

0. FOREWORD

Pumpkin a member of *Cucurbita* genus is an important vegetable fruit because of its nutritional values and health benefits, derived from its tender leaves, flowers, fruits, and seeds. It is a rich source of carotenoids, water soluble vitamins, phenolics, flavonoids, polysaccharides and minerals. Pumpkin flour is obtained by drying and grinding pulp, leaves, flowers and seeds. Pumpkin flour is used to supplement cereal baking flours, soups, sauces, instant noodle, juices, spice mixes as well as a natural colouring agent in pasta and flour mixes.

In the preparation of this standard assistance was obtained from pumpkin flour processors.

In reporting the results of a test or analysis 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 Tanzania standard prescribes requirements and methods of sampling and tests for pumpkin pulp flour intended for human consumption or for other use in the food industry.

2. REFERENCES

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

TZS 4, Rounding off numerical values
TZS 109- Code of hygiene for food processing units – General
TZS 118, Method of plate count of bacteria in foodstuffs
TZS 119, Method for detection and estimation of coliform bacteria in Foodstuffs
TZS 122: 2007 - Foodstuffs – Microbiological examination for salmonellae
TZS 131, Foodstuffs – Method for yeast and moulds count
TZS 330, Cereals – Sampling of milled products
TZS 331, Cereals – Methods of test for milled products
TZS 538, Packaging and labeling of foods
TZS 799, (2nd Ed)/ISO 16050: 2003 Foodstuffs – Determination of aflatoxin B1, and the total content of aflatoxins B1, B2, G1 and G2 in cereals, nuts and derived products – High-performance liquid chromatographic method
Codex Stan 192, General Standard for food additives
Codex Stan 193, General Standard for contaminants in food
Codex online database for pesticide residues in food

3 TERMS AND DEFINITIONS

For the purpose of this standard the following terms and definitions shall apply:

3.1 pumpkin pulp

the fresh part of the pumpkin fruit

3.2 pumpkin flour

flour obtained by grinding dried pumpkin pulp into fine powder

4. REQUIREMENTS

4.1 General requirement

Pumpkin from which the flour is obtained shall be safe for human consumption

4.1.1 Pumpkin flour shall be of natural colour conforming to the colour of pumpkin pulp from which it was prepared. Shall also have characteristic odour and taste of pumpkin variety used.

4.1.2 Pumpkin flour shall be clean, safe, of good quality and free from signs of spoilage.

4.1.3 Pumpkin flour shall be free from insects, larvae, fungal infestation, rodent contamination, dirt and other extraneous matter.

4.2 Specific requirements

Pumpkin flour shall conform to the requirements given in Table 1

Table 1 – Requirements for pumpkin flour

| S/No | Characteristic | Requirement | Methods of test |
|------|---|-------------|-----------------|
| 1 | Moisture, % m/m max | 11 | TZS 331 |
| 2 | Total ash, % m/m max | 6 | |
| 3 | Crude fiber, % m/m max. | 4 | |
| 4 | Acid insoluble ash, % m/m max | 0.1 | |
| 5 | Vitamin A (µg/100 g),min | 262 | |
| 6 | Residues through 1000 micron sieve, % m/m max | 0.5 | |

4.3 Food additives

The use of food additives in pumpkin flour shall be in accordance with Codex Stan 192. (See clause 2).

5. CONTAMINANTS

5.1 Heavy metal

Pumpkin flour shall not contain any metal contaminants in excess of the levels established in Codex Stan 193.

5.2 Pesticide residues- The Maximum Residue Limits of pesticides in pumpkin flour shall not exceed levels established in the *Codex online database for pesticide residues in food* for this product.

5.2 Aflatoxins: The maximum content of aflatoxins in pumpkin flour when determined in accordance with the method described in TZS 799, shall not exceed 5 µg/kg (ppb) for aflatoxin β1 and 10 µg/kg for total aflatoxins.

6. HYGIENE

6.1 Pumpkin flour shall be prepared under Good Hygienic Practices as stipulated in TZS 109

6.2 Pumpkin flour shall be free from objectionable matter and shall be free from pathogenic microorganisms; substances originating from microorganisms or any other deleterious substances in amounts which may constitute a health hazard.

6.3 Microbiological requirements

Pumpkin flour shall also comply with the microbiological requirements given in Table 2

Table 2. Microbiological limits for pumpkin flour

| S/No | MICROORGANISM | MAXIMUM LIMIT | METHOD OF TEST |
|-------------|--------------------------------------|----------------------|-----------------------|
| 1. | Total plate count cfu/g, max. | 10 ⁵ | TZS 118 |
| 2. | <i>E.coli</i> per MPN/25g , max. | Absent | TZS 119 |
| 3. | <i>Salmonella</i> per 10g, max. | Absent | TZS 122 |
| 4. | <i>Yeast and molds</i> cfu/g, max. | 10 ³ | TZS 131 |
| 5. | <i>Staphylococcus</i> , cfu/ g, max. | 10 | TZS 125 |

7. METHODS OF SAMPLING AND TESTS

7.1 Sampling

Sampling of pumpkin flour shall be done in accordance with TZS 330.

7.2 Tests

Pumpkin flour shall be tested in accordance with methods specified in this standard

8. PACKAGING, MARKING AND LABELING

8.1 PACKAGING

Pumpkin flour shall be packed in new suitable bags made of paper, jute, polypropylene or any other suitable material capable of protecting quality and safety of the product. The mouth of each package shall be properly sealed.

8.2 MARKING AND LABELLING

8.2.1 In addition to the requirements given in TZS 538 (see clause 2), each bag/ container shall be legibly and indelibly labeled with the following information;

- a) The common name and type of the product, 'Pumpkin flour'.
- b) The name and physical address and or location of the manufacturer
- c) Batch or code number
- d) Date of manufacture/packing
- e) Net weight in SI units
- f) Country of origin
- g) Statement "Chakula cha binadamu" and/or "Human food"
- h) The wording "Hifadhi pahali pakavu" and /or/store in cool dry place"
- i) The statement "use no hooks"
- j) Best before date
- k) Nutritional information, if any

8.2.2 The language on the label shall be "Kiswahili" or "Kiswahili and English". Any other language may be used depending on the designated market.

8.3 The containers may also be marked with “tbs” certification mark.

NOTE – The “tbs” Mark of Quality may be used by manufacturers only under license from TBS. Particulars of conditions which the licenses are granted may be obtained from TBS offices.

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