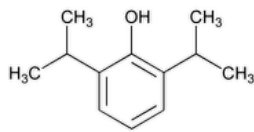


Status: Currently Official on 16-Feb-2025
Official Date: Official as of 01-Mar-2024
Document Type: USP Monographs
DocId: GUID-BDF82E0F-DFA0-4D9F-B253-2D53F75D0300_5_en-US
DOI: https://doi.org/10.31003/USPNF_M70460_05_01
DOI Ref: 4fvpq

© 2025 USPC
Do not distribute

Propofol



C₁₂H₁₈O 178.28
Phenol, 2,6-bis(1-methylethyl);
2,6-Diisopropylphenol CAS RN®: 2078-54-8; UNII: Y17VU623SF.

DEFINITION
Propofol contains NLT 98.0% and NMT 102.0% of propofol (C₁₂H₁₈O).

IDENTIFICATION

- **A.** [SPECTROSCOPIC IDENTIFICATION TESTS \(197\)](#), [Infrared Spectroscopy](#): 197F
- **B.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay, *Procedure 1* or *Procedure 2*.

ASSAY

- **PROCEDURE 1**

[NOTE—This is to be performed in conjunction with *Organic Impurities, Procedure 1*.]

Internal standard solution: 10 mg/mL of [USP 2,4,6-Tritertbutylphenol RS](#) in [methanol](#)

Standard solution: 10 mg/mL of [USP Propofol RS](#) in *Internal standard solution*

Sample solution: 10 mg/mL of Propofol in *Internal standard solution*

Chromatographic system
(See [Chromatography \(621\)](#), [System Suitability](#).)

Mode: GC

Detector: Flame ionization

Column: 0.53-mm × 30-m; coated with a 1.2-μm phase [G16](#)

Temperatures

Detector: 300°

Injection port: 250°

Column: See [Table 1](#).

Table 1

Initial Temperature (°)	Temperature Ramp (°/min)	Final Temperature (°)	Hold Time at Final Temperature (min)
145	—	145	20
145	5	200	5

Carrier gas: Helium
Flow rate: 8 mL/min
Injection volume: 1.0 μL
System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 2.5

Relative standard deviation: NMT 1.5% for the peak response ratio of propofol to the internal standard for five replicate injections

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of propofol ($C_{12}H_{18}O$) in the portion of Propofol taken:

$$\text{Result} = (R_U/R_S) \times (C_S/C_U) \times 100$$

R_U = peak response ratio of propofol to the internal standard from the *Sample solution*

R_S = peak response ratio of propofol to the internal standard from the *Standard solution*

C_S = concentration of [USP Propofol RS](#) in the *Standard solution* (mg/mL)

C_U = concentration of Propofol in the *Sample solution* (mg/mL)

Acceptance criteria: 98.0%–102.0%

Change to read:

• PROCEDURE 2

[NOTE—This is to be performed in conjunction with *Organic Impurities, Procedure 2*.]

Mobile phase: [Hexane](#), [acetonitrile](#), and ▲[alcohol, absolute](#)▲ (ERR 1-Mar-2024) (990: 7.5: 1)

Standard solution: 2.4 mg/mL of [USP Propofol RS](#) in [hexane](#)

Sample solution: 2.4 mg/mL of Propofol in [hexane](#)

Chromatographic system

(See [Chromatography \(621\)](#), [System Suitability](#).)

Mode: LC

Detector: UV 275 nm

Column: 4.6-mm × 20-cm; 5-μm packing [L3](#)

Flow rate: 2 mL/min

Injection volume: 10 μL

System suitability

Sample: *Standard solution*

Suitability requirements

Tailing factor: NMT 1.5

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of propofol ($C_{12}H_{18}O$) in the portion of Propofol taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times 100$$

r_U = peak response of propofol from the *Sample solution*

r_S = peak response of propofol from the *Standard solution*

C_S = concentration of [USP Propofol RS](#) in the *Standard solution* (mg/mL)

C_U = concentration of Propofol in the *Sample solution* (mg/mL)

Acceptance criteria: 98.0%–102.0%

IMPURITIES

• ORGANIC IMPURITIES, PROCEDURE 1

[NOTE—On the basis of knowledge of the manufacturing process, either (1) *Organic Impurities, Procedure 1* is performed in conjunction with *Limit of Propofol Related Compound A*, *Limit of Propofol Related Compound B*, *Procedure 1*, and *Assay, Procedure 1*; or (2) *Organic Impurities, Procedure 2* is performed in conjunction with *Limit of Propofol Related Compound B*, *Procedure 2* and the *Assay, Procedure 2*.]