Liquid glucose (glucose syrup) — Specification
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Wherever the words, “East African Standard” appear, they should be replaced by “Uganda Standard.”
FINAL DRAFT EAST AFRICAN STANDARD

Liquid glucose (glucose syrup) — Specification

EAST AFRICAN COMMUNITY
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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Community established an East African Standards Committee mandated to develop and issue East African Standards.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

FDEAS 349 was prepared by Technical Committee EASC/TC 19, Sugar and sugar confectionary.

This second edition cancels and replaces the first edition (EAS 349: 2004), which has been technically revised.
Liquid glucose (glucose syrup) — Specification

1 Scope

This Final Draft East African Standard specifies the requirements and the methods of sampling and test for liquid glucose (glucose syrup) for human consumption.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CODEX STAN 192, General standard for food additives
EAS 38, Labelling of pre-packaged foods — Specification
EAS 39, Hygiene for food and drink manufacturing industry — Code of practice
ICUMSA GS 1/2/3/4/7/8/9 – 23, Determination of pH by direct method
ICUMSA GS 3/4/7/8- 11, Determination of sulphated ash in brown sugar, juice, syrup and molasses
ISO 1743, Glucose syrup, Determination of dry matter content — Refractive index method
ISO 4833-1, Microbiology food chain — Horizontal method for enumeration for microorganism — Part 1, colony count at 30 degrees C by the pour plate technique
ISO 5377, Starch hydrolysis products — Determination of reducing power and dextrose equivalent — Lane and Eynon constant titre method
ISO 5379, Starches and derived product — Determination of sulphur dioxide content — Acidimetric method and nephelometric method
ISO 6579, Microbiology of food and animal feeding stuffs — Horizontal method for detection of Salmonella spp.
ISO 7251, Microbiology of food and animal feeding stuffs — Horizontal method for detection and enumeration of presumptive Escherichia coli — Most probable number technique
ISO 21527-2, Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of yeasts and moulds — Part 2: Colony count technique in products with water activity less than or equal to 0.95

3 Term and definition

For the purposes of this standard, the following term and definition shall apply.

**liquid glucose (glucose syrup)**
purified and concentrated aqueous solution of nutritive saccharose obtained from starch
4 Requirements

4.1 General requirements

The product shall be:

a) in the form of odourless and viscous syrup with characteristic sweet taste;

b) clear, free from fermentation, mould growth, sediment, dirt or other suspended and extraneous matter;

c) free from objectionable matter;

d) free from added sweetening and flavouring agents; and

e) free from added colouring material.

4.2 Specific requirements

4.2.1 When a 50 % (m/v) solution of the material of regular conversion grade is tested in a Lovibond Tintometer in a 2.54-cm cell, the colour of the material in terms of Lovibond units shall not be deeper than:

a) 0.1 yellow and 0.1 red within a period of 90 days from the date of manufacture; and

b) 0.2 yellow and 0.1 red within a period of 180 days from the date of manufacture.

4.2.2 The material shall also comply with the specific quality requirements given in Table 1.

Table 1 — Specific quality requirements for liquid glucose

<table>
<thead>
<tr>
<th>S/N</th>
<th>Characteristic</th>
<th>Requirement</th>
<th>Test Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Dextrose Equivalent (DE) value, % m/m dry basis, min.</td>
<td>20</td>
<td>ISO 5377</td>
</tr>
<tr>
<td>ii.</td>
<td>Total solids, % m/m, min.</td>
<td>70</td>
<td>ISO 1743</td>
</tr>
<tr>
<td>iii.</td>
<td>Sulphated ash, % m/m, max.</td>
<td>1.0</td>
<td>ICUMSA GS 3/4/7/8-11</td>
</tr>
<tr>
<td>iv.</td>
<td>pH</td>
<td>4.5 - 5.5</td>
<td>ICUMSA GS 1/2/3/4/7/8/9-23</td>
</tr>
<tr>
<td>v.</td>
<td>Sulphur dioxide, mg/kg, max.</td>
<td>400</td>
<td>ISO 5379</td>
</tr>
</tbody>
</table>

5 Food additives

Only the food additives permitted in CODEX STAN 192 may be used.

6 Contaminants

6.1 Pesticide residues

Liquid glucose shall comply with the maximum pesticide residues limits established by the Codex Alimentarius Commission for this commodity.

6.2 Heavy metals

Liquid glucose shall be free from heavy metals in amounts which may represent a hazard to human health.
7 Hygiene

Liquid glucose shall be prepared and handled in accordance with EAS 39 and shall comply with microbiological limits stipulated in Table 2.

<table>
<thead>
<tr>
<th>S/N</th>
<th>Microorganisms</th>
<th>Maximum limit</th>
<th>Test methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Total aerobic count, cfu/g, max.</td>
<td>100</td>
<td>ISO 4833-1</td>
</tr>
<tr>
<td>ii.</td>
<td>Yeast and moulds, cfu/g, max.</td>
<td>10</td>
<td>ISO 21527-2</td>
</tr>
<tr>
<td>iii.</td>
<td>Escherichia coli, cfu/g</td>
<td>Absent</td>
<td>ISO 7251</td>
</tr>
<tr>
<td>iv.</td>
<td>Salmonella, cfu/25 g</td>
<td>Absent</td>
<td>ISO 6579</td>
</tr>
</tbody>
</table>

8 Packaging

Liquid glucose shall be packaged in food grade and leak-proof containers.

9 Weights and measures

The volume and the fill of liquid glucose shall comply with weights and measures regulations of Partner States or equivalent legislation.

10 Labelling

Liquid glucose shall be labelled in accordance with requirements specified in EAS 38. In addition, the following shall be legibly and indelibly marked on each package:

a) name and physical address of manufacturer/importer/distributor/packer;
b) product name as “Liquid glucose (Glucose syrup)”;
c) date of manufacture;
d) expiry date;
e) list of ingredients in descending order;
f) storage instructions;
g) country of origin;
h) batch/lot number;
i) net content in SI units;
j) instructions for disposal of the used package; and
k) declaration of dextrose equivalent value.
11 Sampling

11.1 General requirements

In drawing, preparing, storing and handling of samples, the following precautions and directions shall be observed:

a) samples shall be taken in a protected place not exposed to damp air, dust or soot;

b) sampling instruments shall be clean and dry when used;

c) when sampling for microbiological purposes, the sampling instruments and containers for samples shall be sterilized preferably by dry heat at 170 °C for 1 h before use;

d) precautions shall be taken to protect the samples, the material being sampled, the sampling instruments and the containers for samples from adventitious contamination;

e) samples shall be placed in clean, dry, and moisture-proof containers;

f) sample containers shall be sealed air-tight after filling and marked with name of material, date of sampling, name of the manufacturer, name of the person sampling and such other particulars of the consignments; and

g) samples shall be protected from light as far as practicable and shall be stored in a cool, dry place.

11.2 Scale of sampling

11.2.1 All the packages of the same size, type and style which have been manufactured and packaged under essentially the same conditions in a single consignment shall constitute a lot. Samples shall be tested separately for each lot for ascertaining the conformity of the product.

11.2.2 The number of packages to be selected \( (n) \) from the lot shall depend on the size \( (N) \) of the lot and shall be in accordance with the formula:

\[
n = \sqrt{N}
\]

where

\( n \) number of packages to be selected; and

\( N \) size of the lot.

11.2.3 These packages shall be selected at random from the lot; to ensure the randomness of selection a random number table, as agreed to between the purchaser and the supplier shall be used. In case such a table is not available, the following procedure shall be used:

Starting from any package, count them as 1, 2, 3, ..., up to \( r \) and so on in one order, where \( r \) is equal to the integral part of \( N/n \), \( N \) being the total number of packages in the lot and \( n \) the number of packages to be selected. Every \( r \)th package thus counted shall be separated until the requisite number of packages is obtained from the lot to give samples for test; in case of packages stacked in a pyramidal shape, approximately equal number of packages shall be selected from all exposed sides of the lot, so as to give the required number of sample packages.
11.3 Preparation of sample

11.3.1 Procedure

From the top, middle and bottom portions of each of the selected packages (see 11.2) approximately equal quantity of product shall be taken with the help of a suitable sampling instrument. The sample collected from each of the packages shall be thoroughly mixed so as to give a composite sample of 600 g. The composite sample thus prepared shall be divided approximately into three equal parts; one for the purchaser, one for the supplier, and the third for the referee and sealed air tight with particulars as given in 11.1 f).

11.3.2 Number of tests

The composite sample prepared as under 11.3.1 shall be tested for the characteristics as prescribed in Table 1.

11.3.3 Criteria for conformity

The lot shall be declared as conforming to this specification, when the test results on various characteristics obtained on the composite sample satisfy the corresponding requirements.