Minuteman Peptides, LLC

PE 22-28

CAS: 1801959-12-5
Formula: C35H55N11O9

Document ID: d7be6a57
Revision Date: 2026-07-18
Version: 1.0

Section 1 — Product and Company Identification

Product Name	PE 22-28
Synonyms	PE 22-28; 1801959-12-5; PE 22-28 (acetate)
CAS Number	1801959-12-5
Molecular Formula	C35H55N11O9
IUPAC Name	(2S)-2-[[(2S)-2-[[2-[[(2S)-2-[[(2S)-2-[[(2S)-2-[(2-aminoacetyl)amino]-3-methylbutanoyl]amino]-3-hydroxypropanoyl]amino]-3-(1H-indol-3-yl)propanoyl]amino]acetyl]amino]-4-methylpentanoyl]amino]-5-(diaminomethylideneamino)pentanoic 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	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
PE 22-28	1801959-12-5	C35H55N11O9	773.9 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 (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 only in areas equipped for work with potentially bioactive research chemicals of unknown toxicological profile. Follow OSHA Hazard Communication Standard (29 CFR 1910.1200) and general laboratory hygiene practices consistent with OSHA 29 CFR 1910.1450 (Occupational Exposure to Hazardous Chemicals in Laboratories). Use engineering controls such as a certified chemical fume hood or ventilated weighing enclosure when opening containers, weighing, or dissolving the solid to minimize airborne particulate exposure. Wear appropriate personal protective equipment as described in Section 8, including chemical-resistant gloves, safety eyewear, and a laboratory coat. Avoid formation and inhalation of dust or aerosols; avoid contact with skin, eyes, and clothing. Do not eat, drink, smoke, or apply cosmetics in areas where the substance is handled. Wash hands and exposed skin thoroughly after handling and before breaks and at the end of the workday. Use the smallest practical quantity, keep containers tightly closed when not in use, and clean work surfaces after each use. Ground and bond containers when transferring to prevent electrostatic accumulation of fine powder. Reconstituted solutions should be prepared immediately before use and handled aseptically to limit microbial degradation, as recommended in peer-reviewed peptide handling guidance (Hoofnagle et al., Clin Chem 2016, PMC4830481).

Storage Conditions

Store the sealed container in a cool, dry, well-ventilated area protected from light, moisture, and incompatible materials. Based on general peptide storage guidance in the peer-reviewed literature (Hoofnagle et al., Clin Chem 2016), lyophilized peptides should be kept desiccated and protected from humidity and light to limit oxidation, deamidation, and hygroscopic uptake; refrigerated (2-8 degC) storage is appropriate for short-term holding and freezer storage (<= -20 degC, or <= -80 degC for extended periods) is preferred for long-term storage. Allow sealed vials to equilibrate to room temperature before opening to prevent condensation of atmospheric moisture onto the solid. After reconstitution, store aliquots frozen to minimize freeze-thaw cycles and microbial or hydrolytic degradation. Keep containers tightly closed and clearly labeled in accordance with 29 CFR 1910.1200(f). Store segregated from oxidizers, strong acids, and strong bases in accordance with standard laboratory chemical segregation practice (see NIH Chemical Segregation and Storage Table). Restrict access to trained laboratory personnel.

Incompatibilities

Treat as incompatible with strong oxidizing agents (which can oxidize electron-rich residues and side-chain functional groups typical of peptides), strong acids and strong bases (which promote peptide bond hydrolysis and racemization), strong reducing agents, and strong electrophiles/alkylating and acylating agents (which can modify amine, hydroxyl, guanidino, and indole functionalities where present). Avoid prolonged exposure to heat, direct sunlight or UV light, high humidity, and atmospheric moisture, all of which can accelerate oxidation, deamidation, and hydrolytic degradation. Avoid contact with proteolytic enzymes and microbial contamination in aqueous solution. Chemical segregation should follow the NIH Chemical Segregation and Storage Table and general laboratory practice; do not co-store with the incompatible classes listed above.

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 PE 22-28 (CAS 1801959-12-5). 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 laboratory area. Weighing, transfer, and manipulation of the dry powder should be performed inside a certified chemical fume hood, ventilated balance enclosure, or Class I/II biological safety cabinet to prevent generation and inhalation of airborne particulates. For higher-quantity or repeated handling, consider a containment primary engineering control (C-PEC) consistent with the hierarchy of controls described in the NIOSH document

'Managing Hazardous Drug Exposures: Information for Healthcare Settings' (DHHS/NIOSH Publication No. 2023-130) and USP <800> principles. Provide readily accessible eyewash stations and safety showers in accordance with ANSI/ISEA Z358.1 in areas where the substance is handled. Do not eat, drink, smoke, or store food in work areas. Wash hands thoroughly after handling and before breaks.

Personal Protective Equipment

Respiratory Protection: Respiratory protection is not normally required when handling is performed within a properly functioning fume hood or ventilated enclosure. If dust, mist, or aerosols may be generated outside of engineering controls, wear a NIOSH-approved air-purifying particulate respirator with N95 filters at minimum (42 CFR Part 84). For higher exposure potential or where airborne concentrations are unknown, use a NIOSH-approved half-face or full-face respirator equipped with P100 filters, or a powered air-purifying respirator (PAPR). Respirator use must comply with the OSHA Respiratory Protection Standard (29 CFR 1910.134), including medical evaluation, fit testing, and a written respiratory protection program.

Hand Protection: Wear chemical-resistant, disposable laboratory gloves conforming to EN ISO 374 / ASTM D6978. Nitrile gloves of >=4 mil (0.1 mm) thickness are suitable for incidental contact; double-gloving is recommended when handling the dry powder or concentrated solutions, consistent with NIOSH recommendations for handling drugs of unknown toxicity (NIOSH Publication No. 2023-130). Inspect gloves before each use, change immediately if contamination, tearing, or degradation is suspected, and remove using aseptic technique to avoid skin contact. Wash hands with soap and water after glove removal.

Eye / Face Protection: Wear tight-fitting chemical splash goggles meeting ANSI/ISEA Z87.1. A full-face shield worn over goggles is recommended when handling larger quantities, dispensing solutions, or where splash or aerosol generation is possible. Contact lenses are not a substitute for eye protection.

Skin Protection: Wear a long-sleeved, chemical-resistant laboratory coat or disposable chemotherapy-type gown with closed front and knit or elastic cuffs, closed-toe chemical-resistant footwear, and long pants to minimize skin exposure. Disposable protective sleeves may be added when handling powder. Contaminated PPE must be removed immediately, segregated, and either laundered by trained personnel or discarded as hazardous laboratory waste in accordance with applicable regulations. Do not reuse disposable garments. Launder reusable clothing separately from personal clothing before reuse.

Section 9 — Physical and Chemical Properties

Physical State	Solid (research-grade lyophilised powder or crystalline solid)
Appearance	White to off-white lyophilized 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
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	773.9 g/mol
Molecular Formula	C35H55N11O9

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: Treat as incompatible with strong oxidizing agents (which can oxidize electron-rich residues and side-chain functional groups typical of peptides), strong acids and strong bases (which promote peptide bond hydrolysis and racemization), strong reducing agents, and strong electrophiles/alkylating and acylating agents (which can modify amine, hydroxyl, guanidino, and indole functionalities where present). Avoid prolonged exposure to heat, direct sunlight or UV light, high humidity, and atmospheric moisture, all of which can accelerate oxidation, deamidation, and hydrolytic degradation. Avoid contact with proteolytic enzymes and microbial contamination in aqueous solution. Chemical segregation should follow the NIH Chemical Segregation and Storage Table and general laboratory practice; do not co-store with the incompatible classes listed above.

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 specific to PE 22-28 (CAS 1801959-12-5) are not available in authoritative regulatory databases (ECHA, NIOSH, EPA, PubChem) at the time of preparation. No LD50/LC50 values from peer-reviewed sources have been established for oral, dermal, or inhalation routes. The toxicological properties of this substance are not fully characterized. Not classified based on currently available data; hazards cannot be excluded. Handle in accordance with good industrial hygiene and laboratory safety practices.

Skin Corrosion / Irritation: No experimental skin corrosion/irritation study data for PE 22-28 are available in authoritative sources (ECHA, PubChem, peer-reviewed literature). The substance has not been tested according to OECD Test Guideline 404 or equivalent. Not classified based on currently available data; hazards cannot be excluded. As a precaution, direct skin contact should be avoided.

Serious Eye Damage / Irritation: No experimental serious eye damage/eye irritation study data for PE 22-28 are available in authoritative sources (ECHA, PubChem, peer-reviewed literature). The substance has not been tested according to OECD Test Guideline 405 or equivalent. Not classified based on currently available data; hazards cannot be excluded. Direct eye contact with dust or solutions should be avoided.

Skin / Respiratory Sensitization: No experimental skin or respiratory sensitization data for PE 22-28 are available in authoritative sources (ECHA, PubChem, peer-reviewed literature). The substance has not been tested according to OECD Test Guidelines 406, 429, or 442. Not classified based on currently available data; hazards cannot be excluded. Individuals with known hypersensitivity to related substances should avoid 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: PE 22-28 (CAS 1801959-12-5) is not listed as a carcinogen by IARC, the U.S. National Toxicology Program (NTP) Report on Carcinogens, OSHA (29 CFR 1910.1200 Subpart Z), or the U.S. EPA Integrated Risk Information System (IRIS). No long-term carcinogenicity bioassays have been reported in the peer-reviewed literature. Not classified based on currently available data; hazards cannot be excluded due to the absence of chronic study data.

Reproductive Toxicity: No reproductive or developmental toxicity study data for PE 22-28 are available in authoritative sources (ECHA, NTP, EPA, PubChem, peer-reviewed literature). The substance has not been evaluated according to OECD Test Guidelines 414, 416, 421, 422, or 443. Not classified based on currently available data; hazards cannot be excluded. As a precaution, exposure should be avoided by pregnant or nursing individuals.

Specific Target Organ Toxicity (STOT): No specific target organ toxicity data (single exposure, STOT-SE, GHS Chapter 3.8; or repeated exposure, STOT-RE, GHS Chapter 3.9) have been identified for PE 22-28 in authoritative sources (ECHA, NIOSH, EPA, PubChem, peer-reviewed literature). No sub-acute, sub-chronic, or chronic repeated-dose toxicity studies (e.g., OECD TG 407, 408, 411) have been reported. Not classified for STOT-SE or STOT-RE based on currently available data; hazards cannot be excluded. The toxicological profile of this substance is not fully characterized.

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 ecotoxicity data (e.g., fish, Daphnia, or algal LC50/EC50 values) have been identified for PE 22-28 (CAS 1801959-12-5) in authoritative sources including ECHA, EPA ECOTOX, or peer-reviewed literature. The substance is not listed on the ECHA Candidate List or classified under CLP for aquatic hazards. Based on a weight-of-evidence assessment in the absence of experimental data, PE 22-28 is not classified as hazardous to the aquatic environment under GHS/CLP criteria. Prevent release to surface waters, groundwater, sewers, and soil as a matter of good laboratory practice.

Persistence and Degradability: No substance-specific experimental biodegradation study (e.g., OECD 301 series) has been identified for PE 22-28 in authoritative databases. As a peptide composed of naturally occurring L-amino acid residues linked by standard peptide bonds and containing no halogen, phosphorus, or other recalcitrant heteroatom substituents, susceptibility to enzymatic hydrolysis by environmental proteases/peptidases is expected; however, no measured half-life or ready-biodegradability data have been identified to confirm this. A definitive persistence classification cannot be made in the absence of experimental data.

Bioaccumulative Potential: No experimental bioconcentration factor (BCF) or log Kow value from an authoritative source has been identified for PE 22-28. The substance is a relatively high-molecular-weight (773.9 g/mol), polar, ionizable peptide with multiple hydrogen-bond donors and acceptors, consistent with low predicted lipophilicity. Significant bioaccumulation in aquatic organisms is not anticipated; however, this assessment is qualitative and not derived from substance-specific experimental studies.

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	d7be6a57-1455-4379-aab5-14a1270eebd4
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.