

## GLUCOSE, LIQUID

Glucosum liquidum

### DEFINITION

Liquid glucose is an aqueous solution containing a mixture of glucose, disaccharides and polysaccharides obtained by hydrolysis of starch. It contains not less than 70.0 per cent of dry matter. The degree of hydrolysis expressed as dextrose equivalent (DE) is not less than 20 and is within 10 per cent of the value stated on the label.

### CHARACTERS

A clear, colourless or brown viscous liquid, miscible with water. The substance may partly or totally solidify at room temperature and liquefies again when heated to 50 °C.

### IDENTIFICATION

A. Dissolve 0.1 g in 2.5 ml of *water R* and heat with 2.5 ml of *cupri-tartaric solution R*. A red precipitate is formed.

B. Dip, for 1 s, a suitable stick with a reactive pad containing glucose-oxidase, peroxidase and a hydrogen-donating substance, such as tetramethylbenzidine, in a 5 g/l solution of the substance to be examined. Observe the colour of the reactive pad; within 60 s the colour changes from yellow to green or blue.

C. It is a clear, colourless or brown viscous liquid, miscible with water. The substance may partly or totally solidify at room temperature and liquefies again when heated to 50 °C.

D. It complies with the test for dextrose equivalent (see Tests).

### TESTS

**Solution S.** Dissolve 25.0 g in *carbon dioxide-free water R* and dilute to 50.0 ml with the same solvent.

**pH** (2.2.3). The pH of a mixture of 30 ml of solution S and 1 ml of a 223.6 g/l solution of *potassium chloride R* is 4.0 to 6.0.

**Sulphur dioxide** (2.5.29). Not more than 20 ppm. Not more than 400 ppm if intended for the production of hard boiled candies, provided that

the final product does not *contain* more than 50 ppm of sulphur dioxide.

**Heavy metals** (2.4.8). Dilute 2 ml of solution S to 30 ml with *water R*. The solution complies with limit test E for heavy metals (10 ppm). Prepare the standard using 10 ml of *lead standard solution (1 ppm Pb) R*.

**Loss on drying** (2.2.32). Not more than 30.0 per cent, determined on 1.000 g. Triturate the sample with 3.000 g of *kieselguhr G R*, previously dried for 2 h at 80 °C under reduced pressure, and dry for 2 h at 80 °C *under reduced pressure*.

**Sulphated ash** (2.4.14). Not more than 0.5 per cent, determined on 1.0 g.

**Dextrose equivalent.** Accurately weigh an amount of the sample to be examined equivalent to 2.85 g to 3.15 g of reducing carbohydrates, calculated as dextrose equivalent, into a 500 ml volumetric flask. Dissolve in *water R* and dilute to 500.0 ml with the same solvent. Transfer the solution to a 50 ml burette.

Pipette 25.0 ml of *cupri-tartaric solution R* into a 250 ml flask and add 18.5 ml of the sample solution from the burette, mix and add boiling chips. Place the flask on a hot plate, previously adjusted so that the solution begins to boil within 2 min ± 15 s. Leave to boil for exactly 120 s, add 1 ml of a 1 g/l solution of *methylene blue R* and titrate with the sample solution ( $V_1$ ) until the blue colour disappears. Maintain the solution at boiling throughout the titration.

Standardise the cupri-tartaric solution using a 6.00 g/l solution of *glucose R* ( $V_0$ )

Calculate the dextrose *equivalent (DE)* from the equation:

$$DE = (300 \times V_0 \times 100) / (V_1 \times M \times D)$$

$V_0$  = total volume of glucose standard solution, in millilitres,

$V_1$  = total volume of sample solution, in millilitres,

$M$  = sample weight, in grams,

$D$  = percentage content of dry matter in the substance.

### LABELLING

The label states the dextrose equivalent (DE).