

01/2008:0002 STORAGE

**HYDROCHLORIC ACID,
CONCENTRATED**

Acidum hydrochloridum concentratum

HCl
[7647-01-0] M_r 36.46

DEFINITION

Content: 35.0 per cent *m/m* to 39.0 per cent *m/m*.

CHARACTERS

Appearance: clear, colourless, fuming liquid.*Solubility:* miscible with water.*Relative density:* about 1.18.

IDENTIFICATION

- A. Dilute with *water R*. The solution is strongly acid (2.2.4).
 B. It gives the reactions of chlorides (2.3.1).
 C. It complies with the limits of the assay.

TESTS

Appearance of solution. To 2 ml add 8 ml of *water R*. The solution is clear (2.2.1) and colourless (2.2.2, *Method II*).**Free chlorine:** maximum 4 ppm.To 15 ml add 100 ml of *carbon dioxide-free water R*, 1 ml of a 100 g/l solution of *potassium iodide R* and 0.5 ml of *iodide-free starch solution R*. Allow to stand in the dark for 2 min. Any blue colour disappears on the addition of 0.2 ml of 0.01 M *sodium thiosulphate*.**Sulphates (2.4.13):** maximum 20 ppm.To 6.4 ml add 10 mg of *sodium hydrogen carbonate R* and evaporate to dryness on a water-bath. Dissolve the residue in 15 ml of *distilled water R*.**Heavy metals (2.4.8):** maximum 2 ppm.Dissolve the residue obtained in the test for residue on evaporation in 1 ml of *dilute hydrochloric acid R* and dilute to 25 ml with *water R*. Dilute 5 ml of this solution to 20 ml with *water R*. 12 ml of the solution complies with test A. Prepare the reference solution using *lead standard solution (2 ppm Pb) R*.**Residue on evaporation:** maximum 0.01 per cent.

Evaporate 100.0 g to dryness on a water-bath and dry at 100-105 °C. The residue weighs a maximum of 10 mg.

ASSAY

Weigh accurately a ground-glass-stoppered flask containing 30 ml of *water R*. Introduce 1.5 ml of the acid to be examined and weigh again. Titrate with 1 M *sodium hydroxide*, using *methyl red solution R* as indicator.1 ml of 1 M *sodium hydroxide* is equivalent to 36.46 mg of HCl.

In a stoppered container made of glass or another inert material, at a temperature not exceeding 30 °C.

01/2008:0003

HYDROCHLORIC ACID, DILUTE

Acidum hydrochloridum dilutum

DEFINITION

Content: 9.5 per cent *m/m* to 10.5 per cent *m/m* of HCl (M_r 36.46).

PREPARATION

To 726 g of *water R* add 274 g of concentrated hydrochloric acid and mix.

IDENTIFICATION

- A. It is strongly acid (2.2.4).
 B. It gives the reactions of chlorides (2.3.1).
 C. It complies with the limits of the assay.

TESTS

Appearance. It is clear (2.2.1) and colourless (2.2.2, *Method II*).**Free chlorine:** maximum 1 ppm.To 60 ml add 50 ml of *carbon dioxide-free water R*, 1 ml of a 100 g/l solution of *potassium iodide R* and 0.5 ml of *iodide-free starch solution R*. Allow to stand in the dark for 2 min. Any blue colour disappears on the addition of 0.2 ml of 0.01 M *sodium thiosulphate*.**Sulphates (2.4.13):** maximum 5 ppm.To 26 ml add 10 mg of *sodium hydrogen carbonate R* and evaporate to dryness on a water-bath. Dissolve the residue in 15 ml of *distilled water R*.**Heavy metals (2.4.8):** maximum 2 ppm.Dissolve the residue obtained in the test for residue on evaporation in 1 ml of *dilute hydrochloric acid R* and dilute to 25 ml with *water R*. Dilute 5 ml of this solution to 20 ml with *water R*. 12 ml of the solution complies with test A. Prepare the reference solution using *lead standard solution (2 ppm Pb) R*.**Residue on evaporation:** maximum 0.01 per cent.

Evaporate 100.0 g to dryness on a water-bath and dry at 100-105 °C. The residue weighs a maximum of 10 mg.

ASSAY

To 6.00 g add 30 ml of *water R*. Titrate with 1 M *sodium hydroxide*, using *methyl red solution R* as indicator.1 ml of 1 M *sodium hydroxide* is equivalent to 36.46 mg of HCl.