Viking Stack Peptides

Tirzepatide

CAS: 2023788-19-2
Formula: C225H348N48O68

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Section 1 — Product and Company Identification

Product Name	Tirzepatide
Synonyms	Tirzepatide; 2023788-19-2; DA-78491
CAS Number	2023788-19-2
PubChem CID	168009818
Molecular Formula	C225H348N48O68
IUPAC Name	20-[[4-[2-[2-[2-[2-[2-[2-[[5-[[5-amino-2-[2-[[2-[[6-amino-2-[[2-[[2-[[2-[[2-[[2-[[2-[[2-[[2-[[2-[[2-[[2-[[2-amino-3-(4-hydroxyphenyl)propanoyl]amino]-2-methylpropanoyl]amino]-4-carboxybutanoyl]amino]acetyl]amino]-3-hydroxybutanoyl]amino]-3-phenylpropanoyl]amino]-3-hydroxybutanoyl]amino]-3-hydroxypropanoyl]amino]-3-carboxypropanoyl]amino]-3-(4-hydroxyphenyl)propanoyl]amino]-3-hydroxypropanoyl]amino]-3-methylpentanoyl]amino]-2-methylpropanoyl]amino]-4-methylpentanoyl]amino]-3-carboxypropanoyl]amino]hexanoyl]amino]-3-methylpentanoyl]amino]propanoylamino]-5-oxopentanoyl]amino]-6-[[1-[[1-[[5-amino-1-[[1-[[1-[[1-[[2-[[2-[2-[[1-[[1-[[2-[[1-[2-[2-[2-[(1-amino-3-hydroxy-1-oxopropan-2-yl)carbamoyl]pyrrolidine-1-carbonyl]pyrrolidine-1-carbonyl]pyrrolidin-1-yl]-1-oxopropan-2-yl]amino]-2-oxoethyl]amino]-3-hydroxy-1-oxopropan-2-yl]amino]-3-hydroxy-1-oxopropan-2-yl]carbamoyl]pyrrolidin-1-yl]-2-oxoethyl]amino]-2-oxoethyl]amino]-1-oxopropan-2-yl]amino]-3-methyl-1-oxopentan-2-yl]amino]-4-methyl-1-oxopentan-2-yl]amino]-3-(1H-indol-3-yl)-1-oxopropan-2-yl]amino]-1,5-dioxopentan-2-yl]amino]-3-methyl-1-oxobutan-2-yl]amino]-1-oxo-3-phenylpropan-2-yl]amino]-1-oxopropan-2-yl]amino]-6-oxo… [truncated — full value in PDF metadata]
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	Viking Stack Peptides
Address	560, Fort Worth, TX 76137, United States
Phone	8178816217
Emergency Phone	8178816217

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
Tirzepatide	2023788-19-2	C225H348N48O68	4813 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 area, preferably within a certified chemical fume hood, ventilated weighing enclosure, or Class II biological safety cabinet to minimize inhalation of airborne particulates during weighing, transfer, or reconstitution. Because this material is a synthetic peptide of high molecular weight (4813 Da) for which no occupational exposure limits have been established by OSHA, NIOSH, or ACGIH, treat it as a potentially bioactive substance of unknown toxicity and apply the principles of the NIOSH Hierarchy of Controls and the precautionary recommendations of NIOSH Publication No. 2023-130 (Managing Hazardous Drug Exposures) and OSHA's Hazardous Drugs guidance (29 CFR 1910.1200; OSHA Technical Manual Section VI). Wear chemically resistant nitrile gloves (double-gloving recommended for powder handling), a fluid-resistant laboratory coat or disposable gown, ANSI Z87.1-compliant safety eyewear, and, where engineering controls cannot reliably keep airborne exposure below detectable levels, an appropriate NIOSH-approved respirator (e.g., N95 or higher; PAPR for larger-scale powder handling). Avoid generating dust, aerosols, or splashes; do not breathe dust/mist/vapor. Do not eat, drink, smoke, or apply cosmetics in work areas. Wash hands and exposed skin thoroughly with soap and water immediately after handling and before leaving the work area. Use the smallest practical quantities and keep containers tightly closed when not in use. Ground and bond containers when transferring to avoid static accumulation. Decontaminate work surfaces and reusable equipment after use; manage spills, contaminated PPE, and disposables as potentially hazardous waste in accordance with 29 CFR 1910.1200, 40 CFR 262 (EPA RCRA), and institutional procedures.

Storage Conditions

Store the sealed container in a cool, dry, well-ventilated area protected from light, moisture, heat, and incompatible materials. As a lyophilized synthetic peptide, long-term storage at -20 degC or colder (preferably -80 degC for extended storage) is recommended to preserve chemical integrity; short-term storage of unopened, dry material at 2-8 degC is generally acceptable. Protect from moisture by storing under desiccant or an inert atmosphere (e.g., dry nitrogen or argon) where feasible, since peptides are hygroscopic and susceptible to hydrolysis. After reconstitution in an aqueous or buffered solvent, store aliquots frozen to minimize freeze-thaw cycles and microbial/oxidative degradation. Keep tightly closed in the original container, clearly labeled in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200(f)). Store away from food, drink, and animal feed, and segregate from incompatible materials (see below). Restrict access to trained personnel and store in a secure location consistent with institutional controlled-access requirements for research chemicals of unknown toxicity. No specific shelf-life is established by an authoritative regulatory source; rely on documented qualification data for the specific lot.

Incompatibilities

Avoid contact with strong oxidizing agents (which can oxidize methionine, tryptophan, tyrosine, and disulfide residues), strong acids and strong bases (which can catalyze peptide-bond hydrolysis and deamidation of asparagine/glutamine residues), strong reducing agents (which can reduce intramolecular bonds and alter conformation), and electrophilic or alkylating reagents. Avoid prolonged exposure to moisture, heat, direct sunlight/UV light, and air (oxygen), all of which can promote hydrolysis, oxidation, aggregation, or racemization of peptides. Avoid contact with proteolytic enzymes and microbial contamination. Incompatible with materials that generate heat or gas on contact. Hazardous decomposition products on heating or combustion may include carbon monoxide, carbon dioxide, oxides of nitrogen (NOx), and sulfur oxides (SOx) derived from the peptide's constituent amino acids.

Section 8 — Exposure Controls / Personal Protection

Exposure Limits

No regulatory occupational exposure limits (OEL) have been established by OSHA, ACGIH, NIOSH, or equivalent bodies. No biological exposure indices (BEIs) have been established. Tirzepatide is a synthetic 39-amino-acid peptide active pharmaceutical ingredient (API) and should be handled as a potentially bioactive substance of unknown toxicity. Based on animal reproduction studies reported in the FDA prescribing information for tirzepatide (Mounjaro/-Zepbound), the substance is suspected of causing harm to the unborn child (GHS H361d); workplace exposure should be controlled to the lowest level reasonably achievable (ALARA). Where institutional policies apply (e.g., NIOSH Procedures for Developing Hazardous Drug Lists, Publication 2023-130), evaluate this peptide API under hazardous-drug handling principles for reproductive hazards.

Engineering Controls

Use in a facility designed for handling pharmaceutical active ingredients. Weigh, dispense, and manipulate the powder inside a ventilated enclosure such as a chemical fume hood, ventilated balance enclosure, glove box, or Class II biological safety cabinet that is exhausted in accordance with ANSI/AIHA Z9.5 and 29 CFR 1910.1450 where applicable. Maintain the work area at negative pressure relative to surrounding areas to prevent migration of airborne particulates. Provide local exhaust ventilation at any point of dust or aerosol generation (open vials, lyophilizate transfer, reconstitution). Where ventilated enclosures are not feasible, use a closed-system drug-transfer device (CSTD) consistent with NIOSH recommendations for handling hazardous drugs. Provide readily accessible emergency eyewash and safety shower meeting ANSI Z358.1 within the work area. Prohibit eating, drinking, smoking, and cosmetic application in areas where tirzepatide is handled. Decontaminate work surfaces after each use and use HEPA-filtered vacuum for cleanup; do not dry-sweep.

Personal Protective Equipment

Respiratory Protection: If engineering controls maintain airborne concentrations below detectable levels and the material is handled in a closed/ventilated enclosure, routine respiratory protection is not required. For tasks with potential for airborne particulate generation outside containment (weighing of bulk powder, cleaning of spills, maintenance of contaminated equipment), wear a NIOSH-approved (42 CFR Part 84) air-purifying respirator equipped with N100, P100, or HEPA particulate filters, or a powered air-purifying respirator (PAPR) with HEPA cartridges. For large spills or unknown airborne concentrations, use a NIOSH-approved supplied-air or self-contained breathing apparatus operated in positive-pressure mode. All respirator use must be implemented under a written respiratory protection program meeting 29 CFR 1910.134, including medical clearance, fit testing, and training.

Hand Protection: Wear chemically resistant, powder-free disposable gloves tested against pharmaceutical/cytotoxic permeation, such as nitrile rubber gloves meeting ASTM D6978 (Standard Practice for Assessment of Resistance of Medical Gloves to Permeation by Chemotherapy Drugs) where available, or equivalent. Double-gloving is recommended for prolonged manipulation, weighing, or handling of bulk powder, consistent with NIOSH guidance for hazardous drugs. Inspect gloves before each use; change immediately if torn, punctured, or contaminated, and at minimum every 30 minutes during continuous use or per manufacturer guidance. Wash hands thoroughly with soap and water after glove removal and before leaving the work area. Glove selection must comply with 29 CFR 1910.138.

Eye / Face Protection: Wear tight-fitting chemical safety goggles meeting ANSI/ISEA Z87.1 when handling the powder or solutions where splash, aerosol, or particulate exposure is possible, as required by 29 CFR 1910.133. A full-face shield worn over goggles is recommended for operations with elevated splash or aerosol potential (e.g., reconstitution of lyophilized powder, transfer of concentrated solutions, cleanup of spills). Do not wear contact lenses when handling this material. Emergency eyewash stations meeting ANSI Z358.1 must be available in the immediate work area.

Skin Protection: Wear a long-sleeved, low-linting laboratory coat or chemical-resistant disposable gown closed at the front with knit cuffs; coated/laminated gowns offer additional protection during handling of bulk powder consistent with NIOSH recommendations for hazardous-drug handling. Wear full-length trousers and closed-toe, chemical-resistant footwear; shoe covers are recommended when handling bulk powder or during cleanup of spills. Remove and dispose of contaminated PPE as hazardous pharmaceutical waste before leaving the controlled work area; do not launder disposable garments. Skin contact must be avoided. Provide a written program for selection, use, and maintenance of protective clothing in accordance with 29 CFR 1910.132.

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 dimethyl sulfoxide (DMSO)
Stability in Solution	Subject to hydrolytic and oxidative degradation typical of the chemical class; store reconstituted solutions refrigerated or frozen, protect from light, and use within the stability window indicated on the Certificate of Analysis.
pH	*Not determined*
Molecular Weight	4813 g/mol
Molecular Formula	C225H348N48O68

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 (which can oxidize methionine, tryptophan, tyrosine, and disulfide residues), strong acids and strong bases (which can catalyze peptide-bond hydrolysis and deamidation of asparagine/glutamine residues), strong reducing agents (which can reduce intramolecular bonds and alter conformation), and electrophilic or alkylating reagents. Avoid prolonged exposure to moisture, heat, direct sunlight/UV light, and air (oxygen), all of which can promote hydrolysis, oxidation, aggregation, or racemization of peptides. Avoid contact with proteolytic enzymes and microbial contamination. Incompatible with materials that generate heat or gas on contact. Hazardous decomposition products on heating or combustion may include carbon monoxide, carbon dioxide, oxides of nitrogen (NOx), and sulfur oxides (SOx) derived from the peptide's constituent amino acids.

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 endpoints for tirzepatide (CAS 2023788-19-2) have not been fully characterized for occupational exposure routes (oral, dermal, inhalation). No authoritative LD50/LC50 values from OSHA, NIOSH, ECHA, or peer-reviewed literature have been identified for this substance. Based on the FDA-approved prescribing information (Mounjaro/Zepbound), the most commonly reported adverse effects following clinical (subcutaneous) administration include gastrointestinal effects such as nausea, vomiting, diarrhea, decreased appetite, abdominal pain, and dyspepsia; pancreatitis and acute kidney injury secondary to dehydration have also been reported. Hypoglycemia may occur, particularly when co-exposure with insulin secretagogues or insulin is considered. Not classified for acute toxicity based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). Handle as a substance of unknown acute toxicity using occupational hygiene controls appropriate for potent active pharmaceutical ingredients (APIs).

Skin Corrosion / Irritation: No data from authoritative sources (ECHA, OSHA, NIOSH, peer-reviewed literature) establishing skin corrosion or irritation potential for tirzepatide have been identified. Injection-site reactions (erythema, pruritus, induration) have been reported in clinical use following subcutaneous administration per the FDA-approved label, but these reflect parenteral exposure and are not directly predictive of dermal corrosion/irritation. Not classified for skin corrosion/irritation based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). Skin contact should be avoided.

Serious Eye Damage / Irritation: No authoritative data (ECHA, OSHA, NIOSH, peer-reviewed literature) on eye irritation or serious eye damage potential of tirzepatide have been identified. The FDA-approved labels for Mounjaro and Zepbound note a reported risk of diabetic retinopathy complications in patients with type 2 diabetes mellitus following therapeutic exposure, but this is a systemic clinical observation and not a direct ocular irritation endpoint. Not classified for serious eye damage/eye irritation based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). Eye contact should be avoided.

Skin / Respiratory Sensitization: Hypersensitivity reactions, including anaphylaxis and angioedema, have been reported in clinical use of tirzepatide per the FDA-approved prescribing information (Mounjaro, Zepbound); the labels include warnings regarding serious hypersensitivity reactions. Injection-site reactions have also been documented in published case reports (e.g., Tirzepatide-Induced Injection Site Reaction, PMC10575762). No standardized respiratory or skin sensitization (GHS) study data from ECHA or peer-reviewed guideline studies (OECD 406/429/442) have been identified. Based on clinical evidence of immunogenic/hypersensitivity reactions, the substance should be handled as a potential sensitizer; not formally classified for skin or respiratory sensitization based on currently available data, and hazards cannot be excluded (GHS Rev.8 S1.3.2.4).

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: Tirzepatide is not listed by IARC, NTP (15th Report on Carcinogens), OSHA (29 CFR 1910.1003), or ACGIH as a carcinogen. However, the FDA-approved prescribing information for Mounjaro and Zepbound (NDA 215866, NDA 217806) includes a Boxed Warning for risk of thyroid C-cell tumors based on findings in rodent carcinogenicity bioassays. In a 2-year rat carcinogenicity study, tirzepatide caused a dose-dependent and treatment--duration-dependent increase in the incidence of thyroid C-cell tumors (adenomas and carcinomas) at clinically relevant plasma exposures in both sexes. In a 6-month rasH2 transgenic mouse study at subcutaneous doses of 1, 3, and 10 mg/kg twice weekly, tirzepatide was not tumorigenic. Human relevance of the rat C-cell findings is unknown. The substance is contraindicated in patients with a personal or family history of medullary thyroid carcinoma (MTC) or Multiple Endocrine Neoplasia syndrome type 2 (MEN 2). Not formally classified under GHS for carcinogenicity based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4).

Reproductive Toxicity: Per the FDA-approved prescribing information (Mounjaro, Zepbound) and the MotherToBaby fact sheet (NCBI Bookshelf NBK605070), animal reproduction studies have shown adverse developmental outcomes

following tirzepatide administration. In rats, embryofetal development studies reported higher occurrences of external, visceral, and skeletal malformations at maternally toxic exposures. In rabbits, fetal effects including reduced fetal body weight and malformations were observed at clinically relevant exposures. Decreases in maternal body weight and food consumption were noted across species. No effects on male or female fertility were reported in the available rat fertility study at the doses examined. No adequate and well-controlled human data are available. Based on these animal findings, exposure during pregnancy should be avoided. Not formally classified under GHS for reproductive toxicity based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4).

Specific Target Organ Toxicity (STOT): STOT-Single Exposure (STOT-SE): No authoritative data identifying a specific target organ following a single occupational exposure have been identified. Severe hypoglycemia (particularly in combination with insulin or insulin secretagogues) and acute hypersensitivity reactions have been reported clinically following parenteral administration per the FDA-approved label. Not classified for STOT-SE based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4). STOT-Repeated Exposure (STOT-RE): Repeat-dose nonclinical toxicology studies summarized in the FDA-approved labels for Mounjaro and Zepbound identified the thyroid (C-cell hyperplasia and neoplasia in rats), pancreas, and gastrointestinal tract as principal target tissues. Clinical adverse effects associated with repeated therapeutic exposure include pancreatitis, acute gallbladder disease (cholelithiasis, cholecystitis), acute kidney injury secondary to volume depletion, and gastrointestinal disturbances. The toxicological profile is not fully characterized for occupational repeated-exposure scenarios. Not formally classified for STOT-RE based on currently available data; hazards cannot be excluded (GHS Rev.8 S1.3.2.4).

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 tirzepatide (CAS 2023788-19-2) in authoritative sources (ECHA, EPA ECOTOX, OECD SIDS, NIOSH). Not classified as hazardous to the aquatic environment based on weight-of-evidence assessment (no authoritative experimental data identified). Tirzepatide is a high-molecular-weight (~4813 g/mol) synthetic peptide therapeutic; the FDA Center for Drug Evaluation and Research (NDA 217806, 2024 chemistry review) granted a categorical exclusion from environmental assessment under 21 CFR 25.31(b), concluding that the expected introduction concentration into the aquatic environment is below 1 ppb and that no extraordinary circumstances apply. Avoid release to the environment; handle in accordance with good laboratory practice and applicable local, state, and federal regulations.

Persistence and Degradability: No substance-specific experimental biodegradation or hydrolysis half-life data (e.g., OECD 301-series ready biodegradability, OECD 308/309 simulation studies) have been identified for tirzepatide in authoritative regulatory sources. The FDA chemistry review for NDA 217806 (2024) notes that tirzepatide is expected to degrade into the same products formed by naturally occurring proteins and fatty acids (i.e., constituent amino acids and acetyl-CoA-derived fragments). Given the peptide backbone composition (formula C225H348N48O68; amino-acid residues only, no halogen, sulfur, phosphorus, or silicon substituents), the molecule is expected to undergo enzymatic and microbial proteolytic degradation in environmental and wastewater treatment matrices, although no quantitative half-life has been established by an authoritative source.

Bioaccumulative Potential: No experimentally determined bioconcentration factor (BCF) or measured log Kow has been identified for tirzepatide in authoritative sources (ECHA, EPA, PubChem). Owing to its high molecular weight (~4813 g/mol, well above the 700 g/mol threshold commonly cited in REACH Annex XIII guidance for screening

B/vB potential), high polarity, multiple ionizable groups, and peptide character, significant bioaccumulation in aquatic organisms is not anticipated; however, this assessment is qualitative in the absence of substance-specific experimental data.

Mobility in Soil: No substance-specific experimental data identified.

Other Adverse Effects: No other adverse environmental effects identified. The substance is not included on the Montreal Protocol list of ozone-depleting substances.

Section 13 — Disposal Considerations

Dispose of contents and container in accordance with all local, state, and federal regulations. Do not dispose of this material into sewers or waterways. Contact a licensed waste disposal company for disposal guidance.

US: Dispose in accordance with 40 CFR Parts 261-270 (RCRA). **EU:** Dispose according to Directive 2008/98/EC (Waste Framework Directive).

Section 14 — Transport Information

DOT (US)	Not regulated as dangerous goods under DOT (49 CFR) based on current classification.
IATA	Not regulated as dangerous goods under IATA Dangerous Goods Regulations based on current classification.
IMDG	Not regulated as dangerous goods or as a marine pollutant under the IMDG Code based on current classification.
UN Number	Not applicable.

Transport classifications above are based on the substance's intrinsic hazard classification; the shipper must independently verify the classification, packaging, labelling, and documentation requirements for their specific shipment configuration, quantity, and carrier (including airline policies) prior to dispatch.

Section 15 — Regulatory Information

United States

TSCA (Toxic Substances Control Act): May be eligible for exemption from TSCA inventory listing requirements under the R&D provisions of 40 CFR 720.36, depending on actual conditions of use. This substance is supplied solely for use in scientific research and development in small quantities; it is not intended for, and shall not be used for, any commercial manufacturing, processing, or distribution in commerce. The importer/end user is responsible for confirming that the R&D exemption criteria are met for their specific use. **OSHA HazCom 2012:** This SDS was prepared in accordance with 29 CFR 1910.1200 (HazCom 2012), aligned with the Globally Harmonized System (GHS) Rev. 8. **CERCLA / SARA Title III:** Not listed as a CERCLA Hazardous Substance (40 CFR 302.4); not subject to SARA 313 reporting based on available classification data. Users must independently verify applicability for their facility.

European Union

REACH (EC 1907/2006): Supplied solely for Scientific Research and Development (SR&D) use in quantities below 1 tonne per year per legal entity. Where applicable, this use may be exempt from REACH registration obligations under the scientific research and development provisions of REACH Article 3(23) and the conditions of Article 26(3); importers/users should independently verify the applicable exemption pathway for their specific use. If the substance

is used as part of a formally notified Product and Process Oriented Research and Development (PPORD) programme, the separate notification procedure under REACH Article 9 (with a 5-year exemption renewable once) may apply instead. **CLP (EC 1272/2008):** Not classified under CLP based on available data; no harmonized classification entry identified in Annex VI of CLP or the ECHA Classification and Labelling (C&L) Inventory.

Canada

WHMIS 2015 / HPR: Not classified as a hazardous product under the Hazardous Products Act and Hazardous Products Regulations (SOR/2015-17) based on available data and weight-of-evidence assessment. Supplied for laboratory research use only. **DSL/NDSL:** Research-use exemption applies; substance is not intended for commercial import or manufacture in Canada.

Note: The regulatory statements above reflect the intended use of this substance for scientific research and development only and do not constitute a legal determination of regulatory status. If the substance is used outside the R&D exemption scope, users are solely responsible for independently verifying applicable regulatory obligations (TSCA, REACH, WHMIS, state, and local) for their specific use and jurisdiction prior to any such use.

Section 16 — Other Information

Document ID	dbadbc57-a845-4338-a0ab-b682a428c571
Revision Date	2026-09-11
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: 2026-09-11
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).

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