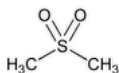


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Methylsulfonylmethane



$C_2H_6O_2S$ 94.13

Dimethyl sulfone;

Sulfonylbismethane CAS RN®: 67-71-0.

DEFINITION

Methylsulfonylmethane contains NLT 98.0% and NMT 102.0% of methylsulfonylmethane ($C_2H_6O_2S$), calculated on the anhydrous basis. The chromatographic purity is NLT 99.8%.

IDENTIFICATION

Change to read:

- **A.** [▲ SPECTROSCOPIC IDENTIFICATION TESTS \(197\), Infrared Spectroscopy: 197K▲](#) (CN 1-MAY-2020)
- **B.** The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the Assay.

ASSAY

PROCEDURE

Diluent: Transfer 950 mL of methanol to a 1-L volumetric flask. Add 0.60 mL of di(ethylene glycol) methyl ether, and dilute with methanol to volume.

Standard solution: 0.4 mg/mL of [USP Methylsulfonylmethane RS](#) in *Diluent*. Sonicate at 50° for 1 min, and allow to cool to room temperature.

Sample solution: 0.4 mg/mL of Methylsulfonylmethane in *Diluent*. Sonicate at 50° for 1 min, and allow to cool to room temperature.

Chromatographic system

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

Mode: GC

Detector: Flame ionization

Column: 0.53-mm × 30-m capillary column coated with a 5-μm phase G2

Temperature

Column: 120°

Injector: 250°

Detector: 250°

Carrier gas: Helium

Flow rate: 5 mL/min

Split ratio: 2:1

Injection size: 1 μL

System suitability

Sample: *Standard solution*

Suitability requirements

Relative standard deviation: NMT 2.0% for the peak response ratio of methylsulfonylmethane to di(ethylene glycol) methyl ether from replicate injections

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of methylsulfonylmethane ($C_2H_6O_2S$) in the portion of Methylsulfonylmethane taken:

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

R_U = peak response ratio of methylsulfonylmethane to di(ethylene glycol) methyl ether from the *Sample solution*

R_S = peak response ratio of methylsulfonylmethane to di(ethylene glycol) methyl ether from the *Standard solution*

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

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

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

IMPURITIES

• CHROMATOGRAPHIC PURITY AND LIMIT OF DIMETHYL SULFOXIDE

Standard stock solution: 1.0 mg/mL of [USP Dimethyl Sulfoxide RS](#) in methanol

Sensitivity check solution: 2.0 µg/mL from the *Standard stock solution* in methanol

System suitability solution: 0.1 mg/mL of [USP Dimethyl Sulfoxide RS](#) and 0.4 mg/mL of [USP Methylsulfonylmethane RS](#) in methanol. In a 50-mL volumetric flask dissolve 20 mg of [USP Methylsulfonylmethane RS](#) in 5 mL of the *Standard stock solution*, and dilute with methanol to volume.

Sample solution: 2 mg/mL of Methylsulfonylmethane in methanol. Sonicate at 50° for 1 min, and allow to cool to room temperature.

Chromatographic system: Proceed as directed in the Assay.

System suitability

Samples: *Sensitivity check solution* and *System suitability solution*

Suitability requirements

Signal-to-noise ratio: NLT 10 for dimethyl sulfoxide peak, *Sensitivity check solution*

Resolution: NLT 2.0 between dimethyl sulfoxide and methylsulfonylmethane, *System suitability solution*

Analysis

Sample: *Sample solution*

Calculate the percentage of each impurity in the portion of Methylsulfonylmethane taken:

$$\text{Result} = (r_U/r_T) \times 100$$

r_U = response of each impurity in the *Sample solution*

r_T = sum of the responses of all of the peaks other than the solvent peak

Acceptance criteria

Individual impurities: NMT 0.1% of dimethyl sulfoxide; NMT 0.05% of any other individual impurity

Total impurities: NMT 0.2% for all impurities, including dimethyl sulfoxide

SPECIFIC TESTS

• **MELTING RANGE OR TEMPERATURE (741):** 108.5°–110.5°

• **MICROBIAL ENUMERATION TESTS (2021):** The total aerobic microbial count is NMT 10^3 cfu/g or mL, and the total combined molds and yeasts count is NMT 10^2 cfu/g or mL.

• **ABSENCE OF SPECIFIED MICROORGANISMS (2022):** It meets the requirements for absence of *Escherichia coli* in 10 g.

• **WATER DETERMINATION, Method I(921):** NMT 0.1%. [NOTE—500 mg of methylsulfonylmethane may be required for this analysis.]

ADDITIONAL REQUIREMENTS

• **PACKAGING AND STORAGE:** Preserve in well-closed containers.

• **USP REFERENCE STANDARDS (11).**

[USP Dimethyl Sulfoxide RS](#)

[USP Methylsulfonylmethane RS](#)

Dimethyl sulfone.

$C_2H_6O_2S$ 94.13

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
METHYLSULFONYLMETHANE	Fatkhulla K Tadjimukhamedov Associate Scientific Liaison	NBDS2020 Non-botanical Dietary Supplements

Chromatographic Database Information: [Chromatographic Database](#)

Most Recently Appeared In:

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