Chewing gum and bubble gum—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.

DEAS 352 was prepared by Technical Committee EASC/ TC/019, Sugar and sugar products.

This second edition cancels and replaces the first/ (352:2004), which has been technically revised.
Introduction

Chewing gum and bubble gum are made from natural or synthetic gum base, sugar and flavouring agents. Chewing gum and bubble gum are offered to consumers in several forms like candy coated gum, stick or stab gum, toffee shaped double gum and other types common in the markets. This standard is prepared to ensure safety and quality of chewing gum and bubble gum for human consumption.

In preparation of this standard assistance was derived from Indian standard IS 6747:
Chewing gum and bubble gum — Specification

1 Scope

This Draft East African Standard Specifies the requirements and methods of sampling and testing for chewing gum and bubble gum.

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.

EAS 39, 39 Hygiene for food and drink manufacturing industry — Code of practice

EAS 38, Labelling of pre-packaged foods

EAS 12, Specification for potable (drinking) water

ISO 5379: Starches and derived products -- Determination of sulfur dioxide content -- Acidimetric method and nephelometric method

ISO 5809 Starches and derived products -- Determination of sulphated ash

ISO 11212 – 1 Starch and derived products -- Heavy metals content -- Part 1: Determination of arsenic content by atomic absorption spectrometry

ISO 11212 – 3 Starch and derived products -- Heavy metals content -- Part 1: Determination of lead content by atomic absorption spectrometry

ISO 21527 Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of yeasts and moulds -- Part 1: Colony count technique in products with water activity greater than 0,95

ISO 6888 1 Microbiology of food and animal feeding stuffs -- Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species) -- Part 1: Technique using Baird-Parker agar medium

ISO 6579 Microbiology of food and animal feeding stuffs -- Horizontal method for the detection of Salmonella spp

ISO 16654:2001 Microbiology of food and animal feeding stuffs -- Horizontal method for the detection of Escherichia coli O157
3 Terms and Definitions

Chewing gum
confection made from natural or synthetic gum base containing flavours sweeteners(nutritive or non-nutritive), aroma compounds and any other appropriate additives.

Bubble gum
confection made from gum base, sweetener and other additives. The gum base should be strong and elastic enough to stretch and form a bubble when filled with air.

Cosmetic function
properties associated with breath freshening, teeth whitening and oral health care and related functions usually associated with approved food additives used such as xylitol

Sugar-free gum –
a gum whose sweetness is imparted by non-nutritive sweeteners

Functional Gum
gum containing other appropriate additives to attach functional properties like nutrition, medical or cosmetic.

4 Requirements

4.1 Ingredients
All ingredients shall comply with relevant East African Standards.

4.1.1 Essential ingredients
The following essential ingredients shall be used for the manufacture of chewing gum and bubble gum:

a) Food grade Gum base
b) Approved sweeteners.
4.1.2 Optional ingredients

In addition to the essential ingredients specified in 4.1, the following additional ingredients may also be used.

a) malt;
b) milk powder;
c) chocolate;
d) coffee;
e) water, potable
f) nutrients like vitamins, minerals, proteins;
g) polyols

4.2 General requirements

The sweetening agent in chewing or bubble gum shall be a sugar or non-sugar product (sugar free gum). The sugar free gum shall contain artificial or non nutritive sweeteners instead of sugar to provide sweetness.

Chewing or bubble gum may contain other appropriate additives to attach functional properties like nutrition, medical or cosmetic.

Chewing or bubble gum may have various physical appearances or designs depending on manufacturers technological innovations or customers and market desires

The chewing gum and bubble gum product shall:

a) Be safe and suitable for human consumption.
b) Be in any desired shape, size or colour with pleasant taste and flavour.
c) be free from foreign matter
d) Not be brittle or gritty, but smooth and with characteristic chewability.

4.3 Specific requirements

Chewing gum and bubble gum shall comply with the specific quality requirements stipulated in Table 1 below;
Table 1 — Requirements for Chewing Gum and Bubble Gum

<table>
<thead>
<tr>
<th>S/N</th>
<th>Characteristic</th>
<th>Requirement</th>
<th>TEST METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chewing gum</td>
<td>Bubble gum</td>
</tr>
<tr>
<td>1</td>
<td>Moisture, % by mass, max</td>
<td>3.5</td>
<td>3.5</td>
</tr>
<tr>
<td>2</td>
<td>Ash, sulphated (if sugar based), % by mass, max</td>
<td>9.5</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Acid insoluble ash, percent by mass, max</td>
<td>/2.0</td>
<td>/3.5</td>
</tr>
<tr>
<td>4</td>
<td>Reducing sugars (if sugar based), % by mass, max</td>
<td>4.5</td>
<td>5.5</td>
</tr>
<tr>
<td>5</td>
<td>Sucrose (if sugar based), % by mass, max</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>Zinc</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Gum base, % by mass, min</td>
<td>12.5</td>
<td>14.0</td>
</tr>
<tr>
<td>8</td>
<td>Copper</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

5. Food additives

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

6. Contaminants

6.1 Pesticide residues

Chewing gum and bubble gum shall comply with those maximum pesticide residues established by the Codex Alimentarius Commission for this commodity.

6.2 Heavy Metal

Chewing gum and bubble gum shall be free from heavy metals in amounts which may represent a hazard to human health.

7. Hygiene

The product shall be processed, packaged, stored and distributed under hygienic conditions prescribed in the EAS 39: *Hygiene for food and drink manufacturing industry — Code of practice*
When tested by appropriate methods of sampling and analysis, the products shall be free from microorganisms in amounts which may represent a hazard to health and shall meet the requirements in Table 3.

Table 3 — Microbiological Limits for chewing gum and bubble gum

<table>
<thead>
<tr>
<th>S. No</th>
<th>Characteristic</th>
<th>Requirement</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Yeast and Moulds, cfu per 10</td>
<td>Absent</td>
<td>ISO 21527 – 1</td>
</tr>
<tr>
<td>ii</td>
<td>E. coli, cfu in 25g</td>
<td>Absent</td>
<td>ISO 16654</td>
</tr>
<tr>
<td>iii</td>
<td>S. aureus, cfu per g</td>
<td>Absent</td>
<td>ISO 6888 – 1</td>
</tr>
<tr>
<td>iv</td>
<td>Salmonella, cfu in 25g</td>
<td>Absent</td>
<td>ISO 6579</td>
</tr>
</tbody>
</table>

8. Packaging

8.1 bubble gum and chewing gum shall be packaged in food grade material which guarantees the safety and integrity of the product.

8.2 The fill of each package shall comply with weights and measures legislation and legal metrology of the Partner State

9. Labelling

9.1 In addition to requirements in EAS 38 on labelling, the following shall be legibly and indelibly marked on each package:

i) name and physical address of manufacturer/importer/distributor/packer;

ii) product name as “Chewing gum” or “Bubble gum”;

iii) date of manufacture;

iv) expiry date;

v) list of ingredients in descending order;

vi) storage instructions (for bags/cartons);

vii) country of origin;

viii) batch/lot number;

ix) net weight in grams (g), Kilograms (Kg) or number of pieces in the package;

x) instructions for disposal of the used package.
Xi) Declaration of the cosmetic and/or nutritional function if any

9.2 Nutrition and Health claim

Any nutrition and health claim associated with chewing or bubble gum shall conform to EAS _805

10. Sampling

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

Samples shall be taken in a protected place not exposed to damp air, dust or soot.

The sampling instruments shall be clean and dry when used.

When sampling for microbiological purposes, the sampling instruments and containers for samples shall be sterilized preferably by dry heat at 170 °C for one hour before use.

Precautions shall be taken to protect the samples, the material being sampled, the sampling instruments and the containers for samples from adventitious contamination.

The samples shall be placed in clean, dry, and moisture-proof containers.

The sample containers shall be sealed air tight after filling, and marked with full details of sampling: the date of sampling, batch number, name and place of factory, name of the person sampling and other important particulars of the consignments.

Samples shall be protected from light as far as practicable and shall be stored in a cool and dry place.
Annex A
(normative)
Determination of acid insoluble ash

C.1 Reagent

C.1.1 Dilute hydrochloric acid, approximately 5 N (prepared from concentrated hydrochloric acid).

C.2 Procedure

C2.1 Weigh accurately 20 g of the prepared sample (see A.1.1) in a tared, clean and dry porcelain dish.

Ignite the material in the dish with the flame of a meker burner for about one hour. Complete the ignition by keeping in the sample material in a muffle furnace at 600 ± 20 °C until grey ash results.

C.2.2 Cool in a desiccator. Add 25 mL of this dilute hydrochloric acid to the ash, cover with a watch-glass and heat on a water bath for 10 min. Allow to cool and filter the content of the dish through a Whatman until the washings are free from chlorides. Return the filter and the residue to the dish. Keep it in an air-oven maintained at 105 ± 2 °C for 3 h. Ignite in the muffle furnace at 600 ± 20 °C for 30 min in the muffle furnace, cool and weigh. Repeat this process of heating for 30 min, cooling and weighing till the difference between two successive weighing is less than one milligram. Record the lowest mass.

C.3 Calculation

C.3.1 Acid insoluble ash, percent by mass = \( \frac{100(m_2 - m)}{m_1 - m} \)

where,

\( m_2 \) is the mass, in g of the porcelain dish with the acid insoluble ash;

\( m \) is the mass, in g of the empty porcelain dish;

\( m_1 \) is the mass, in g of the porcelain dish with the prepared sample taken for the test.
Annex B
(normative)
Determination of sucrose

E.1 Reagents

E.1.1 Concentrated hydrochloric acid, sp. gr. 1.6, of analytical reagent grade.

E.1.2 Fehling's solution (soxhlet modification), prepared by mixing immediately before use, equal volumes of solution A and solution B.

E.1.2.1 Solution A
Dissolve 34.639 g of copper sulphate (CuSO₄·5H₂O) in water, add 0.5 mL of concentrated sulphuric acid (sp.gr. 1.84), and dilute to 500 mL in a graduated flask. Filter the solution through prepared asbestos.

E.1.2.2 Solution B
Dissolve 173 g of Rochelle salt (potassium sodium tartrate (KNaC₄H₄O₆·4H₂O) and 50 mg of sodium hydroxide (analytical reagent) in water, dilute to 500 mL in a graduated flask and allow the solution to standard for two days. Filter this solution through prepared asbestos.

E.2 Procedure
Take 10 mL of the prepared solution (see clause D2.1) in a conical flask, add 1.5 mL of the concentrated hydrochloric acid and about 10 mL of water. Heat the flask at 60 °C to 70 °C for 10 min in a water-bath. Cool immediately and neutralize with 30 % sodium hydroxide (w/v and transfer quantitatively the neutralized inverted solution to a graduated flask and make up the volume to 100 mL.

Determine the reducing sugars in the inverted solution as described in Annex D.

E.3 Calculation

E.3.1 Sucrose, % by weight = \( \frac{(Q - RW) \times 0.95}{W} \)

where

Q is the value in column 3 of Table D.2, corresponding to the titre;

R is the reducing sugars, percent by weight (see Annex D);

W is the weight, in g, of the original material taken for the test (see D.2.1).
Annex C
(Normative)
Determination of gum base content

A.1 Preparation of the sample

Take four tablets of chewing gum or bubble gum and clean with a fine hair brush to remove the talc and sugar dust. Cut the sample into small pieces.

A.2 Method

Weigh accurately the entire sample and quantitatively transfer the sample into an extraction cartridge. Take 200 ml of chloroform in a tared 250-ml capacity round-bottom flask. Extract the sample for eight hours in a soxhlet extraction assembly. Subsequently distil off the chloroform in a drying chamber at 105 °C ± 1 °C. Weigh the flask. Continue the process till a constant mass is obtained.

A.3 Calculation

Gum base content, % by mass = \( \frac{M_1 - M_2}{M} \)

where

- \( M_1 \) = mass in g of the flask with extracted gum sample,
- \( M_2 \) = mass in g of the empty flask, and
- \( M \) = mass in g of the sample taken for test.