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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 20882.2-2021

Replacing GB/T 20885-2007

**Quality requirements for starch sugar - Part 2: Glucose syrup
and glucose syrup powder**

淀粉糖质量要求 第2部分：葡萄糖浆和葡萄糖浆粉

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Foreword

This document was drafted in accordance with the rules given in GB/T 1.1-2020 "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document is one of the series of standards "Quality requirements for starch sugar". The following parts have been released: GB/T 20880, Edible dextrose; GB/T 20882.2, Part 2: Glucose syrup and glucose syrup powder; GB/T 20882.3, Part 3: Crystalline fructose and solid fructose-glucose; GB/T 20882.4, Part 4: High fructose syrup; GB/T 20882.6, Part 6: Maltodextrin.

This document replaces GB/T 20885-2007 "Glucose syrup". Compared with GB/T 20885-2007, the main technical changes are as follows:

- the terms and definitions have been amended (see 3.1; 3.1 of the 2007 edition);
- the classification, the requirements and the corresponding test methods for solid products have been added (see 4.1, Clause 5, 6.3, 6.5, 6.6 and 6.8);
- "transmittance" in the physical and chemical requirements has been changed to "light transmittance" (see 5.2; 5.2 of the 2007 edition);
- the physical and chemical requirements and the test methods for protein and for sugar boiling temperature have been deleted (see 6.6 and 6.7 of the 2007 edition);
- the physical and chemical requirements for DE value, pH and sulfated ash have been

changed (see 5.2; 5.2 of the 2007 edition);

- the test method for dry matter (solid matter) has been changed (see 6.4; 6.2 of the 2007 edition).

Attention is drawn to the possibility that some elements of this document may be the subject of patent rights. The issuing organization is not responsible for identifying patents.

This document is under the jurisdiction of the National Technical Committee 64 on Food Industry of Standardization Administration of China (SAC/TC 64).

The previous versions of this document, and of the document it replaces, are: the first version, released in 2007, was GB/T 20885-2007; this is the first revision.

1 Scope

This document specifies the quality requirements for glucose syrup and glucose syrup powder, including the terms and definitions, the product classification, the requirements, the test methods, the inspection rules, and the marking, packaging, transportation and storage.

It applies to the production, inspection and sale of glucose syrup and glucose syrup powder.

2 Normative references

The following documents are normatively referenced in this document, in whole or in part, and are indispensable for its application. For dated references, only the version corresponding to that date applies; for undated references, the latest version - including all amendments - applies.

GB/T 191 Packaging - Pictorial marking for handling of goods · GB/T 601 Chemical reagent - Preparations of reference titration solutions · GB/T 602 Chemical reagent - Preparations of standard solutions for impurity · GB/T 603 Chemical reagent - Preparations of reagent solutions for use in test methods · GB/T 6682 Water for analytical laboratory use - Specification and test methods · GB 5009.3-2016 National food safety standard - Determination of moisture in foods

3 Terms and definitions

3.1 glucose syrup - a mixed syrup containing glucose, obtained by hydrolysing and refining starch or starchy material by the whole-enzymatic method, the acid process, the enzymatic-acid method or the acid-enzymatic method.

4 Product classification

4.1 By product form, the products are divided into glucose syrup and glucose syrup powder.

4.2 Glucose syrup is divided, according to its glucose equivalent (DE value), into low DE value glucose syrup, medium DE value glucose syrup and high DE value glucose syrup.

5 Requirements

5.1 Sensory requirements shall be in accordance with Table 1.

6 Test methods

6.1 General requirements. Unless otherwise specified, the water used shall meet the requirements for water given in GB/T 6682; unless otherwise specified, the reagents used shall be of analytical grade.

6.2 Sensory requirements. Take an appropriate amount of sample; observe its state and colour under natural light; smell it and taste it.

6.3.2.1 Preparation of the sample solution. Weigh a quantity of sample accurate to 0.000 1 g - the amount taken should give 550 mg to 650 mg of reducing sugar per 100 mL of sample solution - place it in a 50 mL beaker, dissolve it in hot water and transfer it to a 250 mL volumetric flask; cool to room temperature, dilute to the mark with water, shake well and set aside.

6.3.2.2 Pre-titration. Following the calibration procedure for Fehling's solution, pipette 25 mL of mixed Fehling's solution into a conical flask; add 10 mL of water and three glass beads; using a 25 mL burette, add 18 mL of the sample solution.

6.3.2.3 Formal titration. Pipette 25 mL of the mixed Fehling's solution into a conical flask and proceed as for the pre-titration, adding from the burette about 0.5 mL less of the sample solution than in the pre-titration.

6.3.4 Precision. The absolute difference between two independent results obtained under repeatability conditions shall not exceed 2 % of their arithmetic mean.

6.4.2 Instrument calibration. At 20 °C the refractive index of the refractometer, corrected with grade II water, is 1.333 0, corresponding to zero dry matter (solid matter). The instrument shall be calibrated at least once a day.

6.4.3 Analysis steps. Place the refractometer in a well-lit position; bring the temperature of its prisms to 20 °C; separate the two prisms; with a glass rod add one or two drops of sample to the surface of the fixed prism - the rod shall not touch the prism surface, and the application shall take less than 2 s.

6.4.4 Precision. The absolute difference between two independent results obtained under repeatability conditions shall not exceed 1 % of their arithmetic mean.

6.5 Moisture. Determine according to Method I, "Direct drying method", of GB 5009.3-2016, with the drying temperature set at 105 °C ± 2 °C.

6.6.1 Instruments. Acidity meter, accurate to 0.01 pH, fitted with a glass electrode and a calomel electrode, or with a combination electrode.

6.6.3 Precision. The absolute difference between two independent results obtained under repeatability conditions shall not exceed 3 % of their arithmetic mean.

6.7 Light transmittance. Determined by spectrophotometry. The absolute difference between two independent results obtained under repeatability conditions shall not exceed 1 % of their arithmetic mean.

6.8.2 Instruments. Porcelain crucible, 50 mL; high-temperature furnace with a control range of $525\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$; desiccator with silica gel as desiccant; analytical balance accurate to 0.01 mg.

6.8.3.1 Analysis steps. First boil the crucible with hydrochloric acid, then wash it under running water and clean it with distilled water. Place the cleaned crucible in the high-temperature furnace and burn it at $525\text{ }^{\circ}\text{C} \pm 25\text{ }^{\circ}\text{C}$ for 0.5 h; remove it, cool it at room temperature to below $200\text{ }^{\circ}\text{C}$, place it in a desiccator and cool it to room temperature; weigh it accurately, and repeat the burning to constant weight - the difference between two successive weighings shall not exceed 0.3 mg. Express the result to two decimal places.

6.8.5 Precision. The absolute difference between two independent results obtained under repeatability conditions shall not exceed 5 % of their arithmetic mean.

7 Inspection rules

7.1 Batch. Products of the same raw materials, the same formula and the same process, produced continuously on the same production line and of uniform quality, constitute one batch.

7.2.2.1 Glucose syrup powder sampling. When sampling a whole batch, a number of packaging units shall first be taken from the batch, and uniform samples shall then be taken from those packaging units.

7.3.1 Delivery inspection. Before delivery the products shall be inspected batch by batch according to this document, and shall not leave the factory until the inspection meets its requirements.

7.4 Type inspection. The inspection items are all those specified in the requirements of this document. Type inspection is generally carried out once every six months.

7.5.1 Determination rules. When all the inspection items of the sampled products meet the requirements, the batch is determined to conform to this document.

8 Marking, packaging, transportation and storage

8.1.1 The product classification shall be indicated on the label or in the instruction manual;