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21 Author

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22 Date of Revision

4 May 2017.

Benzyl Benzoate

1 Nonproprietary Names

BP: Benzyl Benzoate

JP: Benzyl Benzoate

PhEur: Benzyl Benzoate

USP–NF: Benzyl Benzoate

2 Synonyms

Benylate; benzoic acid, benzyl ester; benzyl benzene carboxylate; benzylis benzoas; benzyl phenylformate; phenylmethyl benzoate.

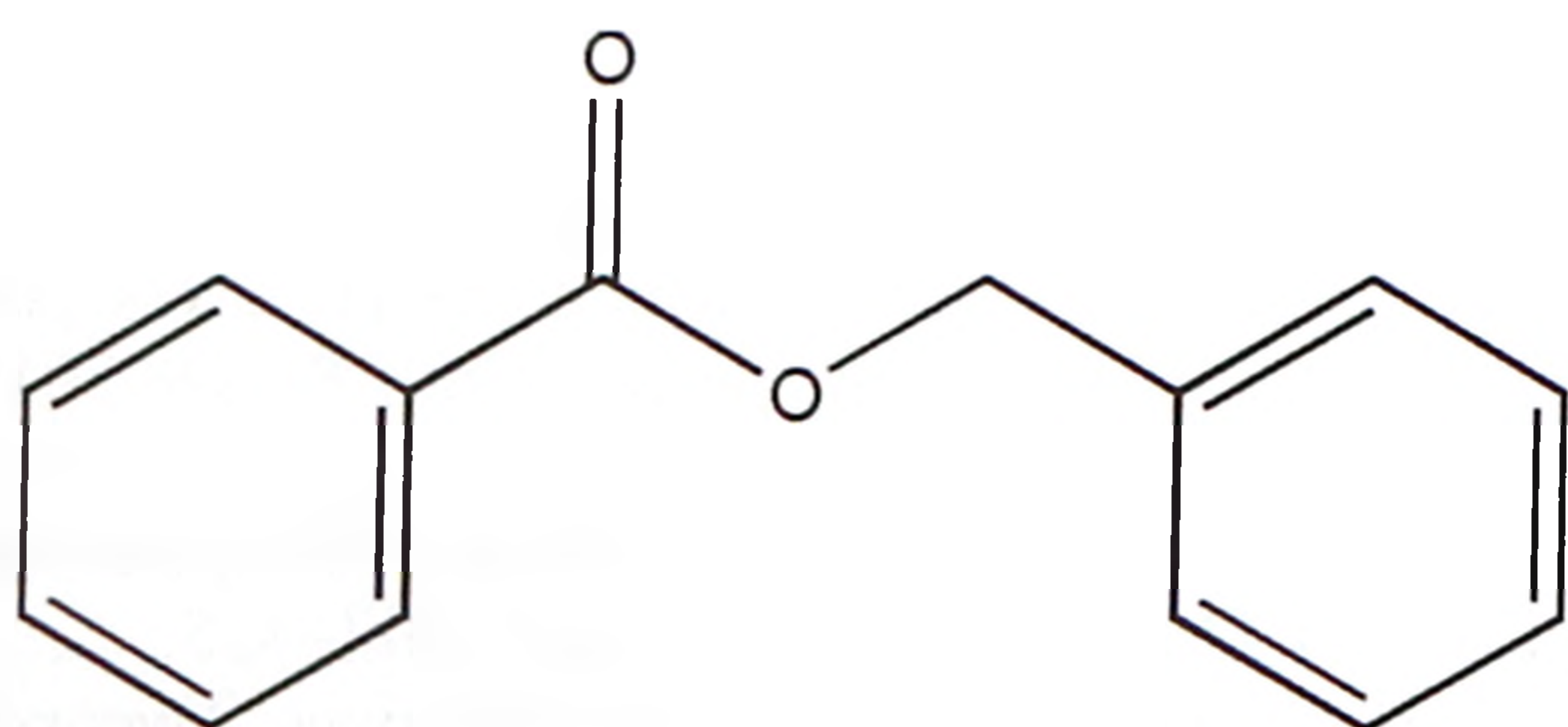
3 Chemical Name and CAS Registry Number

Benzoic acid phenylmethyl ester [120-51-4]

4 Empirical Formula and Molecular Weight

C₁₄H₁₂O₂ 212.24

5 Structural Formula



6 Functional Category

Antimicrobial preservative; flavoring agent; plasticizing agent; solubilizing agent; solvent.

7 Applications in Pharmaceutical Formulation or Technology

Benzyl benzoate is used as a solubilizing agent and nonaqueous solvent in intramuscular injections at concentrations of 0.01–46.0% v/v,⁽¹⁾ and as a solvent and plasticizer for cellulose acetate and nitrocellulose. It is also used in the preparation of spray-dried powders using nanocapsules.^(2,3) Benzyl benzoate is also used in pharmaceutical preparations as a preservative and flavoring agent. It has been investigated for injectable controlled-release formulations functioning as a cosolvent for *in situ* forming implants and gels.^(4–6)

8 Description

Benzyl benzoate is a clear, colorless, oily liquid with a slightly aromatic odor. It produces a sharp, burning sensation on the tongue. At temperatures below 17°C it exists as clear, colorless crystals.

9 Pharmacopeial Specifications

See Table I.

Table I: Pharmacopeial specifications for benzyl benzoate.

Test	JP XVII	PhEur 9.2	USP 40–NF 35 S1
Identification	+	+	+
Characters	+	+	–
Specific gravity	≈ 1.123	1.118–1.122	1.116–1.120
Congealing temperature	≈ 17°C	≥ 17.0°C	≥ 18.0°C
Boiling point	≈ 323°C	≈ 320°C	–
Refractive index	1.568–1.570	1.568–1.570	1.568–1.570
Aldehyde	–	–	≤ 0.05%
Acidity	+	+	+
Sulfated ash	≤ 0.05%	≤ 0.1%	–
Assay	≥ 99.0%	99.0–100.5%	99.0–100.5%

10 Typical Properties

Autoignition temperature 481°C

Boiling point 323–324°C

Flash point 148°C

Partition coefficient Octanol: water $\log k_{ow} = 3.97$

Solubility Soluble in acetone and benzene; practically insoluble in glycerin and water; miscible with chloroform, ethanol (96%), methylene chloride, ether, and with fatty acids and essential oils.

Spectroscopy

IR spectrum *see* Figure 1.

Raman spectrum *see* Figure 2.

Vapor density (relative) 7.3 (air = 1)

11 Stability and Storage Conditions

Benzyl benzoate is stable when stored in tight, well-filled, light-resistant containers. Exposure to excessive heat (above 40°C) should be avoided.