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Cupric Tartrate, Alkaline, Solution (Fehling's Solution)

Copper solution (Solution A): Transfer 34.639 g of [cupric sulfate](#) to a 500-mL volumetric flask, and dissolve in and dilute with [water](#) to volume. Filter, if necessary.

Alkaline tartrate solution (Solution B): Transfer 173 g of [potassium sodium tartrate](#) and 50 g of [sodium hydroxide](#) to a 500-mL volumetric flask, and dissolve in and dilute with [water](#) to volume. Filter, if necessary.

Just before use, prepare *Cupric Tartrate, Alkaline, Solution* by mixing equal volumes of *Solution A* and *Solution B*.

• STANDARDIZATION

Standard stock solution: Transfer 9.5 g of [Sucrose](#) to a 1-L volumetric flask, dissolve in 100 mL of [water](#), add 5 mL of [hydrochloric acid](#), and store for 3 days at 20°–25°. Dilute with [water](#) to volume. This solution is stable for several months.

Invert sugar solution: Immediately before use in standardizing the *Cupric Tartrate, Alkaline, Solution*, transfer 25 mL of *Standard stock solution* to a 100-mL volumetric flask, and dilute with [water](#) to volume.

Procedure

Apparatus: Mount a ring support on a ring stand 1–2 inches above a gas burner, and mount a second ring 6–7 inches above the first. Place 6-inch open-wire gauze on the lower ring to support a 400-mL conical flask, and place a 4-inch watch glass with a center hole on the upper ring to deflect heat. Attach a 50-mL buret to the ring stand so that the tip just passes through the watch glass centered above the flask. Place an indirectly lighted white surface behind the assembly for observing the endpoint.

Standardization: Transfer 20.0 mL of the *Cupric Tartrate, Alkaline, Solution* to a 400-mL flask containing a few boiling chips, and add 15 mL of [water](#) and 39.0 mL of *Invert sugar solution*. Mix by swirling at ambient temperature, and immediately place the flask on the wire gauze of the *Apparatus*. Adjust the burner so that the boiling point of the solution is reached in about 2 min. Boil gently but steadily for 2 min. As boiling continues, add 3–4 drops of [methylene blue](#) solution (1 in 100). Complete the titration within 1 min by adding the *Invert sugar solution* dropwise until the blue color disappears. Allow a 5-s reaction time between drops at the end of titration. Adjust the *Cupric Tartrate, Alkaline, Solution* for the correct amount of copper (equivalent to 100 mg of invert sugar), and restandardize if the total volume of *Invert sugar solution* is more or less than 40.0 mL.

[NOTE—If this volumetric solution is used in a qualitative application such as pH adjustment, dissolution medium, or diluent, its standardization is not required.]

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

Topic/Question	Contact	Expert Committee
CUPRIC TARTRATE, ALKALINE, SOLUTION	Margareth R.C. Marques Principal Scientific Liaison	HDQ Headquarters

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