DUS DEAS 36-1

# DRAFT UGANDA STANDARD

First Edition
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## Honey — Specification — Part 1: Table honey

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## National foreword

Uganda National Bureau of Standards (UNBS) is a parastatal under the Ministry of Trade, Industry and Cooperatives established under Cap 327, of the Laws of Uganda, as amended. UNBS is mandated to co-ordinate the elaboration of standards and is

(a) a member of International Organisation for Standardisation (ISO) and

(b) a contact point for the WHO/FAO Codex Alimentarius Commission on Food Standards, and

(c) the National Enquiry Point on TBT Agreement of the World Trade Organisation (WTO).

The work of preparing Uganda Standards is carried out through Technical Committees. A Technical Committee is established to deliberate on standards in a given field or area and consists of representatives of consumers, traders, academicians, manufacturers, government and other stakeholders.

Draft Uganda Standards adopted by the Technical Committee are widely circulated to stakeholders and the general public for comments. The committee reviews the comments before recommending the draft standards for approval and declaration as Uganda Standards by the National Standards Council.

This Draft Uganda Standard, DUS DEAS 36-1: 2019*, Honey — Specification — Part 1: Table honey*, is identical with and has been reproduced from an East African Standard, DEAS 36-1: 2019, *Honey — Specification — Part 1: Table honey,* and is being proposed for adoption as a Uganda Standard.

The committee responsible for this document is Technical Committee UNBS/TC 2, *Food and agriculture.*

Wherever the words, “East African Standard " appear, they should be replaced by "Uganda Standard."

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DEAS 36-1: 2019

ICS **67.180.20**

# DRAFT EAST AFRICAN STANDARD

## Honey — Specification — Part 1: Table honey

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## 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.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. 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 Principles and procedures for development of East African Standards.

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.

The committee responsible for this document is EASC/TC 011, *Apiary and apiary products*.

This second edition cancels and replaces the first edition (EAS 36:2000), which has been technically revised.

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# Honey — Specification — Part 1: Table honey

## 1 Scope

This Draft East African Standard specifies the requirements, sampling and test methods for honey produced by honeybees of genus Apis for human consumption.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

AOAC *Official method 985.16 determination of Tin in canned foods — Atomic Absorption Spectrophotometric Method*

AOAC 920.181 *Determination of Ash content of Honey*

AOAC *Official Method 920.183 Sugars (Reducing) in Honey*

AOAC 920.184 *Determination of Sucrose in Honey*

AOAC *Official Method* 952.13 *for determination of Arsenic in food —Silver diethyldithiocarbamate*

AOAC 958.09 *Determination of Diastase Activity*

AOAC 962.19 *Determination of Acidity (Free, Lactone, and Total)*

AOAC 969.38b *Determination of Moisture Content*

AOAC 980.23 *Determination of hydroxymethylfurfural (HMF) content*

AOAC *Official Method 983.20 Mercury (Methyl) in Fish and Shellfish Gas Chromatographic Method*

AOAC *Official method 985.16 for determination of Tin in canned foods — Atomic absorption spectrophotometric method*

AOAC *Official method 999.10 for determination of Cadmium, Tin, Copper and Iron in foods*

*AOAC Official method 999.11 Determination of Lead, Cadmium, Copper, Iron, and Zinc in Foods*

EAS 38, *Labelling of pre-packaged foods — Specification*

EAS 39, *Hygiene in the food and drink manufacturing industry — Code of practice*

ISO 4831, *Microbiology of food and animal feeding stuffs — Horizontal method for the detection and enumeration of coliforms — Most probable number technique*

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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 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at http://www.iso.org/obp

**honey**
the natural sweet substance produced by honey bees of genus Apis from the nectar of plants or from secretions of living parts of plants or excretions of plant sucking insects on the living parts of plants, which the bees collect, transform by combining with specific substances of their own, deposit, dehydrate, store and leave in the honey comb to ripen and mature

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## 4 Types of honey

### 4.1 By origin

#### 4.1.1 Blossom honey or nectar honey

Honey which is derived mainly from nectarines of flowers

#### 4.1.2 Honey dew honey

Honey, which comes mainly from secretions of living parts of plants or excretions of plant sucking insects on the living parts of the plants. Its colour varies from very light brown or greenish to dark brown

#### 4.1.3 Monofloral honey

A type of honey which has a distinctive flavor or other attribute due to its being predominantly from the nectar of one plant species

#### 4.1.4 Fruit and plant juices honey

Honey made by bees from sweet substances such as juices and sap from fruits and plant phloem

### 4.2 By methods of processing

#### 4.2.1 Extracted honey

Honey only obtained by centrifuging decapped broodless combs

#### 4.2.2 Pressed honey

Honey obtained by pressing broodless combs with or without the application of moderate heat

#### 4.2.3 Drained honey

Honey obtained by draining decapped broodless combs


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### 4.3 By form of presentation

Honey which meets all the compositional and quality criteria of this standard may be presented as follows:

a) Honey which is honey in liquid or crystalline state or a mixture of the two;

b) Comb honey, which is honey, stored by bees in the cells of freshly built broodless combs and which is sold in sealed whole combs or sections of such combs;

c) Chunk honey, which is, honey containing one or more pieces of comb honey;

d) Crystalled or granulated honey which is honey that has undergone a natural process of solidification as a result of glucose crystallization; and

e) Creamed (or creamy or set) honey is honey which has a fine crystalline structure and which may have undergone a physical process to give it that structure and to make it easy to spread.

## 5 Requirements

### 5.1 General requirements

Honey shall;

a) not have added food ingredient, including food additives, nor shall any other additions be made other than honey*;*

b) not have any objectionable matter*,* flavour, aroma, or taint absorbed from foreign matter during its processing and storage;

c) not have begun to ferment or effervesce;

d) not have pollen or constituent particular to honey removed except where this is unavoidable in the removal of foreign inorganic or organic matter;

e) not be heated to such an extent that its essential composition and /or its quality is impaired;

f) not be chemically or biochemically treated to influence honey crystallisation;

g) have the colour varying from near colourless to dark brown (amber) depending on the botanical source.

h) have the consistency of fluid, viscous, partly or entirely crystallized;

i) have the flavour and aroma derived from plant origin; and

j) be free from visible mould and as far as practicable, be free from inorganic or organic matter foreign to its composition, such as insects, insect debris, brood or grains of sand, or soil, when the honey is offered for sale or is used in any product for human consumption.

### 5.2 Specific requirements

Honey shall comply with the specific requirements given in Table 1 when tested in accordance with test methods specified therein.

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**Table 1 — Specific requirements for honey**

| S/N | Characteristic | Requirement | Test method |
|---|---|---|---|
| i) | Reducing sugar content calculated as invert sugar, % m/m, min<br>- Other honey<br>- Honeydew honey | <br>60<br>45 | AOAC 920.183 |
| ii) | Moisture content, % m/m, max | 20 | AOAC 969.38 b |
| iii) | Sucrose content, % m/m, max | 5 | AOAC 920.184 |
| iv) | Water insoluble solids<br>- For honeys other than pressed honey, % m/m, max<br>- Pressed honey, % m/m, max | <br>0.1<br>0.5 | Annex A |
| v) | Total ash, % m/m, max | 0.6 | AOAC 920.181 |
| vi) | Acidity, %, m/m, max, as miliequivalents acid per kg or when expressed as formic acid percent by mass not more than 0.2 % | 40 | AOAC 962.19 |
| vii) | Diastase activity, schade, min | 8 | AOAC 958.09 |
| viii) | Hydroxymethylfurfural (HMF), mg/kg, max | 40 | AOAC 980.23 |
| ix) | Fructose-glucose ratio, min | 1 | Annex B |
| x) | Fiehe's test | Negative | Annex C |

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# 6 Food additives and contaminants

## 6.1 Food additives

Honey shall not contain any added substances either in the form of additions or additives.

## 6.2 Heavy metal contaminants

Honey shall be free from heavy metals in amounts which may represent a hazard to human health. The products covered by this Standard shall comply with those maximum levels for heavy metals established by the Codex Alimentarius Commission.

In particular, the levels of heavy metallic contaminants in honey shall not exceed limits given in Table 1, when tested in accordance with the test method prescribed therein.

**Table 2 — Limits for heavy metal contaminants**

| S/N | Heavy metal | Maximum level mg/kg (ppm) | Test method |
|---|---|---|---|
| i) | Arsenic | 0.1 | 952.13 |
| ii) | Lead | 0.1 | AOAC 999.11 |
| iii) | Tin | 5.0 | AOAC 985.16 |
| iv) | Mercury | 0.01 | AOAC 983.20 |
| v) | Cadmium | 0.03 | AOAC 999.10 |


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### 6.3 Residues of pesticides and veterinary drugs

The product shall comply with pesticides and veterinary drugs maximum residue limits for honey established by the Codex Alimentarius Commission.

## 7 Hygiene

Honey shall be processed and handled in hygienic manner in accordance with the EAS 39 and shall comply with the microbiological limits stipulated in Table 3 when tested in accordance with test methods specified therein.

**Table 3 — Microbiological requirements for honey**

| S/N | Microorganism | Requirement | Test method |
|---|---|---|---|
| i) | Coliform count, MPN/g, max. | Absent | ISO 4831 |
| ii) | Yeast and mould count, cfu/g, max. | < 10 | ISO 21527-2 |

## 8 Packaging

Honey shall be packaged in a food grade material that protects the integrity and safety of the product.

## 9 Weights and measures

The volume and fill of the container shall comply with weights and measures regulations in the respective partner state.

## 10 Labelling

In addition to the labelling requirements given in EAS 38, the package shall be legibly and indelibly marked with the following information:

a) name of the product as “Honey”;

b) type of honey as per clause 5.2;

c) name, location and physical address of the processor/packer;

d) country of origin;

e) date of packaging;

f) best before;

g) instructions for storage;

h) net content in SI unit; and

i) batch/lot number.

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## 11 Sampling

Sampling of honey shall be done in accordance with CAC/GL 50.

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# Annex A
(normative)

# Gravimetric determination of water-insoluble solids content (Type II method)

## A.1 Sampling

### A.1.1 Liquid or strained honey

If sample is free from granulation, mix thoroughly by stirring or shaking; if granulated, place closed container in water-bath without submerging, and heat 30 min. at 60 °C; then if necessary, heat at 65 °C until liquefied. Occasional shaking is essential. Mix thoroughly and cool rapidly as soon as sample liquefies. Do not heat honey intended for hydroxymethylfurfural or diastatic determination. If foreign matter, such as wax, sticks, bee's particles or comb, etc., is present, heat sample at 40 °C in water-bath and strain through cheesecloth in hot-water-funnel before sampling.

### A.1.2 Comb honey

Cut across top of comb, if sealed, and separate completely from comb by straining through a sieve the meshes of which are made by so weaving wire as to form square opening of 0.500 mm by 0.500 mm when portions of comb or wax pass through sieve, heat sample as in 7.1.3.1 and strain through cheesecloth. If honey is granulated in comb, heat until wax is liquefied; stir, cool and remove wax.

## A.2 Procedure

### A.2.1 Preparation of test sample

Honey (20 g) is weighted to the nearest centigram (10 mg) and dissolved in a suitable quantity of distilled water at 80 °C and mixed well.

### A.2.2 Gravimetric determination

The test sample is filtered through a previously dried and weighed fine sintered glass crucible (pore size 15.40) and washed thoroughly with hot water (80 °C) until free from sugars (Mohr test). The crucible is dried for one hour at 135 °C, cooled and weighed to 0.1 mg.

### A.2.3 Expression of results

The result is expressed as percent water insoluble solids (m/m).

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# Annex B
(normative)

# Determination of fructose-glucose ratio

## B.1 Principle of the method

The glucose portion of the invert sugar content of honey is determined by reacting it with iodine. The fructose content is calculated by subtraction.

## B.2 Reagents

— 0.05 N iodine solution

— 0.01 N sodium hydroxide solution

— Standard sodium thiosulphate solution (0.05 N).

## B.3 Procedure

Pipette 50 ml of honey solution in a 250 ml stoppered flask. Add iodine solution and 25 ml of sodium hydroxide solution. Stopper the flask and keep in dark for 20 min. Acidify with 5 ml of sulphuric acid and titrate quickly the excess of iodine against standard thiosulphate solution. Conduct a blank using 50 ml of water instead of honey solution.

## B.4 Calculation and expression of results

**B.4.1** Approximate glucose, percent by mass (g of glucose per 100 g honey):

$$w = \frac{(B-S)\times 0.004502\times 100}{a}$$

where

$B$ is the volume of sodium thiosulphate solution required for the blank (ml).

$S$ is the volume of sodium thiosulphate solution required for the sample (ml), and

$a$ is the mass of honey taken for the test.

**B.4.2** Approximate fructose, per cent by mass (g fructose per 100 g honey):

$$X = \frac{\text{Total reducing sugars (c) - approximate glucose content (w)}}{0.925}$$

**B.4.3** Actual glucose content (g per 100 g honey), per cent (y) = w - 0.012 x, and

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$$\text{Fructose content (g per 100 g honey), per cent (z)} = \frac{\text{Total reducing sugars} - \text{y actual}}{0.925}$$

**B.4.4** Fructose-glucose ratio = $\frac{\text{Actual fructose content (z)}}{\text{Actual glucose content (y)}}$

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# Annex C
# (normative)

# Fiehe's test

## C.1 Reagent

### Resorcinol solution

Dissolve 1 g of resublimed resorcinol in 100 ml of hydrochloric acid (sp. gr. 1.18 to 1.19).

## C.2 Procedure

Dissolve 2 g of honey in 10 ml of water and extract with 30 ml ether. A continuous extractor is preferable. Remove ether in a separating funnel and concentrate the layer at 5 ml. Add 2 ml of freshly prepared resorcinol solution, shake and note the colour.

## C.3 Expression of results

A cherry red colour appearing in a minute indicates the presence of commercial invert sugar.

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# Bibliography

EAS 36:2000, *Honey — Specification*

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