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Cresol

C_7H_8O 108.14
Phenol, methyl-;
Cresol CAS RN[®]: 1319-77-3.

DEFINITION

Cresol is a mixture of isomeric cresols obtained from coal tar or from petroleum.

IDENTIFICATION

• A.

Sample solution: A saturated solution

Analysis: To the *Sample solution* add a few drops of ferric chloride TS.

Acceptance criteria: A bluish-violet color is produced.

IMPURITIES

• LIMIT OF PHENOL

Solution A: Bubble air through nitric acid until the acid is colorless, then mix 1 volume of the acid with 4 volumes of water.

Standard solution: Dissolve 1 g of phenol in 100 mL of water, and determine the actual C_6H_6O concentration as follows. Pipet 4 mL of the solution into an iodine flask, add 30.0 mL of 0.1 N bromine VS, then add 5 mL of hydrochloric acid, and immediately insert the stopper. Shake the flask repeatedly for 30 min, and allow to stand for 15 min. Add quickly 5 mL of a 200-mg/mL potassium iodide solution, taking precautions to prevent the escape of bromine vapor, and at once insert the stopper into the flask. Shake thoroughly, remove the stopper, and rinse it and the neck of the flask with a small quantity of water so that the washings flow into the flask. Add 1 mL of chloroform, shake the mixture, and titrate the liberated iodine with 0.1 N sodium thiosulfate VS, adding 3 mL of starch TS as the endpoint is approached. Perform a blank determination. Each mL of 0.1 N bromine is equivalent to 1.569 mg of C_6H_6O . Dilute a suitable volume of the solution with water to obtain a concentration of 250 µg/mL of C_6H_6O .

Sample solution: Place 2.5 g of Cresol in a 250-mL volumetric flask, add 10 mL of sodium hydroxide solution (100 mg/mL), and dilute with water to volume. Pipet 5 mL of this solution into a 200-mL volumetric flask, add 45 mL of water and 1 drop of methyl orange TS, neutralize with *Solution A* added dropwise, and then dilute with water to volume.

Analysis: Pipet 5.0 mL of the neutralized *Sample solution* into each of two 20- × 180-mm test tubes, graduated at the 25-mL mark, and pipet 5.0 mL of the *Standard solution* into each of two similar test tubes. To the contents of each tube add 5 mL of Millon's Reagent, allowing it to flow down the inner wall of the tube. Place the tubes simultaneously in a boiling water bath provided with a rack so that the tubes do not touch the bottom of the bath, and maintain the bath at boiling temperature for 30 min, accurately timed. At once remove the tubes from the bath, cool them immediately and thoroughly by placing them in a bath of cold water for NLT 10 min, and add 5 mL of *Solution A* to each tube. Add 3 mL of a 2% formaldehyde solution to one of each pair of tubes, add water to fill all tubes to volume, shake thoroughly, and allow to stand for 16 h, during which time the added formaldehyde imparts a yellow color while the contents of the other two tubes acquire an orange-red color.

Pipet 20 mL from each of the two tubes containing the *Standard solution* into separate 100-mL volumetric flasks, add 5 mL of *Solution A*, and then add water to volume. Transfer the solutions to burets marked *B1* and *B2*, representing, respectively, the solution not treated and the solution treated with formaldehyde.

Pipet 10 mL from each of the two tubes containing the *Sample solution* into separate 50-mL color-comparison tubes marked *N1* and *N2*, representing, respectively, the solution treated with formaldehyde and the solution not treated with formaldehyde.

Add to tube *N1* the orange-red colored solution from buret *B1*, and add to tube *N2* an equal volume of the yellow-colored solution from buret *B2*, until the colors in tubes *N1* and *N2* match when observed in a colorimeter.

Calculate the percentage of phenol (C_6H_6O) in the portion of the sample taken:

$$\text{Result} = V/W \times 5$$

V = volume of the *Standard solution* taken from buret *B1* (mL)

W = weight of Cresol taken (g)

Acceptance criteria: NMT 5.0%

SPECIFIC TESTS

- [SPECIFIC GRAVITY \(841\)](#): 1.030–1.038
- [DISTILLING RANGE, Method II \(721\)](#): NLT 90% distills between 195° and 205°.

• HYDROCARBONS

Sample solution: 1 in 60

Standard solution: To 58 mL of water add 1.5 mL of 0.02 N sulfuric acid and 1 mL of barium chloride solution (100 mg/mL).

Analysis: Compare the turbidity of the *Sample solution* against the *Standard solution* after the *Standard solution* has been shaken and allowed to stand for 5 min.

Acceptance criteria: The *Sample solution* shows no more turbidity than the *Standard solution*.

ADDITIONAL REQUIREMENTS

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

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

Topic/Question	Contact	Expert Committee
CRESOL	Documentary Standards Support	SE2020 Simple Excipients

Chromatographic Database Information: [Chromatographic Database](#)

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