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**Change to read:**

## 0.1 N Titanium Trichloride VS

▲ (USP 1-Aug-2020)

Add 75 mL of [titanium trichloride](#) solution (1 in 5) to 75 mL of [hydrochloric acid](#), dilute ▲with [water](#)▲ (USP 1-Aug-2020) to 1000 mL, and mix.

### Standardization

▲See [Volumetric Solutions, 1. Definitions](#).

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](#).]▲ (USP 1-Aug-2020)

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

(USP 1-Aug-2020)

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,▲ (USP 1-Aug-2020) and an exit tube. Arrange for mechanical stirring. All joints must be air-tight. Arrange to have ▲the inert gas▲ (USP 1-Aug-2020) pass through a wash bottle containing titanium trichloride solution (approximately 1 in 50) 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:**▲ (USP 1-Aug-2020) Place an accurately measured volume of about 40 mL of [0.1 N ferric ammonium sulfate VS](#) in the titration flask, and pass in a rapid stream of ▲inert gas▲ (USP 1-Aug-2020) until all the air has been removed. Add the titanium trichloride solution from the buret until near the calculated endpoint (about 35 mL), then add through the outlet tube 5 mL of [ammonium thiocyanate TS](#), and continue the titration until the solution is colorless.

$$N = \frac{\text{mL FeNH}_4(\text{SO}_4)_2 \times N \text{ FeNH}_4(\text{SO}_4)_2}{\text{mL TiCl}_3}$$

▲**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.

$$N = \frac{\text{mL FeNH}_4(\text{SO}_4)_2 \times N \text{ FeNH}_4(\text{SO}_4)_2}{\text{mL TiCl}_3}$$

▲ (USP 1-Aug-2020)

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

Topic/Question	Contact	Expert Committee
0.1 N TITANIUM TRICHLORIDE VS	<a href="#">Margareth R.C. Marques</a> Principal Scientific Liaison	HDQ Headquarters

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