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Diluted Hydrochloric Acid

DEFINITION

Diluted Hydrochloric Acid contains, in each 100 mL, NLT 9.5 g and NMT 10.5 g of hydrochloric acid (HCl).
Diluted Hydrochloric Acid may be prepared as follows.

Hydrochloric Acid	226 mL
Purified Water, a sufficient quantity to make	1000 mL

Mix the ingredients.

IDENTIFICATION

- ~~A. IDENTIFICATION TESTS—GENERAL, Chloride (191).~~

ASSAY

• PROCEDURE

Sample: 10.0 mL
Blank: 20 mL of water
Titrimetric system
(See [Titrimetry \(541\)](#).)
Mode: Direct titration
Titrant: 1 N sodium hydroxide VS
Endpoint detection: Visual

Analysis: Transfer the *Sample* to a conical flask, and add about 20 mL of water. Add 3 drops of methyl red TS. Titrate with *Titrant*. Perform a blank determination.

Calculate the amount of hydrochloric acid (HCl) in the portion of sample taken:

$$\text{Result} = (V_s - V_b) \times N \times F$$

V_s = *Titrant* volume consumed by the *Sample* (mL)
 V_b = *Titrant* volume consumed by the *Blank* (mL)
 N = actual normality of the *Titrant* (mEq/mL)
 F = equivalency factor, 3.646×10^{-2} g/mEq

Acceptance criteria: 9.5–10.5 g of HCl in each 100 mL

IMPURITIES

- [RESIDUE ON IGNITION \(281\)](#).

Sample: 20 mL
Analysis: To the *Sample* add 2 drops of sulfuric acid, evaporate to dryness, and ignite.
Acceptance criteria: NMT 2 mg

• FREE BROMINE OR CHLORINE

Sample: 10 mL
Analysis: To the *Sample* add 1 mL of potassium iodide TS and 1 mL of chloroform, and agitate the mixture.
Acceptance criteria: The chloroform remains free from any violet coloration for at least 1 min.

- **SULFATE**
Sample solution: Mix 3 mL of Diluted Hydrochloric Acid and 5 mL of water.
Analysis: To the *Sample solution* add 5 drops of barium chloride TS.
Acceptance criteria: Neither turbidity nor precipitate appears within 1 h.

- **SULFITE**
Analysis: Complete the test for *Sulfate*, then add to the liquid 2 drops of 0.1 N iodine.
Acceptance criteria: Neither turbidity nor decolorization of the iodine occurs.

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in tight containers.

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

Topic/Question	Contact	Expert Committee
DILUTED HYDROCHLORIC ACID	Documentary Standards Support	SE2020 Simple Excipients

Chromatographic Database Information: [Chromatographic Database](#)

Most Recently Appeared In:
Pharmacopeial Forum: Volume No. Information currently unavailable

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