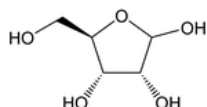


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## Ribose



$C_5H_{10}O_5$  150.13

(2S,3R,4S,5R)-5-(Hydroxymethyl)oxolane-2,3,4-triol;

D-Ribose CAS RN®: 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