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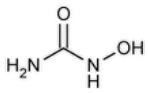
Hydroxyurea



$CH_4N_2O_2$ 76.05
Urea, hydroxy-.

Hydroxyurea CAS RN®: 127-07-1; UNII: X6Q56QN5QC.

» Hydroxyurea contains not less than 97.0 percent and not more than 103.0 percent of $CH_4N_2O_2$, calculated on the dried basis.

Packaging and storage—Preserve in tight containers, in a dry atmosphere.

USP Reference standards ⟨11⟩—
USP Hydroxyurea RS

Change to read:

Identification, ▲**Spectroscopic Identification Tests** ⟨197⟩, *Infrared Spectroscopy*: **197K**▲ (CN 1-May-2020) •

Loss on drying ⟨731⟩—Dry it in vacuum at 60° for 3 hours: it loses not more than 1.0% of its weight.

Residue on ignition ⟨281⟩**:** not more than 0.50%.

Urea and related compounds—

Developing solvent—Shake equal volumes of isobutyl alcohol and water in a separator, and allow the layers to separate. Use the upper layer as the *Mobile phase* and the lower layer as the *Stationary phase.*

p-Dimethylaminobenzaldehyde solution, 1%—Dissolve 1.0 g of *p*-dimethylaminobenzaldehyde in 50 mL of alcohol, add 2 mL of hydrochloric acid, and dilute with alcohol to 100.0 mL.

pH 6.5 Buffer solution—Mix 700 mL of 0.2 M dibasic sodium phosphate and 300 mL of 0.1 M citric acid.

Standard preparation—Prepare a solution of urea in water, containing 0.1 mg per mL.

Test preparation—Dissolve 10.0 mg of Hydroxyurea in 1.0 mL of water.

Procedure—Treat a suitable chromatographic paper strip (Whatman No. 1 or equivalent) by dipping it in *pH 6.5 Buffer solution.* Dry the paper strip, and apply 100 µL of the *Test preparation* and 50 µL of the *Standard preparation.* Place the strip in a chromatographic chamber for descending chromatography containing the *Stationary phase* in the bottom of the chamber and the *Mobile phase* in the trough. Develop for 24 hours, remove the strip from the chamber, air-dry, and develop again for 24 hours. Remove the strip, air-dry, spray with *p-Dimethylaminobenzaldehyde solution, 1%,* and heat at 90° for 1 to 2 minutes. Not more than two spots, other than the major component, are present in the *Test preparation,* and their intensities are not greater than the intensity of the spot from the *Standard preparation* (0.5% of each impurity). The R_r values relative to hydroxyurea, the principal spot, are 0.65 and 1.26 (urea).

Assay—

Solution A—Dissolve 1.7 g of tetrabutylammonium hydrogen sulfate and 1.74 g of dibasic potassium phosphate, anhydrous, in 1000 mL of water, and adjust with 1 N sodium hydroxide or 85% phosphoric acid to a pH of 5.0.

Solution B: methanol.

Mobile phase—Prepare a solution of filtered, degassed *Solution A* and *Solution B* (8.5:1.5). Make adjustments if necessary (see *System Suitability* under *Chromatography* ⟨621⟩).

Resolution solution—Dissolve accurately weighed quantities of USP Hydroxyurea RS and hydroxylamine hydrochloride in *Mobile phase,* and dilute quantitatively, and stepwise if necessary, with *Mobile phase* to obtain a solution having a known concentration of about 0.4 mg per mL of each.

Standard preparation—Dissolve an accurately weighed quantity of USP Hydroxyurea RS in *Mobile phase,* and dilute quantitatively, and stepwise if necessary, with *Mobile phase* to obtain a solution having a known concentration of about 0.4 mg per mL.

Assay preparation—Transfer about 200 mg of Hydroxyurea, accurately weighed, to a 500-mL volumetric flask, dissolve in and dilute with *Mobile phase* to volume, and mix.

Chromatographic system (see *Chromatography* ⟨621⟩)—The liquid chromatograph is equipped with a 214-nm detector and a 4.6-mm × 25-cm column that contains 5-µm packing L1. The flow rate is about 0.5 mL per minute. Chromatograph the *Resolution solution,* and record the peak responses as directed for *Procedure:* the resolution, *R,* between the hydroxylamine and hydroxyurea peaks is not less than 1.5; for the hydroxyurea peak, the column efficiency is not less than 5000; and the tailing factor is not more than 1.5. Chromatograph the *Standard preparation,* and record the peak responses as directed for *Procedure:* the relative standard deviation for replicate injections is not more than 2.0%.

Procedure—Separately inject equal volumes (about 10 µL) of the *Standard preparation* and the *Assay preparation* into the chromatograph, record the chromatograms, and measure the responses for the major peaks. Calculate the quantity, in mg, of $CH_4N_2O_2$ in the portion of Hydroxyurea taken by the formula:

$$500C(r_U/r_S)$$

in which C is the concentration, in mg per mL, of USP Hydroxyurea RS in the *Standard preparation;* and r_U and r_S are the peak responses of the hydroxyurea peaks obtained from the *Assay preparation* and the *Standard preparation,* respectively.

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

Topic/Question	Contact	Expert Committee
HYDROXYUREA	Documentary Standards Support	SM32020 Small Molecules 3

Chromatographic Database Information: Chromatographic Database

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