DRAFT KENYA STANDARD

DKS 2431: 2025

ICS 67.040

Third Edition

Garlic paste — Specification

TECHNICAL COMMITTEE REPRESENTATION

The following organizations were represented on the Technical Committee:

Jomo Kenyatta University of Agriculture and Technology

Technical University of Kenya

Kenya Industrial Research and Development Institute (KIRDI)

Consumer Information Network (CIN)

Ministry of Health — Department of Public Health

Government Chemist's Department

Unilever (K) Ltd.

Jomu Spice Firm

Tropical Heat Ltd.

Top Foods EA Ltd.

Adamji Multi Supplies

Unilever Kenya

Kenya Bureau of Standards — Secretariat

REVISION OF KENYA STANDARDS

In order to keep abreast of progress in industry, Kenya Standards shall be regularly reviewed. Suggestions for improvements to published standards, addressed to the Managing Director, Kenya Bureau of Standards, are welcome.

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Third Edition

Garlic paste — Specification

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DKS 2431: 2025

Foreword

This Kenya Standard was prepared by the Spices and Condiments Technical Committee under the guidance of the Standards Projects Committee, and it is in accordance with the procedures of the Kenya Bureau of Standards.

Kenya Bureau of Standards (KEBS) has established Technical Committees (TCs) mandated to develop Kenya Standards (KS). The Committees are composed of representatives from the public and private sector organizations in Kenya.

Kenya Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft Kenya Standards are circulated to stakeholders through the KEBS website and notifications to World Trade Organization (WTO). The comments received are discussed and incorporated before finalization of the standards, in accordance with the Procedures for Development of Kenya Standards.

Kenya Standards are subject to review, to keep pace with technological advances. Users of the Kenya Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

Garlic paste is made from garlic (*Allumsativum*) cloves which have been crushed into a paste. This standard specifies physical and chemical limits as well as microbiological and metallic contaminant limits. It also sets out hygiene and packaging and labelling requirements and preserves test methods.

This Third Edition standard has been reviewed to incorporate reviewed test methods for physical requirements, microbiology and heavy metal contaminant limits. These reviewed test methods bring the standard in line with requirements for trade in the EAC region and for global trade.

This Third edition cancels and replaces the second edition (KS 2431:2018) which has been technically revised.

During the preparation of this standard, reference was made to the following documents:

The Food, Drugs and Chemical Substances Act, Cap. 254 of the Laws of Kenya.

Codex Stan 192, Codex General Standard for food additives,

Codex Stan 193, Codex General Standard for contaminants in Foods and feeds.

The Public Health Act, Cap. 242 of the Laws of Kenya.

Acknowledgement is hereby made for the assistance derived from these sources.

Garlic Paste — Specification

1 Scope

This Draft Kenya Standard specifies requirements, sampling and test methods for concentrated garlic paste, and raw garlic paste that is well blended.

2 Normative references

The following referenced documents 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.

CXS 192, Codex standard for Additives in foods

CXS 193, Codex standard for contaminants in food and feeds.

KS EAS 35, Fortified edible salt — Specification

KS EAS 38, Labelling of pre-packaged foods — General requirements

KS EAS 39, General principles of food hygiene — Code of practice

ISO 15213-2:2023 Microbiology of the food chain — Horizontal method for the detection and enumeration of Clostridium spp.

KS ISO 948, Spices and condiments — Sampling

KS ISO 2173, Fruit and vegetable products — Determination of soluble solids — Refractometric method

KS ISO 4832, Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coliforms —part 3: Colony-count technique

KS ISO 4833-1:2013 Microbiology of the food chain — Horizontal method for the enumeration of microorganisms — Part 1: Colony count at 30 °C by the pour plate technique

KS ISO 6570-1:2017 Microbiology of the food chain — Horizontal method for the detection, enumeration and serotyping of Salmonella-Part 1: Detection of Salmonella spp

KS ISO 6888-1, Microbiology of food and animal feeding stuffs — Horizontal method for the enumeration of coagulase-positive staphylococci (Staphylococcus aureus and other species)

KS ISO 6632, Fruits, vegetables and derived products — Determination of volatile acidity

KS ISO 6633, Fruits, vegetables and derived products — Determination of lead content — Flameless atomic absorption spectrometric method

KS ISO 6634, Fruits, vegetables and derived products — Determination of arsenic content — Silver diethyldithiocarbamate spectrophotometric method

KS ISO 6579, Microbiology of food and animal feeding stuffs- part 6: Horizontal method for the detection of Salmonella SPP

KS ISO 16050, 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

KS ISO 16654, Microbiology of food and animal feeding stuffs — Horizontal method for the detection of Escherichia coli O157

ISO 16654:2001/Amd 1:2017, microbiology of food and animal feeding stuffs- Horizontal method for the detection of Escherichia coli O157

KS 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.

3.1
concentrated garlic paste
garlic paste made under vacuum to preserve the nature of the product by lowering the dehydration temperature.

3.2
raw garlic paste
garlic paste which is uncooked and has undergone a basic sorting/cleaning process peeling/unpeeling and then ground using commercial grinders or home grinders to a paste and is meant to be refrigerated during storage.

3.3
extraneous matter
fiber and skin common to garlic and stems up to 10 mm in length aggregating an area of 5 cm^2

4 Requirements

4.1 General requirements

4.1.1 Garlic paste shall be obtained by crushing and blending of clean garlic pulp with subsequent concentration under vacuum

4.1.2 Garlic paste shall be of the consistency of crushed garlic.

4.1.3 The garlic cloves used shall be mature, sound, fresh, and free from insect and fungal attack.

4.1.4 Garlic paste shall be light to ivory brown in colour.

4.1.5 Garlic paste shall have characteristic flavour with no burnt flavour or other off flavour.

4.1.6 Garlic paste shall be free from extraneous matter.

4.1.7 Garlic paste shall be free of insect fragments and contamination from rodents.

4.2 Specific requirements

4.2.1 Physical and chemical requirements for garlic paste

Garlic paste shall comply with the physical and chemical requirements given in Table 1, when tested in accordance with the methods given there in.

Table 1 — Physical and chemical limits for raw and concentrated garlic past

S/N	Characteristic	Requirement For raw garlic Paste	Requirements For the Concentrated garlic paste	Test method
i.	Total soluble solids, %, m/m, min.	22	55	ISO 2173
ii.	Acidity as acetic acid, max	0.8	5	ISO 6632
iii.	Total insoluble pulp, %, mlm, max.	3	2	Annex B

4.2.2 Heavy metal contaminants for raw and concentrated garlic paste

Garlic paste shall comply with the heavy metal contaminant limits in Table 2 when tested in accordance with the methods given their in.

Table 2 — Heavy metal contaminant limits for raw and concentrated garlic paste

SL No	Characteristic	Requirement	Test method
i)	Arsenic (as As), ppm, max.	0.1	KS ISO 6634
ii)	Lead (as Pb), ppm max.	2	KS ISO 6633

4.2.3 Microbiological limits for raw and concentrated garlic paste

Garlic paste shall comply with the microbiological limits given in Table 3 when tested in accordance with the methods given their in.

Table 3 — Microbiological limits for raw and concentrated garlic paste

SL No	Characteristic	Limit	Test method
i)	Coli forms, cfu/g	< 10	KS ISO 4832
ii)	Yeast and mould counts, cfu/g	< 10	KS ISO 21527
iii)	*E. Coli* counts, cfu/g	Absent	KS ISO 16654
iv	*Clostridium perfrigens* cfu/g[a)]	< 10	KS ISO 793
v)	*Salmonella*, cfu per 25 g	Absent	KS ISO 6579
vi)	*Staphylococcus aureus* cfu/ g	< 10	KS ISO 6888
[a] unless canned			

4.3 Food Additives

No additives other than those permitted under the Food, Drugs and Chemical substances Act, Cap. 254 of the Laws of Kenya, Public Health Act, Cap. 242 and CXS 192 shall be used.

5 Hygiene

Garlic paste shall be manufactured under hygienic conditions complying with KS EAS 39, the Public Health Act, Cap. 242 Laws of Kenya, Food Drugs and Chemical Substances Act, Cap. 254 of the Laws of Kenya.

6 Aflatoxins

Garlic paste shall not have more than 10 ppb total aflatoxins and 5 ppb aflatoxin B1, when tested according to KS ISO 16050.

7 Weights and measures

Fill of the container shall comply with the Weights and Measures Act, Cap. 513 of the Laws of Kenya.

8 Environmental management

Garlic paste shall be processed in an environment that complies with EMCA 1999 No.8 on Environmental Management and comply with Cleaner Production Technology.

9 Packaging

Garlic paste shall be packed in food grade containers that secure product integrity and safety of the Garlic paste.

10 Labelling

Labelling shall be done in accordance with EAS 38. Each container shall be legibly and indelibly marked with the following information:

a) name of the product i.e. “Raw garlic paste”, or “Concentrated garlic paste”;

b) name and physical address of the manufacturer;

c) net weight of the contents in grams or kilograms;

d) date of manufacture;
e) code number/lot number;
f) list of ingredients in descending order;
g) expiry date;
h) storage instructions;
i) instructions for use;
j) GMO status;
k) Instructions for disposal of used package;
l) Irradiation status (where applicable); and
m) Country of origin.

11 Sampling

Sampling shall be done in accordance with KS ISO 948.

Annex A
(informative)

Determination of total soluble solids

A.1 Apparatus

Refractometer, either hand or Abbe refractometer.

A.2 Procedure

Keep one or two drops of the garlic paste concentrate sample between the two prisms of the refractometer and read the percentage of refractometric soluble solids. Although the instrument is calibrated at 20 ˚C, no temperature correction is usually necessary, if readings are taken at room temperature.

Annex B
(normative)

Determination of total insoluble pulp

B.1 Procedure

B.1.1 Boil 20 g of sample with 100 ml distilled water for 30 min - 40 min.

B.1.2 Filter through dried and weighed filter paper. Wash with hot water.

B.1.3 Dry paper at 100 ^{o}C to constant weight.

B.2 Report

From this weight, subtract the weight of the filter paper. This gives the weight of total insoluble pulp.

Bibliography

KS 2431:2018, *Garlic paste — Specification*

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