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Malathion Lotion

DEFINITION

Malathion Lotion is Malathion in a suitable isopropyl alcohol vehicle. It contains NLT 90.0% and NMT 110.0% of the labeled amount of malathion ($C_{10}H_{19}O_6PS_2$).

IDENTIFICATION

• **A.** The retention time of the major peak for malathion of the *Sample solution* corresponds to that of the *Standard solution*, both relative to the internal standard, as obtained in the *Assay*.

ASSAY

• **Procedure**

Solution A: Methyl ethyl ketone and *n*-hexane (4:1)

Internal standard solution: 2 mg/mL of parathion in *Solution A*

Standard stock solution: 2 mg/mL of USP Malathion RS in *Solution A*

Standard solution: 0.4 mg/mL of USP Malathion RS from the *Standard stock solution* and 0.4 mg/mL of parathion from the *Internal standard solution* in *Solution A*

Sample solution: Nominally 0.4 mg/mL of malathion and 0.4 mg/mL of parathion in *Solution A*, prepared as follows. Transfer a volume of Lotion, equivalent to 10 mg of malathion, to a 25-mL volumetric flask. Add 5.0 mL of *Internal standard solution*, and dilute with *Solution A* to volume.

Chromatographic system

(See *Chromatography ⟨621⟩, System Suitability*.)

Mode: GC

Detector: Flame ionization

Column: 2-mm × 1.8-m glass; packed with 5% G6 liquid phase on 110- to 120-mesh support S1A

Temperatures

Injector: 230°

Detector: 250°

Column: 190°

Carrier gas: Dry nitrogen

Flow rate: 15 mL/min

Injection volume: 1 µL

System suitability

Sample: *Standard solution*

[Note—The relative retention times for malathion and parathion are 1.0 and about 1.3, respectively.]

Suitability requirements

Resolution: NLT 3.0 between malathion and parathion

Relative standard deviation: NMT 2.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of malathion ($C_{10}H_{19}O_6PS_2$) in the portion of Lotion taken:

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

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

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

C_S = concentration of USP Malathion RS in the *Standard solution* (mg/mL)

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

Acceptance criteria: 90.0%–110.0%

OTHER COMPONENTS

• **Content of Isopropyl Alcohol**

Internal standard solution: Ethyl acetate and dehydrated alcohol (4:1)

Standard solution: Transfer 2.0 mL of isopropyl alcohol and 5.0 mL of *Internal standard solution* to a 200-mL volumetric flask, and dilute with ethyl acetate to volume.

Sample solution: Transfer a volume of Lotion, equivalent to 2.0 mL of isopropyl alcohol, to a 200-mL volumetric flask. Add 5.0 mL of *Internal standard solution*, and dilute with ethyl acetate to volume.

Chromatographic system

(See *Chromatography ⟨621⟩, System Suitability*.)

Mode: GC

Detector: Flame ionization

Column: 2-mm × 1.8-m glass; packed with 110- to 120-mesh support S2

Temperatures

Injector: 200°

Detector: 220°

Column: 130°

Carrier gas: Dry nitrogen

Flow rate: 7 mL/min

Injection volume: 1 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Relative standard deviation: NMT 2.0% for the peak response ratio of isopropyl alcohol to the internal standard

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of the labeled amount of isopropyl alcohol (C_3H_8O) in the portion of Lotion taken:

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

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

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

C_S = concentration of isopropyl alcohol in the *Standard solution* (mg/mL)

C_U = nominal concentration of isopropyl alcohol in the *Sample solution* (mg/mL)

Acceptance criteria: 90%–110%

ADDITIONAL REQUIREMENTS

• **Packaging and Storage:** Preserve in tight glass containers.

• **Labeling:** The labeling states the percentage (v/v) of isopropyl alcohol in the Lotion.

• **USP Reference Standards ⟨11⟩**

USP Malathion RS

Auxiliary Information - Please check for your question in the FAQs before contacting USP.

Topic/Question	Contact	Expert Committee
MALATHION LOTION	Documentary Standards Support	SM12020 Small Molecules 1

Topic/Question	Contact	Expert Committee
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	SM12020 Small Molecules 1

Chromatographic Database Information: Chromatographic Database

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