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Add the following:

▲0.05 N Titanium Trichloride VS

Prepare a 100 mg/mL solution of titanium trichloride in water. Transfer 75 mL of this solution to a 1000-mL volumetric flask containing 75 mL of hydrochloric acid. Dilute with water to volume.

Standardization

See *Volumetric Solutions, 1. Introduction*.

See *Titrimetry ⟨541⟩*.

Standardize by one of the following procedures. [NOTE—Other standardization procedures may be used. See *Volumetric Solutions, 2. Preparation and Standardization, 2.3 Standardization*.]

Store the titanium trichloride solution in the reservoir of a closed-system titration apparatus in an atmosphere of inert gas.

Use a wide-mouth, 500-mL conical flask as the titration vessel, and connect it by means of a tight-fitting rubber stopper to the titration buret, an inlet tube for inert gas, and an exit tube. Arrange for mechanical stirring. All joints must be air-tight. Arrange to have inert gas pass through a wash bottle containing a 20 mg/mL solution of titanium trichloride solution in water to remove any oxygen.

If the solution to be titrated is to be heated before or during titration, connect the titration flask with an upright reflux condenser through the rubber stopper.

Standardization with visual endpoint: Place an accurately measured volume of about 10 mL of 0.1 N ferric ammonium sulfate VS in the titration flask, and pass in a rapid stream of inert gas until all the air has been removed. Add the titanium trichloride solution from the buret until near the calculated endpoint (about 15 mL), then add through the outlet tube 5 mL of ammonium thiocyanate TS, and continue the titration until the solution is colorless.

$$N = \frac{\text{mL } FeNH_4(SO_4)_2 \times \text{N } FeNH_4(SO_4)_2}{\text{mL } TiCl_3}$$

Standardization with potentiometric endpoint: Place an accurately measured volume of about 10 mL of 0.1 N ferric ammonium sulfate VS in the titration flask, and pass in a rapid stream of inert gas until all the air has been removed. Titrate with the titanium trichloride solution potentiometrically using a combined platinum electrode.

$$N = \frac{\text{mL } FeNH_4(SO_4)_2 \times \text{N } FeNH_4(SO_4)_2}{\text{mL } TiCl_3}$$

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

▲ (USP 1-Aug-2022)

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

Topic/Question	Contact	Expert Committee
0.05 N TITANIUM TRICHLORIDE VS	Margareth R.C. Marques Principal Scientific Liaison	HDQ Headquarters

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