Natural Vanilla Extract Products — Specification
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0. Foreword

Commercial vanilla products are produced from the cured, dried, and conditioned pods of fully mature fruit of the orchid genus Vanilla. Of the 110 known species of vanilla, only *Vanilla planifolia* Andrews, *Vanilla tahitensis* Moore, and *Vanilla pompona* Shiede are of commercial importance today. The vanilla species of commerce, *Vanilla planifolia* is used for a variety of purposes fragrance, cacao flavouring and medicinal.

This Tanzania standard has been developed to keep up with advancements of the natural vanilla extract and their products and to ensure the safety and quality of the product traded in the markets in order to safeguard the health of the consumers.

In preparation of this Tanzania standard assistance is derived from the following publications; *The US Code of Federal Regulations for Vanilla, 21 CFR 169.175–169.182*

In reporting the result of a test or analysis made in accordance with the Tanzania standard, if the final value observed or calculated is to be rounded off, it shall be done in accordance with TZS 4 (see clause 2)
1 Scope

This draft Tanzania Standard specifies the requirements and methods for sampling and test of natural vanilla extract products obtained from *V. planifolia*, *V. tahitensis* and *V. pompona* species of vanilla orchid for human consumption.

2. Normative References

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

Rearrange in ascending order

*Codex 193, General standard for contaminants and toxins in food and feed*

*TBS/AFDC07(6216)P3 / ISO 3493 - Vanilla -- Vocabulary*

*TZS 1735/ ISO 5565-1 (en), Vanilla [Vanilla fragrans (Salisbury) Ames – Part 1 - Specification*

*TBS/AFDC07(6731)/ ISO 5565-2, Vanilla [Vanilla fragrans (Salisbury) Ames] — Part 2: Test methods*

*TZS 4, Rounding off numerical values.*

*TZS 109, Food processing units – Code of hygiene*

*TZS 116, Labelling of food additives when sold as such — General requirements*

*TZS 118, Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of microorganisms – Colony-count technique at 30oC*

*TZS 122, Microbiology of food and feeding stuffs – Horizontal method for the detection of salmonella spp*

*TZS 131, Microbiology of food and animal feeding stuffs: General guidance for enumeration of yeasts and moulds: Colony Count technique at 25oC*

*TZS 268, General atomic absorption spectrophotometric method for determination of lead in food and food stuffs.*
TZS 471, Alcoholic beverages — Methods of sampling and test.

TZS 538, Labelling of pre-packaged foods — General requirements.

TZS 730, Microbiology of the food chain — Horizontal method for the enumeration of beta-glucuronidase-positive Escherichia coli — Part 1: Colony-count technique at 44 degrees C using membranes and 5-bromo-4-chloro-3-indolyl beta-D-glucuronide.


TZS 1495, Fruits, vegetables and derived products — Determination of copper content — Method using flame atomic absorption spectrometry.

TZS 1501, Fruits, vegetables and derived products — Determination of mercury content — Flameless atomic absorption method.

3 Terms and definitions

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

3.1 vanilla beans
these refer to the cured, dried, and conditioned pods of fully mature fruit of the orchid genus Vanilla.

3.2 vanilla extract
vanilla extract is the solution in aqueous ethyl alcohol of the sapid and odorous principles extractable from vanilla beans.

3.3 vanillin
is a component from which vanilla derives its flavour character and flavouring strength.

3.4. vanilla flavoring
vanilla extract that contains not less than 35% ethyl alcohol by volume.
3.5 oleoresin
solvent-free viscous concentrate composed of 50% aqueous ethanol soluble vanilla solids.

3.6 food grade material
material made of substances which are safe and suitable for their intended use and which will not impart any toxic substance or undesirable odor or flavor to the product.

4.0 Product description
4.1 Main ingredient
Vanilla extract shall be obtained from natural vanilla bean/pod complying to extractives and ethyl alcohol content of not less than 35% by volume. The extraction grade beans may contain from 20 to 25% moisture for better extraction process.

4.2 Optional Ingredients
Vanilla extract may contain one or more of the following optional ingredients and shall comply to the relevant standard:
   (a) Glycerin.
   (b) Propylene glycol (usually no more than 2%).
   (c) Sugar (including invert sugar).
   (d) Dextrose.
   (e) Corn syrup (or corn syrup solids).

4.3 Product characteristics
Vanilla extract shall have the following characteristics, such that;
   (a) ethyl alcohol content to be not less than 35% by volume, and the extractible matter of one or more units of vanilla constituent.
   (b) a unit of vanilla constituent to be 378.5g of beans containing not more than 25% moisture per 3.785 liters of finished extract.
   (c) Extractible matter amount of not less than 283.50g of beans on the moisture-free basis.
   (d) vanilla extracts shall be available as a single-fold strength such as 1- to 10-fold strengths for all household uses. or two-fold and higher strength extracts for industrial products such as ice cream, chocolate, candy, bakery, beverage, and other food manufacturers.
   (e) pure single-fold vanilla extract shall be a pale to dark amber brown clear liquid or a reddish hue depending on the quality of beans and extraction method used.
Vanillin content of *V. planifolia* can yield 2 to 2.5% and *V. tahitensis* normally will produce no more than 1.2 to 1.5% when even under optimum conditions.

5.0 Requirements

5.1 General Requirements

Vanilla extract shall;

(a) have the physical, chemical characteristic, colour, aroma and flavor of vanilla

(b) be pale to dark amber brown clear liquid for a pure single-fold vanilla extract.

(c) not be mixed with any synthetic material

5.2 Specific requirements

5.2.1 Physicochemical requirements

Natural vanilla extract shall comply with the physicochemical requirements in Table 1 when tested in accordance with the test methods specified therein.

**Table 1 — Physicochemical requirements for Natural Vanilla Extract**

<table>
<thead>
<tr>
<th>S/N</th>
<th>Characteristic</th>
<th>Requirement</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>i</td>
<td>Alcohol % (v/v), min</td>
<td>35</td>
<td>TZS 471</td>
</tr>
<tr>
<td>ii</td>
<td>pH</td>
<td>4 - 6.5</td>
<td>TBS/AFDC07(6731)/ISO 5565-2</td>
</tr>
<tr>
<td>iii</td>
<td>Specific gravity, min</td>
<td>0.83</td>
<td>ISO 5565-2</td>
</tr>
<tr>
<td>iv</td>
<td>Vanillin content (mg/ml)</td>
<td>1.0-1.5</td>
<td></td>
</tr>
</tbody>
</table>

6. Hygiene

6.1 Natural Vanilla Extract shall be prepared and packaged in premises built and maintained under hygienic condition in accordance with TZS 109.

6.2 The product shall comply with microbiological limits given in Table 2 when tested in accordance with the test methods specified therein.
Table 2 — Microbiological limits for Natural Vanilla Extract

<table>
<thead>
<tr>
<th>S/N</th>
<th>Microorganism</th>
<th>Maximum limit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Total viable count, CFU/g,</td>
<td>$1.0 \times 10^4$</td>
<td>TZS 118</td>
</tr>
<tr>
<td>ii.</td>
<td>Yeast and moulds CFU/g,</td>
<td>$1.0 \times 10^2$</td>
<td>TZS 131</td>
</tr>
<tr>
<td>iii.</td>
<td>Salmonella spp in 25 g</td>
<td>Absent</td>
<td>TZS 122</td>
</tr>
<tr>
<td>iv.</td>
<td>E. Coli CFU/g</td>
<td>Absent</td>
<td>TZS 730</td>
</tr>
</tbody>
</table>

7.0 Contaminants

Natural Vanilla Extract shall comply with the contaminant limits specified in the latest edition of CODEX STAN 193.

7.1 Heavy Metals

Natural Vanilla Extract shall comply with the maximum levels for the heavy metals given in Table 3 when tested in accordance with the test methods specified therein.

Table 3 — Permitted maximum level of heavy metals in Natural vanilla extract

<table>
<thead>
<tr>
<th>S/N</th>
<th>Heavy metal</th>
<th>Maximum limits (mg/kg)</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Lead (Pb),</td>
<td>0.3</td>
<td>TZS 268</td>
</tr>
<tr>
<td>ii.</td>
<td>Copper (Cu),</td>
<td>2</td>
<td>TZS 1495</td>
</tr>
<tr>
<td>iii.</td>
<td>Arsenic (As),</td>
<td>0.05</td>
<td>TZS 1502</td>
</tr>
<tr>
<td>iv.</td>
<td>Cadmium (Cd),</td>
<td>0.01</td>
<td>TZS 1490</td>
</tr>
</tbody>
</table>
7.2 Pesticide residues
Natural Vanilla Extract shall comply with pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

7.3 Mycotoxin
Natural Vanilla Extract shall comply with mycotoxin limits of given in Table 4 when tested in accordance with the test methods specified therein.

Table 4 — Mycotoxins limits for natural vanilla extract

<table>
<thead>
<tr>
<th>S/N</th>
<th>Mycotoxin</th>
<th>Maximum Limit (µg/kg)</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aflatoxin B1</td>
<td>5</td>
<td>TZS 799</td>
</tr>
<tr>
<td>2</td>
<td>Total aflatoxin</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

8. Sampling
Representative samples of the product shall be drawn in accordance with the procedure elaborated in TZS 471

9. Packaging, marking and labeling
9.1 The products shall be packaged in clean and airtight amber brown sealed food grade materials.

9.2 Marking and Labelling
9.2.1 In addition to the requirements of TZS 538 and TZS 116, the product packages shall be legibly and indelibly labelled with the following information:
   i) Name of the product as “Natural Vanilla Extract”
   ii) Name and physical address of the manufacturer,
   iii) Batch or code number,
   iv) Net content,
   v) List of ingredients in descending order of proportion,
   vi) Date of manufacture,
   vii) Best before ,
   viii) Country of origin,
   ix) Storage conditions
   x) Instructions of use
9.2.2 The language on the label shall be ‘Kiswahili and/or English’. A second language may be used depending on the designated market.

9.2.3 The packages may also be marked with the TBS certification mark.

NOTE - The TBS Standards Mark of Quality may be used by the manufacturers only under license from TBS. Particulars of conditions under which the licenses are granted, may be obtained from TBS.
Hand Book of Vanilla Science and Technology