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21 Authors

AH Kibbe, ME Quinn.

22 Date of Revision

4 May 2017.

Benzethonium Chloride

1 Nonproprietary Names

BP: Benzethonium Chloride

JP: Benzethonium Chloride

PhEur: Benzethonium Chloride

USP–NF: Benzethonium Chloride

2 Synonyms

Benzethonii chloridum; benzyldimethyl-[2-[2-(p-1,1,3,3-tetramethylbutylphenoxy) ethoxy]ethyl]ammonium chloride; BZT; diisobutylphenoxyethoxyethyl dimethyl benzyl ammonium chloride; *Hyamine 1622*; phemerol chloride.

3 Chemical Name and CAS Registry Number

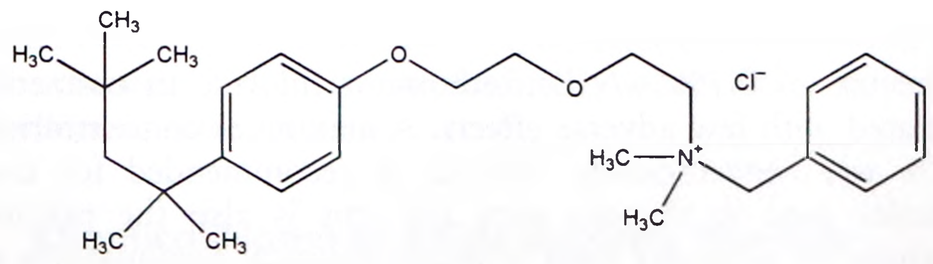
N,*N*-Dimethyl-*N*-[2-[2-[4-(1,1,3,3-tetramethylbutyl)phenoxy]ethoxy]ethyl]benzene-methanaminium chloride [121-54-0]

p-Diisobutylphenoxyethoxyethyl dimethyl benzyl ammonium chloride monohydrate [5929-09-9]

4 Empirical Formula and Molecular Weight

$C_{27}H_{42}ClNO_2$	448.08
$C_{27}H_{42}ClNO_2.H_2O$	466.17

5 Structural Formula



6 Functional Category

Antimicrobial preservative; cationic surfactant.

7 Applications in Pharmaceutical Formulation or Technology

Benzethonium chloride is a quaternary ammonium compound used in pharmaceutical formulations as an antimicrobial preservative. Typically, it is used for this purpose in injections, ophthalmic, nasal, and otic preparations at concentrations between 0.01–0.02% w/v. Benzethonium chloride may also be used as a wetting and solubilizing agent, and has been used as a surfactant in hydrogels for modified drug release.[1]

In cosmetics such as deodorants, benzethonium chloride may be used as an antimicrobial preservative in concentrations up to 0.5% w/v.

The physical properties and applications of benzethonium chloride are similar to those of other cationic surfactants such as cetrimide.

8 Description

Benzethonium chloride occurs as a white crystalline material with a mild odor and very bitter taste.

9 Pharmacopeial Specifications

See Table I.

Table I: Pharmacopeial specifications for benzethonium chloride.

Test	JP XVII	PhEur 9.2	USP 40–NF 35 S1
Identification	+	+	+
Characters	–	+	–
Appearance of solution	–	+	–
Acidity or alkalinity	–	+	–
Melting range	158–164°C	158–164°C	158–163°C
Loss on drying	≤5.0%	≤5.0%	≤5.0%
Residue on ignition	≤0.1%	–	≤0.1%
Sulfated ash	–	≤0.1%	–
Ammonium compounds	+	≤50 ppm	–
Assay (dried basis)	≥97.0%	97.0–103.0%	97.0–103.0%