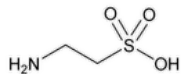


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Taurine



$C_2H_7NO_3S$ 125.15

Taurine

Ethanesulfonic acid, 2-amino-

2-Aminoethane-1-sulfonic acid CAS RN[®]: 107-35-7; UNII: 1EQV5MLY3D.

DEFINITION

Taurine contains NLT 98.0% and NMT 102.0% of taurine ($C_2H_7NO_3S$), calculated on the dried basis.

IDENTIFICATION

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

ASSAY

• PROCEDURE

Solution A: [Water](#) adjusted with [acetic acid](#) to a pH of 3.0.

Mobile phase: [Acetonitrile](#) and *Solution A* (80:20)

Standard stock solution: Prepare a solution containing 1.0 mg/mL of [USP Taurine RS](#) in *Mobile phase*.

Standard solutions: Using the *Standard stock solution* prepare three *Standard solutions* with concentrations of 0.4, 0.5, and 0.6 mg/mL of [USP Taurine RS](#) in *Mobile phase*.

Sample solution: 0.5 mg/mL of Taurine in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: Evaporative light-scattering detector (ELSD)

Drift tube temperature: 55° or optimize according to the manufacturer's recommendations to achieve optimal signal-to-noise ratio

Nebulizer gas: Nitrogen

Nebulizer gas flow rate: 1.5 L/min or optimize according to the manufacturer's recommendations to achieve optimal signal-to-noise ratio

Column: 3-mm × 10-cm; 2.5-μm packing [L104](#)

Column temperature: 25°

Flow rate: 0.4 mL/min

Injection volume: 5 μL

System suitability

Sample: *Standard solution* at 0.5 mg/mL

Suitability requirements

Column efficiency: NLT 6000 theoretical plates

Tailing factor: NMT 1.5

Relative standard deviation: NMT 3%

Analysis

Samples: *Standard solutions* and *Sample solution*

Plot the logarithms of the taurine peak areas against the logarithms of taurine concentrations, in mg/mL, in the three *Standard solutions* and establish a calibration curve by least-squares regression. The correlation coefficient for the regression line is NLT 0.99. Inject the *Sample solution* three times and obtain the average value of taurine peak areas. Using the logarithm of the average taurine peak area

from the *Sample solution*, calculate the logarithm of taurine concentration from the calibration curve and calculate the concentration, C , in mg/mL, of taurine in the *Sample solution* by taking the antilog of the result.
Calculate the percentage of taurine ($C_2H_7NO_3S$) in the portion of Taurine taken:

$$\text{Result} = (C/C_U) \times 100$$

C = concentration of Taurine in the *Sample solution* (mg/mL), determined from the calibration curve

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

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

IMPURITIES

- [RESIDUE ON IGNITION \(281\)](#): NMT 0.3%

- [CHLORIDE AND SULFATE \(221\)](#), *Chloride*

Standard: 0.50 mL of 0.020 N [hydrochloric acid](#)

Sample: 0.7 g of Taurine

Acceptance criteria: NMT 0.05%

- [CHLORIDE AND SULFATE \(221\)](#), *Sulfate*

Standard: 0.25 mL of 0.020 N [sulfuric acid](#)

Sample: 0.8 g of Taurine

Acceptance criteria: NMT 0.03%

Change to read:

- [IRON \(241\)](#), *Procedures, Procedure 1* ▲ (CN 1-JUN-2023): NMT 30 ppm

- **RELATED COMPOUNDS**

Sample solution: 10 mg/mL of Taurine in [water](#)

Standard solution: 0.05 mg/mL of [USP Taurine RS](#) in [water](#), an equivalent concentration of about 0.5% of the *Sample solution*

Chromatographic system

(See [Chromatography \(621\)](#), *General Procedures, Thin-Layer Chromatography*.)

Mode: TLC

Adsorbent: 0.25-mm layer of [chromatographic silica gel mixture](#)

Application volume: 5 μ L

Developing solvent system: [Butyl alcohol](#), [glacial acetic acid](#), and [water](#) (3:1:1)

Spray reagent: 2 mg/mL of [ninhydrin](#) in a mixture of [butyl alcohol](#) and 2 N [acetic acid](#) (95:5)

Analysis: Dry the plate at 80° for 30 min. Spray the plate with *Spray reagent*, and heat at 80° for about 10 min. Examine the plate under white light. [NOTE—The R_f value for the taurine spots should be about 0.2.]

Acceptance criteria: No secondary spot of the *Sample solution* is larger or more intense than the principal spot of the *Standard solution*.

Individual impurities: NMT 0.5%

SPECIFIC TESTS

- [Loss on Drying \(731\)](#)

Analysis: Dry at 105° for 3 h.

Acceptance criteria: NMT 0.3%

ADDITIONAL REQUIREMENTS

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

- [USP REFERENCE STANDARDS \(11\)](#)

[USP Taurine RS](#)

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

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

Topic/Question	Contact	Expert Committee
REFERENCE STANDARD SUPPORT	RS Technical Services RSTECH@usp.org	NBDS2020 Non-botanical Dietary Supplements

Chromatographic Database Information: [Chromatographic Database](#)

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