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Liquid Glucose

CAS RN®: 8027-56-3.

Change to read:

DEFINITION

Liquid Glucose is a product obtained by the incomplete hydrolysis of starch. It consists chiefly of dextrose, dextrans, maltose, and water. ▲The dextrose equivalent (DE) of Liquid Glucose is NLT 20 and NMT 100 and 90.0%–110.0% of the labeled value.▲ (NF 1-Aug-2024)

IDENTIFICATION

- **A.** It meets the requirements in the Assay for *Reducing Sugars (Dextrose Equivalent)*.

ASSAY

Change to read:

- **REDUCING SUGARS (DEXTROSE EQUIVALENT)**

▲**Mobile phase:** Water

Standard solution A: Prepare a solution in *Mobile phase*, containing a total of 2% of dextrose and 1.5% of maltose, using [USP Dextrose RS](#) and [USP Maltose Monohydrate RS](#).

Standard solution B: Prepare a solution in *Mobile phase*, containing a total of 10% (w/v) of saccharide solids, by diluting [USP Corn Syrup DE 42 RS](#) with *Mobile phase*.

Sample solution: Dilute a known weight of Liquid Glucose, determined from the result of the test for *Water Determination*, with *Mobile phase* to have 10% (w/v) of solids.

Chromatographic system

(See [Chromatography \(621\), System Suitability](#).)

Mode: LC

Detector: Refractive index

Columns

Guard: 4.6-mm × 3-cm¹

Analytical: 7.8-mm × 30-cm; two analytical columns, 25-μm packing [L124](#)²

Temperatures

Column: 85°

[NOTE—For high-maltose corn syrup made by enzyme hydrolysis, a column temperature of 60 ± 1° may be needed. Column and detector temperatures (±1°) will help achieve system suitability requirements.]

Detector: 45°

Flow rate: 0.4 mL/min

Injection volume: 20 μL

Run time: 60 min

System suitability

Samples: *Standard solution A* and *Standard solution B*

[NOTE—See [Table 1](#) for the relative retention times.]

Table 1

^a DP₁, monosaccharides, primarily dextrose, in liquid glucose or corn syrup; DP₂, disaccharides, primarily maltose; DP₃, trisaccharides, primarily maltotriose; DP₄, maltotetraose; DP₅₊, oligosaccharides and polysaccharides.

Degree of Polymerization (DP _x) ^a	Relative Retention Time
1	1.00
2	0.88
3	0.78
4	0.71
5	0.64
6	0.59
7	0.55
8	0.51
9	0.49
10	0.46
11	0.45
12	0.43
13	0.42
14	0.41
15	0.37

Suitability requirement

Resolution: NLT 2.0 between the dextrose and maltose peaks using vertical drop-down integration, *Standard solution A*; NLT 0.2 between DP₉ and DP₁₀ using vertical drop-down integration, *Standard solution B*

Analysis

Samples: *Standard solution A*, *Standard solution B*, and *Sample solution*

Identify each saccharide peak in the *Sample solution* based on that in *Standard solution A* and *Standard solution B* using vertical drop-down integration.

Calculate the percentage of each saccharide (S_x) in the portion of Liquid Glucose taken:

$$\text{Result} = (r_A / r_B) \times 100$$

r_A = peak response of each saccharide from the *Sample solution*

r_B = sum of all of the peak responses, excluding peak responses due to solvent from the *Sample solution*

The expected DE values for each component are listed in [Table 2](#).

Table 2

Degree of Polymerization (DP _x)	Expected DE 25 Products	Expected DE 36 and DE 42 Products	Expected DE ≥ 63 Products
1	100.00	100.00	100.00



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