SODIUM CHLORIDE

Natrii chloridum

NaCl M_r 58.44
[7647-14-5]

DEFINITION
Content: 99.0 per cent to 100.5 per cent (dried substance).

CHARACTERS
Appearance: white or almost white, crystalline powder or colourless crystals or white or almost white pearls.
Solubility: freely soluble in water, practically insoluble in anhydrous ethanol.

IDENTIFICATION
A. It gives the reactions of chlorides (*2.3.1*).
B. It gives the reactions of sodium (*2.3.1*).

TESTS

Solution S. Dissolve 20.0 g in *carbon dioxide-free water R* prepared from *distilled water R* and dilute to 100.0 mL with the same solvent.

Appearance of solution. Solution S is clear (*2.2.1*) and colourless (*2.2.2, Method II*).

Acidity or alkalinity. To 20 mL of solution S add 0.1 mL of *bromothymol blue solution R1*. Not more than 0.5 mL of *0.01 M hydrochloric acid* or *0.01 M sodium hydroxide* is required to change the colour of the indicator.

Bromides: maximum 100 ppm.
To 0.5 mL of solution S add 4.0 mL of *water R*, 2.0 mL of *phenol red solution R2* and 1.0 mL of a 0.1 g/L solution of *chloramine R* and mix immediately. After exactly 2 min, add 0.15 mL of *0.1 M sodium thiosulfate*, mix and dilute to 10.0 mL with *water R*. The absorbance (*2.2.25*) of the solution measured at 590 nm, using *water R* as the compensation liquid, is not greater than that of a standard prepared at the same time and in the same manner, using 5.0 mL of a 3.0 mg/L solution of *potassium bromide R*.

Ferrocyanides. Dissolve 2.0 g in 6 mL of *water R*. Add 0.5 mL of a mixture of 5 mL of a 10 g/L solution of *ferric ammonium sulfate R* in a 2.5 g/L solution of *sulfuric acid R* and 95 mL of a 10 g/L solution of *ferrous sulfate R*. No blue colour develops within 10 min.

Iodides. Moisten 5 g by the dropwise addition of a freshly prepared mixture of 0.15 mL of *sodium nitrite solution R*, 2 mL of *0.5 M sulfuric acid*, 25 mL of *iodide-free starch solution R* and 25 mL *of water R*. After 5 min, examine in daylight. The mixture shows no blue colour.

Nitrites. To 10 mL of solution S add 10 mL of *water R*. The absorbance (*2.2.25*) is not greater than 0.01 at 354 nm.

Phosphates (*2.4.11*): maximum 25 ppm.
Dilute 2 mL of solution S to 100 mL with *water R*.

Sulfates (*2.4.13*): maximum 200 ppm.
Dilute 7.5 mL of solution S to 30 mL with *distilled water R*.

Aluminium (*2.4.17*): maximum 0.2 ppm, if intended for use in the manufacture of peritoneal dialysis solutions, haemodialysis solutions or haemofiltration solutions.
Prescribed solution. Dissolve 20.0 g in 100 mL of *water R* and add 10 mL of *acetate buffer solution pH 6.0 R*.
Reference solution. Mix 2 mL of *aluminium standard solution (2 ppm Al) R*, 10 mL of *acetate buffer solution pH 6.0 R* and 98 mL of *water R*.
Blank solution. Mix 10 mL of *acetate buffer solution pH6.0 R* and 100 mL of *water R*.

Arsenic (*2.4.2, Method A*): maximum 1 ppm, determined on 5 mL of solution S.

Barium. To 5 mL of solution S add 5 mL of *distilled water R* and 2 mL of *dilute sulfuric acid R*. After 2 h, any opalescence in the solution is not more intense than that in a mixture of 5 mL of solution S and 7 mL of *distilled water R*.

Iron (*2.4.9*): maximum 2 ppm, determined on solution S.
Prepare the standard using a mixture of 4 mL of *iron standard solution (1 ppm Fe) R* and 6 mL of *water R*.

Magnesium and alkaline-earth metals (*2.4.7*): maximum 100 ppm, calculated as Ca and determined on 10.0 g.
Use 150 mg of *mordant black 11 triturate R*. The volume of *0.01 M sodium edetate* used is not more than 2.5 mL.

Potassium: maximum 500 ppm, if intended for use in the manufacture of parenteral preparations or haemodialysis, haemofiltration or peritoneal dialysis solutions.
Atomic emission spectrometry (*2.2.22, Method I*).
Test solution. Dissolve 1.00 g in *water R* and dilute to 100.0 mL with the same solvent.
Reference solutions. Dissolve 1.144 g of *potassium chloride R*, previously dried at 100-105 °C for 3 h, in *water R* and dilute to 1000.0 mL with the same solvent (600 µg of K per millilitre). Dilute as required.
Wavelength: 766.5 nm.

Heavy metals (*2.4.8*): maximum 5 ppm.
12 mL of solution S complies with test A. Prepare the reference solution using *lead standard solution (1 ppm Pb) R*.

Loss on drying (*2.2.32*): maximum 0.5 per cent, determined on 1.000 g by drying in an oven at 105 °C for 2 h.

ASSAY
Dissolve 1.0000 g in *water R* and dilute to 100.0 mL with the same solvent. To 10 mL of the solution add 50 mL of *water R*, 5 mL of *divte nitric acid R*, 25 mL of *0.1 M silver nitrate* and 2 mL of *dibutyl phthalate R*. Shake. Titrate with *0.1 M ammonium thiocyanate*, using 2 mL of *ferric amonium sulfate solution R2* as indicator and shaking vigorously towards the end-point.

1 mL of *0.1 M silver nitrate* is equivalent to 5.844 mg of NaCl.