

Safety Data Sheet

Benzethonium Chloride

Section 1: Identification

Product identifier	Benzethonium Chloride
Product code	Not provided
Chemical name	Benzethonium chloride
Synonyms	(Diisobutylphenoxyethoxyethyl)dimethylbenzylammonium chloride; Hyamine; Phemerol chloride
CAS number	121-54-0
EC number	204-479-9
Chemical formula	C ₂₇ H ₄₂ ClNO ₂
Molecular weight	448.08 g/mol
Appearance	White, odorless crystalline powder / solid
Recommended use	Laboratory chemical and research; chemical synthesis; analytical chemistry; cationic surfactant and detergent research; reagent for analytical determinations; formulation and process research; other appropriate industrial and technical applications.
Use restrictions	Not intended or represented for food or drug/pharmaceutical applications. Do not use as a pesticide or biocidal product unless all applicable registrations and legal requirements are independently satisfied.
Supplier / Distributor	Chemical Store Inc.
Address	1059 Main Avenue, Clifton, NJ 07011, United States
Telephone / Website / Email	+1 (973) 405-6248 ChemicalStore.com info@ChemicalStore.com
Emergency telephone	+1 (973) 420-4972 (United States)

Section 2: Hazards Identification

United States (US) - OSHA Hazard Communication Standard (29 CFR 1910.1200, 2024).

Classification	Acute Toxicity (Oral) - Category 3; Skin Corrosion - Category 1C; Serious Eye Damage - Category 1; Specific Target Organ Toxicity - Single Exposure - Category 3 (respiratory system).
Signal word	DANGER
Pictograms	 GHS05 - Corrosion; GHS06 - Skull and crossbones; GHS09 - Aquatic Toxicity
Hazard statements	H301 - Toxic if swallowed. H314 - Causes severe skin burns and eye damage. H335 - May cause respiratory irritation.
Additional environmental hazard	Very toxic to aquatic life. Current supplier information treats this as a significant environmental hazard; avoid release to the environment.
Hazards not otherwise classified	No additional HNOC identified in the principal current U.S. supplier SDS reviewed.

Precautionary statements

- Do not breathe dust, fumes, gas, mist, vapors, or spray.
- Wash face, hands, and exposed skin thoroughly after handling.
- Do not eat, drink, or smoke when using this product.
- Use only outdoors or in a well-ventilated area / chemical fume hood.
- Wear protective gloves, protective clothing, eye protection, and face protection.
- IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor.

- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
- IF INHALED: Remove person to fresh air and keep comfortable for breathing. Seek immediate medical attention.
- Store locked up in a well-ventilated place. Keep container tightly closed.
- Dispose of contents/container through an approved waste-disposal facility.

Section 3: Composition / Information on Ingredients

Chemical Name	CAS Number	EC Number	Concentration
Benzethonium chloride	121-54-0	204-479-9	Principal ingredient; current Thermo Fisher SDS reports >95%. Exact Chemical Store assay should follow the current specification/COA.

Section 4: First Aid Measures

Eye contact	Rinse immediately with plenty of water, including under the eyelids, for at least 15 minutes. Remove contact lenses if present and easy to do. Immediate medical attention is required.
Skin contact	Remove contaminated clothing. Rinse skin immediately with plenty of water for at least 15 minutes. Immediate medical attention is required. Wash contaminated clothing before reuse.
Inhalation	Remove to fresh air. Immediate medical attention is required. If breathing has stopped, provide artificial respiration using an appropriate barrier/resuscitation device; avoid unprotected mouth-to-mouth contact.
Ingestion	Do NOT induce vomiting. Rinse mouth. Immediately call a physician or poison control center.
Most important symptoms/effects	Causes burns by exposure routes involving direct contact. Ingestion may cause severe tissue injury, swelling, and risk of perforation. Inhalation of dust may cause respiratory irritation.
Notes to physician	Treat symptomatically.

Section 5: Fire Fighting Measures

Suitable extinguishing media	Water spray, carbon dioxide, dry chemical, or alcohol-resistant foam.
Specific hazards	Corrosive material. Thermal decomposition can release irritating and toxic gases or vapors. Keep product and empty containers away from heat and ignition sources.
Hazardous combustion products	Nitrogen oxides, carbon monoxide, carbon dioxide, and hydrogen chloride gas.
Environmental fire precaution	Do not allow contaminated firefighting runoff to enter drains or waterways.
Firefighter protection	Wear full protective equipment and positive-pressure self-contained breathing apparatus.

Section 6: Accidental Release Measures

Personal precautions	Evacuate unnecessary personnel. Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Use required personal protective equipment.
Environmental precautions	Prevent entry into drains, sewers, surface water, and groundwater. Notify appropriate authorities if a significant release cannot be contained.
Cleanup methods	Carefully sweep, scoop, or collect into suitable closed containers for disposal while minimizing dust. Do not use cleanup practices that increase airborne exposure.

Section 7: Handling and Storage

Handling	Use under a chemical fume hood or with effective local exhaust ventilation. Avoid dust formation. Do not breathe dust or mist. Do not get in eyes, on skin, or on clothing. Do not ingest.
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Storage	Keep container tightly closed in a dry, cool, well-ventilated place. Store locked up in an appropriate corrosives area. Product is hygroscopic; protect from moisture.
Incompatible materials	Strong oxidizing agents.
Conditions to avoid	Dust formation, excessive heat, moisture exposure, and incompatible materials.
Use restrictions	Exclude food and drug/pharmaceutical applications. Pesticide/biocidal use requires independent compliance with applicable registration and regulatory requirements.

Section 8: Exposure Controls / Personal Protection

The principal current supplier SDS reports no substance-specific occupational exposure limit established by the referenced regulatory bodies.

Engineering controls	Use a chemical fume hood or effective local exhaust. Ensure eyewash stations and safety showers are close to the work area.
Eye / face protection	Chemical safety goggles meeting applicable OSHA requirements; use a face shield where splash, dust, or corrosive contact risk warrants additional protection.
Skin protection	Wear appropriate chemical-resistant gloves and protective clothing to prevent skin exposure.
Respiratory protection	Use a NIOSH-approved particulate respirator when ventilation is inadequate, airborne exposure is significant, or irritation/symptoms occur, within a respiratory protection program meeting 29 CFR 1910.134.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice. Wash thoroughly after handling. Do not eat, drink, or smoke in handling areas.

Section 9: Physical and Chemical Properties

Property	Value	Property	Value
Physical state	Powder / solid	Color	White
Odor	Odorless	Molecular formula	C27H42ClNO2
Molecular weight	448.08 g/mol	Melting point/range	158-163 °C (316.4-325.4 °F)
pH	4.8-5.5 (1% aqueous solution; supplier value)	Water solubility	Soluble
Solubility in other solvents	Reported soluble in alcohol, acetone, and chloroform for commercial grades	Log Pow	1.08 (supplier value)
Flash point	No reliable value identified in current principal SDS	Autoignition temperature	No data available
Vapor pressure	No data available	Vapor density	Not applicable - solid
Density / specific gravity	No reliable value identified in principal current SDS	Hygroscopicity	Hygroscopic
Flammability	No specific solid-flammability classification identified	Explosive properties	No data indicating explosive classification

Section 10: Stability and Reactivity

Reactivity	No specific reactive hazard known based on available supplier information.
Chemical stability	Hygroscopic; otherwise stable under recommended handling and storage conditions.
Possibility of hazardous reactions	No hazardous reactions expected under normal processing.
Conditions to avoid	Dust formation, incompatible materials, excess heat, and exposure to moisture.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Nitrogen oxides, carbon monoxide, carbon dioxide, and hydrogen chloride gas.
Hazardous polymerization	No information indicating hazardous polymerization.

Section 11: Toxicological Information

Likely routes of exposure	Ingestion, inhalation of dust, eye contact, and skin contact.
Acute oral toxicity	Category 3. Supplier data report oral LD50 approximately 295 mg/kg in rats.
Skin corrosion / irritation	Category 1C. Causes severe burns.
Serious eye damage / irritation	Category 1. Corrosive to eyes and may cause severe damage, including blindness.

Respiratory effects	May cause respiratory irritation; avoid breathing dust or spray mist.
Sensitization	No adequate data identified in the principal current supplier SDS.
Germ cell mutagenicity	No classification assigned; principal supplier SDS reports a negative Ames test.
Carcinogenicity	Not listed as a carcinogen by IARC, NTP, ACGIH, or OSHA in the principal current supplier SDS.
Reproductive toxicity	No adequate data identified.
STOT - single exposure	Category 3, respiratory system, under the current Thermo Fisher U.S. OSHA 2024 classification.
STOT - repeated exposure	No adequate data identified.
Aspiration hazard	Not applicable to the supplied solid form.

Section 12: Ecological Information

Ecotoxicity	Very toxic to aquatic life.
Aquatic toxicity data	Current supplier SDS reports LC50 1.15 mg/L/96 h for rainbow trout (<i>Oncorhynchus mykiss</i>) and EC50 0.220 mg/L/48 h for water flea.
Persistence / degradability	Supplier information states persistence is unlikely based on available information; complete product-specific degradation data are limited.
Bioaccumulative potential	No adequate product-specific bioaccumulation data identified; supplier reports log Pow 1.08.
Mobility	Likely mobile in the environment because of water solubility.
Environmental precautions	Avoid release to the environment, drains, sewers, surface water, and groundwater.

Section 13: Disposal Considerations

Product waste	Dispose of through an approved hazardous/chemical waste facility in accordance with federal, state, and local regulations. Waste generators must determine the regulatory classification of the discarded material.
Packaging	Do not reuse contaminated containers. Dispose of residues and containers in accordance with applicable regulations.

Section 14: Transport Information

Mode	UN Number	Proper Shipping Name	Class	Subsidiary Risk	Packing Group
U.S. DOT	UN2923	Corrosive solid, toxic, n.o.s. (Benzethonium chloride)	8	6.1	III
TDG	UN2923	Corrosive solid, toxic, n.o.s. (Benzethonium chloride)	8	6.1	III
IATA/ICAO	UN2923	Corrosive solid, toxic, n.o.s. (Benzethonium chloride)	8	6.1	III
IMDG/IMO	UN2923	Corrosive solid, toxic, n.o.s. (Benzethonium chloride)	8	6.1	III

Section 15: Regulatory Information

OSHA Hazard Communication	Hazardous under 29 CFR 1910.1200 (2024): Acute Oral Toxicity Category 3; Skin Corrosion Category 1C; Serious Eye Damage Category 1; STOT-SE Category 3 (respiratory system).
TSCA	Listed and ACTIVE on the U.S. EPA TSCA Inventory according to the current Thermo Fisher SDS.
SARA 313	Current Thermo Fisher SDS reports no components subject to SARA 313 reporting requirements.
CERCLA	Current Thermo Fisher SDS reports that the material as supplied does not contain substances regulated as CERCLA hazardous substances.
California Proposition 65	Current Thermo Fisher SDS reports no Proposition 65 chemicals in the product.
EC number	204-479-9.
Use restriction	Chemical Store product is not intended or represented for food or drug/pharmaceutical applications.

Section 16: Other Information

Revision date	2026-10-08
Initial preparation date	2026-03-23
SDS version	1.1
Supersedes	1.0

Version	Date	Description
1.0	2026-03-23	Initial Chemical Store SDS for Benzethonium Chloride, CAS 121-54-0, excluding food and drug/pharmaceutical uses.
1.1	2026-10-08	GHS09 pictogram added , GHS07 pictogram removed

Key literature and data sources

- Thermo Fisher Scientific Chemicals / Alfa Aesar Safety Data Sheet, Benzethonium chloride, CAS 121-54-0, revision 21-Dec-2025, prepared to U.S. OSHA Hazard Communication Standard 2024.
- Sigma-Aldrich Safety Data Sheet, Benzethonium chloride, CAS 121-54-0, Version 6.7, revision 07-Sep-2024.
- PubChem, Benzethonium Chloride, CID 8478, identity and hazard summary.
- Thermo Scientific / Fisher Scientific commercial product information for Benzethonium chloride, including physical properties and transport information.
- Chemical Store instruction for this SDS: exclude food and drug/pharmaceutical uses.

Hazard classification method

The OSHA classification follows the current Thermo Fisher U.S. SDS prepared to the 2024 Hazard Communication Standard. Sigma-Aldrich also classifies benzethonium chloride as acutely toxic by ingestion, corrosive to skin, seriously damaging to eyes, and very toxic to aquatic life. Where supplier classifications differ in category detail, this SDS uses the more current U.S. OSHA 2024 Thermo Fisher classification as the principal basis.

Training advice

- Chemical hazard communication and SDS use.
- Corrosive and toxic chemical handling.
- Chemical fume hood / local exhaust use.
- Selection and use of chemical-resistant gloves, goggles, face protection, and respiratory protection where required.
- Emergency eyewash/shower procedures and immediate first aid.
- Spill containment and prevention of environmental release.
- DOT hazardous-material handling where applicable.

Disclaimer

The information provided in this Safety Data Sheet is believed to be accurate and represents the best information currently available from the sources identified above. No warranty, express or implied, is made regarding completeness or suitability for a particular purpose. The user is responsible for confirming the actual commercial grade, assay, lot specification, intended use, workplace conditions, transportation requirements, and all applicable regulatory requirements.

Prepared By

Company	Chemical Store Inc.
Address	1059 Main Avenue, Clifton, NJ 07011, United States
Telephone	+1 (973) 405-6248
Email	info@ChemicalStore.com
Website	ChemicalStore.com