERVs for copper ion on the order of 12 ug Cu/L, and free cupric ion is documented as acutely and chronically toxic to fish, invertebrates, and algae (ECHA Registration Dossiers; UN GHS Annex 9 transformation/dissolution approach). Released copper ion may therefore present a hazard to the aquatic environment depending on bioavailability, pH, hardness, and dissolved organic carbon. Avoid release to surface waters, drains, and the wider environment.

Persistence and Degradability: No substance-specific degradation studies (e.g., OECD 301 ready biodegradability) have been identified for GHK-Cu in authoritative sources. The organic tripeptide ligand (glycyl-L-histidyl-L-lysine) would be expected to undergo hydrolytic and microbial breakdown into constituent amino acids; however, the copper(II) center is an element and cannot be degraded. Per EPA and ATSDR characterizations, copper released to the environment partitions strongly to soils and sediments and is considered persistent as an element, undergoing speciation rather than degradation.

Bioaccumulative Potential: No measured bioconcentration factor (BCF) or log Kow has been identified for GHK-Cu in authoritative databases. The intact charged copper-peptide complex is highly polar and water-soluble, suggesting low intrinsic potential to bioaccumulate via partitioning (UN GHS Annex 9 criteria reference BCF >= 500 or log Kow >= 4 as indicators of bioaccumulation potential). Copper ion liberated from the complex is an essential trace element that is homeostatically regulated in vertebrates and is not classified as bioaccumulative in the conventional BCF sense per ECHA and International Copper Association assessments, although it can accumulate in sediments and certain aquatic invertebrates and plants. A weight-of-evidence assessment does not identify a high bioaccumulation potential, but substance-specific data are lacking.

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	ccc58b7a-9458-4925-b0d0-fe8d56657985
Revision Date	2026-05-28
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: 2026-05-28 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).