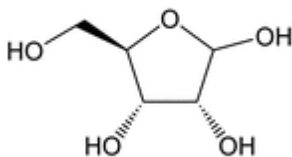


Ribose



Click image to enlarge

$C_5H_{10}O_5$ 150.13
(2*S*,3*R*,4*S*,5*R*)-5-(Hydroxymethyl)oxolane-2,3,4-triol;
D-Ribose [50-69-1].

DEFINITION

Ribose contains NLT 98.0% and NMT 102.0% of D-ribose ($C_5H_{10}O_5$), calculated on the dried basis.

IDENTIFICATION

- **A.** [SPECTROSCOPIC IDENTIFICATION TESTS \(197\)](#), [Infrared Spectroscopy](#): 197K
- **B.** It meets the requirements in *Specific Tests* for [Optical Rotation \(781S\)](#), [Procedures](#), [Specific Rotation](#).
- **C.** 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

Mobile phase: Degassed [water](#)

System suitability solution: 20 mg/mL of [USP Ribose RS](#) and 0.2 mg/mL of [USP Arabinose RS](#) in *Mobile phase*

Standard solution: 20 mg/mL of [USP Ribose RS](#) in *Mobile phase*

Sample solution: 20 mg/mL of Ribose in *Mobile phase*

Chromatographic system

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

Mode: LC

Detector: Refractive index

Column: 8.0-mm × 30-cm; 6-μm packing [L22](#)

Temperatures

Detector: 40°

Column: 80°

Flow rate: 1.0 mL/min

Injection volume: 10 μL

System suitability

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

[NOTE—The relative retention times for arabinose and ribose are 0.9 and 1.0, respectively.]

Suitability requirements

Resolution: NLT 1.2 between ribose and arabinose, *System suitability solution*

Tailing factor: NMT 1.5, *Standard solution*

Column efficiency: NLT 2500 theoretical plates for the ribose peak, *Standard solution*

Relative standard deviation: NMT 2.0%, *Standard solution*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of D-ribose in the portion of Ribose 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 Ribose RS](#) in the *Standard solution* (mg/mL)

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

Acceptance criteria: 98.0–102.0% on the dried basis

IMPURITIES

- **RESIDUE ON IGNITION (281):** NMT 0.2%

- **CHLORIDE AND SULFATE (221), Chloride**

Standard: 0.10 mL of 0.020 N [hydrochloric acid](#)

Sample: 3.6 g of Ribose

Acceptance criteria: NMT 0.002%

- **CHLORIDE AND SULFATE (221), Sulfate**

Standard: 0.10 mL of 0.020 N [sulfuric acid](#)

Sample: 3.3 g of Ribose

Acceptance criteria: NMT 0.003%

- **RELATED COMPOUNDS**

Mobile phase, System suitability solution, Sample solution, Chromatographic system, and System suitability: Proceed as directed in the *Assay*.

Standard solution: 0.02 mg/mL of [USP Arabinose RS](#) in *Mobile phase*

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of arabinose in the portion of Ribose taken:

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

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

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

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

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

Calculate the percentage of any unspecified impurity in the portion of Ribose taken:

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

r_U = peak response of any unspecified impurity from the *Sample solution*

r_T = sum of all the peak responses from the *Sample solution*

Acceptance criteria

Arabinose: NMT 1.0%

Unspecified impurity: NMT 0.1%

Total unspecified impurities: NMT 1.0%

SPECIFIC TESTS

- **OPTICAL ROTATION** ([781S](#)), [Procedures](#), [Specific Rotation](#)

Sample solution: 20 mg/mL in [water](#)

Acceptance criteria: -18.0° to -22.0°

- **COLOR OF SOLUTION**

Sample solution: Dissolve 5.0 g of Ribose in 50 mL of [water](#). Centrifuge or filter, if necessary, to obtain a clear solution.

Blank solution: [Water](#)

Analysis: Absorbance at 430 nm in a 1-cm cell

Acceptance criteria: NMT 0.2 AU

Change to read:

- **LOSS ON DRYING** ([731](#))

Analysis: ▲ Dry at 60° under vacuum of NLT 50 mmHg for 3.5 h. ▲ (IRA 1-Mar-2021)

Acceptance criteria: NMT 0.5%

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight, light-resistant containers.

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

[USP Arabinose RS](#)

[USP Ribose RS](#)

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