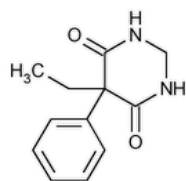


Status: Currently Official on 16-Feb-2025
 Official Date: Official as of 01-May-2020
 Document Type: USP Monographs
 DocId: GUID-E8398E86-B7AB-4A12-9666-1D751FBC5527_2_en-US
 DOI: https://doi.org/10.31003/USPNF_M69110_02_01
 DOI Ref: ka9el

© 2025 USPC
 Do not distribute

Primidone



$C_{12}H_{14}N_2O_2$ 218.25

4,6(1*H*,5*H*)-Pyrimidinedione, 5-ethyl-5-phenyl-

5-Ethyl-5-phenyl-4,6(1*H*,5*H*)-pyrimidinedione CAS RN®: 125-33-7; UNII: 13AFD7670Q.

DEFINITION

Primidone contains NLT 98.0% and NMT 102.0% of $C_{12}H_{14}N_2O_2$, calculated on the dried basis.

IDENTIFICATION

Change to read:

- **A.** [▲ SPECTROSCOPIC IDENTIFICATION TESTS \(197\), Infrared Spectroscopy: 197K ▲](#) (CN 1-MAY-2020) : If a difference appears, dissolve portions of both the sample and the Reference Standard in alcohol, evaporate the solutions to dryness, and repeat the tests.
- **B.** The retention time of the major peak in the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.

ASSAY

PROCEDURE

Solution A: 6.8 g/L of monobasic potassium phosphate

Mobile phase: Methanol, tetrahydrofuran, and *Solution A* (35:0.5:65)

Diluent: Methanol and water (35:65)

Standard stock solution: 0.5 mg/mL of [USP Primidone RS](#) in methanol

Standard solution: 0.05 mg/mL of [USP Primidone RS](#) in *Diluent*, prepared from the *Standard stock solution*

Sample stock solution: 0.5 mg/mL of Primidone in methanol

Sample solution: 0.05 mg/mL of Primidone from the *Sample stock solution* diluted with *Diluent*

Chromatographic system

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

Mode: LC

Detector: UV 220 nm

Column: 4.6-mm × 10-cm; 3-μm packing L1

Column temperature: 35°

Flow rate: 1.3 mL/min

Injection size: 20 μL

System suitability

Sample: *Standard solution*

Suitability requirements

Column efficiency: NLT 3000 theoretical plates

Tailing factor: NMT 2.0

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of $C_{12}H_{14}N_2O_2$ in the portion of Primidone taken:

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

r_U = peak response from the *Sample solution*

r_S = peak response from the *Standard solution*

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

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

Acceptance criteria: 98.0%–102.0% on the dried basis

IMPURITIES

INORGANIC IMPURITIES

- [RESIDUE ON IGNITION \(281\)](#): NMT 0.2%

ORGANIC IMPURITIES

• PROCEDURE

Solution A: 1.36 g/L of monobasic potassium phosphate

Solution B: Methanol

Mobile phase: See the gradient table below.

Time (min)	Solution A (%)	Solution B (%)
0	75	25
1.0	75	25
6.0	40	60
8.0	40	60
8.5	75	25
10.0	75	25

Standard stock solution: 1000 µg/mL of [USP Primidone RS](#) in methanol

Standard solution: 1 µg/mL of [USP Primidone RS](#) in methanol, prepared from the *Standard stock solution* in methanol

System suitability solution: 1000 µg/mL of [USP Primidone RS](#) and 10 µg/mL each of [USP Phenobarbital RS](#) and [USP Primidone Related Compound C RS](#). Prepare by diluting weighed quantities of [USP Phenobarbital RS](#) and [USP Primidone Related Compound C RS](#) with the *Standard stock solution*.

Sample solution: 1000 µg/mL of Primidone in methanol

Chromatographic system

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

Mode: LC

Detector: UV 215 nm

Column: 4.6-mm × 10-cm; monolithic packing L1

Flow rate: 3.2 mL/min

Injection size: 10 µL

System suitability

Samples: *Standard solution* and *System suitability solution*

Suitability requirements

Resolution: NLT 2.5 between phenobarbital and primidone related compound C, *System suitability solution*

Tailing factor: NMT 2.0 for primidone, *Standard solution*

Relative standard deviation: NMT 5.0% for primidone, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Identify the impurities using the relative retention times listed in [Impurity Table 1](#). Calculate the percentage of each impurity in the portion of sample taken: