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Formaldehyde Solution

CH₂O 30.03

Formaldehyde.

Formaldehyde CAS RN®: 50-00-0; UNII: 1HG84L3525.

» Formaldehyde Solution contains not less than 34.5 percent, by weight, of formaldehyde (CH₂O), with methanol added (9.0% to 15.0%) to prevent polymerization.

Packaging and storage—Preserve in tight containers, and preferably store at a temperature not below 15°.

Identification—

A: Dilute 2 mL with 10 mL of water in a test tube, and add 1 mL of silver-ammonia-nitrate TS: metallic silver is produced either in the form of a finely divided, gray precipitate, or as a bright, metallic mirror on the sides of the test tube.

B: Add 2 drops to 5 mL of sulfuric acid in which about 20 mg of salicylic acid has been dissolved, and warm the liquid very gently: a permanent, deep-red color appears.

Acidity—Measure 20.0 mL into a flask containing 20 mL of water, add 2 drops of bromothymol blue TS, and titrate with 0.1 N sodium hydroxide VS: not more than 10.0 mL of 0.1 N sodium hydroxide is consumed.

Content of methanol—

Internal standard solution—Dilute 10 mL of dehydrated alcohol with water to 100 mL.

Test solution—To 10.0 mL of Solution add 10.0 mL of the *Internal standard solution*, and dilute with water to 100.0 mL.

Standard solution—To 1.0 mL of methanol add 10.0 mL of the *Internal standard solution*, and dilute with water to 100.0 mL.

Chromatographic system (see [CHROMATOGRAPHY \(621\)](#))—The gas chromatograph is equipped with a flame-ionization detector and a 2- to 4-mm × 1.5- to 2.0-m column containing packing S3. The carrier gas is nitrogen or helium, flowing at a rate of 30 to 40 mL per minute. The column temperature is maintained at 120°. The injection port temperature and the detector temperature are maintained at 150°. Chromatograph the *Standard solution*, and record the peak responses as directed for *Procedure*: the resolution, *R*, between the peaks corresponding to methanol and alcohol is not less than 2.0.

Procedure—Separately inject equal volumes (1 µL) of the *Standard solution* and the *Test solution* into the chromatograph, record the chromatograms, and measure the responses for the major peaks. Calculate the percentage (v/v) of methanol in the portion of Solution taken by the formula:

$$100 \times (V_M/V)(R_U/R_S)$$

in which *V_M* is the volume, in mL, of methanol taken to prepare the *Standard solution*; *V* is the volume, in mL, of Solution taken to prepare the *Test solution*; and *R_U* and *R_S* are the peak response ratios of methanol to that of the internal standard obtained from the *Test solution* and the *Standard solution*, respectively: between 9.0% and 15.0% (v/v) is found.

Assay—Into a 100-mL volumetric flask containing 2.5 mL of water and 1 mL of sodium hydroxide TS 2, introduce 1.0 g of the Solution to be examined, shake, and dilute with water to 100.0 mL. To 10.0 mL of the solution add 30.0 mL of 0.1 N iodine VS. Mix, and add 10 mL of sodium hydroxide TS 2. After 15 minutes, add 25 mL of diluted sulfuric acid and 4 mL of starch TS. Titrate with 0.1 N sodium thiosulphate VS. Each 1 mL of 0.05 M iodine is equivalent to 1.501 mg of CH₂O.

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

Topic/Question	Contact	Expert Committee
FORMALDEHYDE SOLUTION	Documentary Standards Support	SM12020 Small Molecules 1

Chromatographic Database Information: [Chromatographic Database](#)

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