Soy Sauce — Specifications
0. Foreword

Soy sauce also referred to as soya sauce which is derived from soya bean (Glycine max (L.) Merr.), is increasingly being used in the country both at home, institutions and restaurants as a table liquid seasoning. There are several forms of soy sauce depending on the manufacturing process.

The most common forms are processed by natural fermentation, Aspergillus fermentations or hydrolysis methods. The difference of processing results to different tastes and therefore consumers are given an opportunity to choose from the various tastes available.

Development of this Tanzania standard was necessitated by the need to ensure the safety and quality of soy sauce being produced and or marketed in Tanzania as well as for import and export markets.

In preparation of this Tanzania standard assistance was drawn from Malaysian Standard, MS 807:1983—Specification for soya sauce

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)
1.0 Scope

This Tanzania Standard prescribes the requirements, methods of sampling and test for salty soy sauce, light soy sauce and dark (thick) soy sauce obtained from fermentation of soybeans (Glycine max (L.) Merr.) for human consumption.

2.0 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 193, General standard for Food Additives

CODEX STAN 193, General standard for contaminants and toxins in food and feed

TZS 109, General principles of food hygiene

TZS 117, Food – Handling of samples for microbiological analysis – Code of practice

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

TZS 125, Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of coagulase-positive staphylococci \(\text{(Staphylococcus aureus and other species)}\) – Part 1: Technique using Baird-Parker agar medium – Amendment 1: Inclusion of precision data

TZS 131, Microbiology of food and animal feeding stuffs: General guidance for enumeration of yeasts and moulds:\(\text{- Colony Count technique at 25^oC}\)

TZS 330, Cereals – Sampling of milled products

TZS 331 – Cereals – Milled products - Methods of test

TZS 538, Labelling of pre-packed foods — General requirements

TZS 730, Microbiology of food and animal feeding stuffs – Horizontal method for the enumeration of \(\text{-b-glucuronidase-positive Escheria coli}\) – Part 2 – Colony-count technique at 44 0C using 5\(\text{-bromo-4-chloro-3-indoly}-\text{b-D-glucuronide}\)

TZS 1083. Dry Soy bean- Specification

TZS 1491, Fruits, vegetables and derived products – Sampling and methods of test – Part 5: Determination of pH

TZS 1496, Fruits, vegetables and derived products – Sampling and methods of test – Part 10: Determination of soluble solids

TZS 1502, Fruits, vegetables and derived products – Sampling and methods of test Part 14: Determination of arsenic content \(\text{- Silver diethyldithiocarbamate spectrophotometric method}\)

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

TZS 1527, Fruits and vegetables \(\text{- Determination of specific gravity}\)

TZS 1529, Fruits and vegetables \(\text{- Determination of sodium chloride in brine}\)
TZS 1770, Hazard Analysis and Critical Control Point (HACCP) System — Requirements for any organization in the food chain

3.0 Terms and definitions
For the purposes of this standard, the following terms and definitions shall apply.

3.1 soya bean
mature dry grains of variety grown from Glycine max (L.) Merr.

3.2 soy sauce
is a seasoning product for edible purposes prepared from fermentation of soya bean and/or defatted soya bean, Aspergillus oryzae and/or Aspergillus sojae and grain/flour (wheat, rice, maize or tapioca), in a solution of brine (edible salt /sodium chloride).

3.3 light soy sauce
is a thin reddish brown liquid condiment made from fermented soy beans and wheat.

3.4 dark (thick) soy sauce
is a thick dark brown sauce made from fermented yellow soybean, wheat flour, salt and sugar .

3.5 foreign matter
all organic and inorganic material other than soy sauce ingredients

4.0 Requirements

4.1 Basic ingredients
a) soya bean and/or defatted soya bean complying to TZS1083
b) grain/flour (wheat, rice, maize or tapioca/cassava);
c) edible salt (sodium chloride); and
d) potable water.
e) fermenting agents/organisms such that all mentioned basic ingredients to comply to the relevant standards.

4.2 Optional ingredients
a) sweetening substance, such as sucrose, dextrose and liquid glucose; and molasses.
c) caramel (as colouring substance),
d) permitted preservatives .
e) permitted flavour enhancer

4.3 General Requirements
(a) The soy sauce shall be pasteurised and/or a heat-treated product.
(b) Soy sauce shall not contain added artificial sweeteners
(c) Soy sauce shall be free from any foreign matter.
(d) Soy sauce shall not contain any added colouring substance except caramel.
(e) It shall not contain hydrolysed vegetable protein.
(f) The aroma and taste shall be characteristic of soy sauce.

4.4 Specific requirements

Soy sauce shall comply with the specific requirements in Table 1 below

**Table 1—Specific requirements for soy sauce**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Requirements</th>
<th>Method of test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Salty soy sauce</td>
<td>Light soy sauce</td>
</tr>
<tr>
<td>Total soluble solid, % w/w, min</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Total Nitrogen, % Min.</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Salt (as sodium chloride), % w/v, min</td>
<td>10.0</td>
<td>10.0</td>
</tr>
<tr>
<td>pH, max</td>
<td>4.8</td>
<td>4.0-5.1</td>
</tr>
<tr>
<td>Halophilic yeast count per ml</td>
<td>&lt;100</td>
<td>&lt;100</td>
</tr>
<tr>
<td>Specific gravity min,</td>
<td>1.2</td>
<td>1.2</td>
</tr>
</tbody>
</table>

5.0 Food Additives

Only the food additives permitted in CODEX STAN 192, Codex General Standard for food additives may be used without exceeding the limits.

6.0 Hygiene

6.1 It is recommended that the soy sauce be prepared and handled in accordance with TZS 109/EAS 39 and TZS 1779.

6.2 The produce should comply with any microbiological criteria established in accordance with TZS 117

6.3 Microbiological requirement

The soy sauce shall conform to the microbiological limits in Table 2 below

**Table 2 — Microbiological limits**

<table>
<thead>
<tr>
<th>SL NO.</th>
<th>Characteristic</th>
<th>Limits (Max)</th>
<th>Method of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>Total viable counts cfu/g</td>
<td>&lt; 10</td>
<td>TZS 792</td>
</tr>
<tr>
<td>ii)</td>
<td>E. coli cfu/g, max</td>
<td>absent</td>
<td>TZS 730</td>
</tr>
<tr>
<td>iii)</td>
<td>Salmonella /25ml</td>
<td>absent</td>
<td>TZS 122</td>
</tr>
<tr>
<td>iv)</td>
<td>Staphylococcus aureaus per /25ml</td>
<td>absent</td>
<td>TZS 125</td>
</tr>
<tr>
<td>v)</td>
<td>Yeast and Moulds cfu/g, max</td>
<td>&lt;10</td>
<td>TZS 131</td>
</tr>
</tbody>
</table>
7.0 Contaminants

7.1 Pesticide residues
Soy sauce shall comply with those pesticide residue limits established by the Codex Alimentarius Commission for this commodity.

7.2 Heavy metals and metallic contaminants
Soy sauce shall be free from heavy metals and metallic contaminants in amounts which may represent a hazard to health. If present, they shall not exceed the limits established in Table 3.

Table 3 — Heavy metal and metallic contaminants limits Soy sauce

<table>
<thead>
<tr>
<th>S/N</th>
<th>Heavy metals</th>
<th>Limits in ppm</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arsenic (As), max</td>
<td>0.5</td>
<td>TZS 1502</td>
</tr>
<tr>
<td>2</td>
<td>Lead (Pb), max</td>
<td>1.0</td>
<td>TZS 268</td>
</tr>
<tr>
<td>3</td>
<td>Tin</td>
<td>250</td>
<td>TZS 1492</td>
</tr>
</tbody>
</table>

7.3 Mycotoxins
Soy sauce shall comply with the maximum limits for mycotoxins given in Table 4 when tested in accordance with the test methods prescribed therein.

Table 4 — Mycotoxin limits for Soy sauce

<table>
<thead>
<tr>
<th>S/N</th>
<th>Mycotoxin</th>
<th>Maximum limit</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>Total aflatoxins µg/kg</td>
<td>10</td>
<td>TZS 331</td>
</tr>
<tr>
<td>ii.</td>
<td>Aflatoxin B₁, µg/kg</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

8.0 Weight and measures
The fill of the container shall be packaged in accordance to the Weights and Measures of the relevant country.

9.0 Packaging, marking and labelling

9.1 Packaging
Soy sauce shall be packed in well-sealed moisture proof food grade containers, which will protect the product from deterioration in quality and safety throughout the shelf life.

9.2 Labelling
9.2.1 Labelling of retail containers

In addition to the requirements in TZS 538, each package shall be legibly and indelibly labelled with the following on the container:

a) name and type of the product as “Salty Soy sauce”, ‘Light soy sauce’ and Dark (thick) soy sauce’

b) name, address and physical location of the producer/packer/importer;

c) Brand name/ trade name;

d) Country of origin

e) lot/batch/code number;

f) net weight, in metric units;

g) Date of manufacture;

h) Expiry date

i) storage condition;

j) instructions for use and disposal of used package;

k) declaration of enhancers and preservatives used in the product

l) List of ingredients in descending order of proportion used in the product.

9.2.2 Labelling of non-retail containers

Information detailed in 9.1 shall be given either on the container or in accompanying documents, except that the name of the product, lot identification and the name and address of the processor or packer as well as storage instructions, shall appear on the container.

However, lot identification and the name and address of the processor or packer may be replaced by an identification mark provided that such a mark is clearly identifiable with the accompanying documents.

9.3 The use of pictorials or any other misrepresentation of the product on the label is prohibited.

9.4 Each container may be marked with the TBS standards mark of quality.

NOTE – The TBS Standards Mark of Quality may be used by the manufacturers only under licence from TBS. Particulars of conditions under which the licences are granted, may be obtained from TBS.

10. Sampling

Sampling shall be done in accordance with the TZS 330.