
Canned Asparagus – Specification

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FOREWORD

This Ethiopian Standard has been prepared under the direction of the Technical committee for fruit and vegetable (TC-13) and published by Ethiopian Standard Agency (ESA).

The standard has been developed to address observed needs and to support the local industry in order to make progress through upraising competitiveness and maintain comparative market advantage both domestically and internationally.

In the preparation of this standard reference has been made to the following:

Codex Stan 56, Codex Standard for Canned Asparagus.

Codex Stan 193, General Standard for contaminants and toxins in food and feed.

CAC/RCP 1, *General Principles of Food Hygiene*.

Codex Stan 297, Standard for Certain Canned Vegetables.

Acknowledgment has been made for the use of information from the above publications.

Canned Asparagus - Specification

1. Scope

This Ethiopian standard specifies the requirements for canned asparagus¹.

2. Normative Reference

The following documents are 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.

CES 73, General standard for prepackaged foods –Labeling.

ES 577, Recommended code of practice-General principle of food hygiene.

ES 929, Code of practice-food hygiene management.

ES 1263, Food microbiology- Examination for specific organism - *Clostridium botulinum*.

ES ISO 2447, Fruits, vegetables and derived products - Determination of tin content.

ES 2834, Sampling plans for prepackaged foods (AQL6.5).

ES ISO 6633, Fruits, vegetables and derived products - Determination of lead content - Flameless atomic absorption spectrometric method.

ES ISO 22002-1, Prerequisite programmes on food safety -Part 1 Food manufacturing.

3. Description

3.1 Product Definition:

Canned asparagus is a product

- prepared from the edible portion of stalks of varieties of the asparagus plant conforming to the characteristics of *asparagus officinalis* L., and may be peeled or unpeeled;
- packed with water or other suitable liquid medium and may contain other ingredients appropriate to the product; and
- processed by heat in an appropriate manner, before or after being sealed in a container, so as to prevent spoilage.

3.2 Styles

3.2.1 Long Shoots or Long Spears - consist of the head and adjoining portion of the stalk not more than 18 cm, but less than 15 cm in length.

3.2.2 Shoots or Spears - consist of the head and adjoining portion of the stalk less than 15 cm, but not less than 10.5 cm in length.

3.2.3 Tips or Points - consist of the head and adjoining portion of the stalk less than 10.5 cm, but not less than 4 cm in length.

3.2.4 Cuts and Heads or Cut Spears - consist of stalks cut transversely into pieces with and without heads, not more than 6 cm, but not less than 2 cm in length. At least 20 %, by count, of pieces with heads must be present, except that when the spears are cut into pieces of 3 cm or less in length, at least 10%, by count, of pieces with heads must be present

3.2.5 Cuts - consist of portions of stalks cut transversely into pieces not more than 6 cm in length. Pieces with heads may be present.

3.3 Other Styles

Any other presentation of the product shall be permitted provided that the product:

- is sufficiently distinctive from other forms of presentation laid down in this standard;
- meets all relevant requirements of this standard, including requirements relating to limitations on defects, drained weight, and any other requirements in this standard which are applicable to that style in the standard which most closely resembles the style or styles intended to be provided for under this provision;
- is adequately described on the label to avoid confusing or misleading the consumer.

3.4 Colour types

3.4.1 White - units are white, cream or yellowish white; not more than 20%, by count, of the units may possess blue, green, light green, or yellowish green tips.

3.4.2 White and Blue Tipped; White and Green Tipped - "Long Shoots", "Shoots" and "Tips" which are white, cream, or yellowish-white may have blue, green, light green or yellowish-green heads and

¹ Formerly CAC/RS 56-1972 as amended

adjacent areas but not more than 25%, by count, of the units may have such colour that extends more than one-half the length of the unit.

3.4.3 Green - units are green, light green, or yellowish-green; not more than 20%, by count, of the units may possess a white, cream, or yellowish-white colour of the bottom portion of the stalk, but such colour shall not extend more than one-half of the length of the unit.

3.4.4 Mixed - consists of a mixture of white, cream, yellowish-white, blue, green, light green, or yellowish-green units.

3.5 Designations in Accordance with Size

Long Shoots; Shoots; Tips - may be designated according to size in the following manner:

Single Sizes	Peeled Asparagus	Unpeeled Asparagus
"Small"	up to 8 mm, inclusive	up to 10 mm, inclusive
"Medium"	over 8 mm, and up to 13 mm, inclusive	over 10 mm, and up to 15 mm, inclusive
"Large"	over 13 mm, and up to 18 mm inclusive	over 15 mm, and up to 20 mm, inclusive
"Extra large"	over 18 mm	over 20 mm

Blend of sizes or Assorted Sizes - a mixture of two or more single sizes.

3.5.1 "Diameter"

The diameter of a long shoot, shoot, or tip is the maximum diameter at the thickest part of the unit, measured at right angles to the longitudinal axis of the unit.

3.5.2 Compliance with "single size" designations

3.6.2.1 When the product is declared, presented or offered as conforming to the single size designations in sub-section 3.6 - other than "Blend of Sizes" or "Assorted Sizes" - the sample unit shall conform to the diameter specified for each single size, except that not more than 25 percent, by count, of all the units in the container may belong to adjacent size group(s).

3.6.2.2 Any sample unit or container that exceeds the 25 percent allowance in the foregoing sub-section 3.6.2.1 will be considered a "defective" for Size Classification.

3.6.2.3 A lot will be considered as meeting the criteria for a "single size" designation when the number of defectives, as defined in sub-section 3.6.2.2 does not exceed the acceptance number of the appropriate sampling plan in ES 2834.

4. Ingredients

4.1 Basic Ingredients

Asparagus and liquid packing medium appropriate to the product where the liquid packing medium shall be practically clear except as it may be affected by other ingredients and only a small amount of sediment or parts of asparagus may be present

4.2 Other Permitted ingredients

4.2.1 Salt, vinegar.

4.2.2 Sucrose, invert sugar syrup, dextrose, glucose syrup, dried glucose syrup.

4.2.3 Butter or other edible animal or vegetable fats or oils. If the butter is added, it must amount to not less than 3% of the final product.

4.2.4 Starches - natural (native), physically or enzymatically modified - only when butter or other edible animal or vegetable fats or oils are ingredients.

5. Requirements

5.1 General requirements

5.1.1 Allowances for Styles

The length requirements for the styles listed in sub-section 3.2 will be considered to be met when:

- the predominant length of the units in the sample falls within the designated style classification; and
- the length of the units is reasonably uniform.

5.1.2 "Reasonably uniform", based on sample average, means for:

- Long Shoots; Shoots; Tips - at least 75%, by count, of the units are within + 1 cm of the predominant length and at least 95%, by count, of the units are within + 2 cm of the predominant length;
- Cuts and heads; Cuts - at least 75%, by count, of the units are within + 1 cm of the predominant length and at least 90%, by count, of the units are within + 2 cm of the predominant length.

5.1.3 Color

The color of the product shall be normal for the color type.

5.1.4 Flavor

Canned asparagus shall have a normal flavor and odor free from flavors or odors foreign to the product. Canned asparagus with special ingredients shall have the flavor characteristic of that imparted by the asparagus and the other substances used.

5.1.5 Texture

The asparagus units shall be reasonably free from units that are excessively fibrous or tough.

5.2 Specific requirements

- i. Defects and Allowances shall comply with the limitation indicated in Table 1 below.

Table -1 Defects and Allowances

S/N	Defects and Allowances	limitation
a.	Shattered heads and other shattered asparagus material (consisting of broken or shattered pieces to the extent that the appearance of the product is seriously affected and includes pieces less than 1 cm in length)	The product shall be reasonably free from such material
b.	Extraneous matter (such as sand, grit, or earthy material)	The product shall be practically free from such material
c.	Units with peel (in Peeled Asparagus only) (those units with unpeeled areas which seriously affect the appearance or edibility of the unit)	10%, by count
d.	Hollow units (consisting of units that are hollow to the extent that the appearance of the unit is seriously affected)	10%, by count
e.	Misshapen units (includes shoots or heads badly crooked or any unit that is seriously affected in appearance by doubles or other malformations)	10%, by count
f.	Damaged units (includes discoloration, mechanical injury, disease, or damage by other means to the extent that the appearance or edibility of the unit is seriously affected)	10%, by count
Total of all defects in (d), (e), (f) for these styles:		
i.	Long shoots	15%, by count
ii.	Shoots	15%, by count
iii.	Tips	15%, by count
iv.	Cuts and Heads	20%, by count
v.	Cuts	25%, by count

ii. Classification of "defectives"

A container that fails to meet one or more of the applicable quality requirements, as set out in Sub sections 5.1.1 through 5.2.1, shall be considered a "defective".

iii. Acceptance

A lot will be considered as meeting the applicable quality requirements referred to in sub-section 5.2.2, when the number of "defectives", as defined in sub-section 5.2.2, does not exceed the acceptance number of the appropriate sampling plan in ES 2834.

6. Food Additives

6.1 Monosodium glutamate

Maximum Level

Limited by GMP

6.2 Stannous chloride²

25 mg/kg calculated as Sn

6.3 L-Ascorbic acid

Limited by GMP

6.4 Acidifying Agents

6.4.1 Acetic acid

6.4.2 Citric acid

6.4.3 Malic acid

6.4.4 L-Tartaric acid

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Limited by GMP

² May be used only for asparagus in glass or in fully enamel-lined (lacquered) cans.

6.5 Vegetable gums

6.5.1	Arabic gum	}
6.5.2	Carrageenan	}
6.5.3	Guar Gum	}
		}
6.6	Pectins	}
6.7	Alginates (Ca, K, Na, NH ₄)	}
		}
6.7.1	Propylene glycol alginate	}
		}
6.8	Modified Starches	} ³
		}
6.8.1	Acid-treated starches	}
6.8.2	Alkali-treated starches	}
6.8.3	Bleached starches	}
6.8.4	Distarch phosphate (sodium trimeta- phosphate treated)	}
6.8.5	Distarch phosphate, phosphate	}
6.8.6	Monostarch phosphate	}
6.8.7	Starch acetate	}
6.8.8	Starch hydroxypropyl	}
6.8.9	Distarch adipate acetylated	}
6.8.10	Distarch glycerol, hydroxypropyl	}
6.8.11	Oxidized starches	}
6.8.12	Distarch phosphate (phosphorous oxy- chloride treated)	}
6.8.13	Distarch phosphate, acetylated	}
6.8.14	Distarch glycerol, acetylated	}
6.8.15	Distarch glycerol	}

1% m/m of the additives specified under 6.5 to 6.8 inclusive, singly or in combination.

7. Contaminants

The products covered by this Standard shall comply with the maximum levels of the General Standard for Contaminants and Toxins in Food and Feed (CODEX STAN 193-1995)

7.1 Pesticides residues

The products shall confirm to the maximum residue limits established by codex committee on pesticides Residues.

7.2 Heavy Metal Contaminants

The products covered by the provisions of this standard shall conform to those maximum limits for Heavy metals contaminants established by the Codex Alimentarius Commission for these products in Table 2 below.

Table 2 – Heavy metal contaminants limits for canned asparagus

Contaminants	Limit (mg/kg, Max.)	Test Methods
Lead (as Pb)	1.0	ES ISO 6633
Tin (as Sn)	250	ES ISO 2447

8. Hygiene

- Canned asparagus shall be manufactured and handled in a hygienic manner in accordance with ES 577, ES 929, ES ISO 22002-1 and CAC/RCP 1-1969.
- To the extent possible in Good Manufacturing Practice, the product shall be free from objectionable matter.
- When tested by appropriate methods of sampling and examination, the product:
 - shall be free from microorganisms in amounts which may represent a hazard to health;
 - shall be free from parasites which may represent a hazard to health; and
 - shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health.
- The product shall have received a processing treatment sufficient to destroy all spores of *Clostridium botulinum* (ES 1263).

³ May be used only when butter or other edible animal or vegetable fats or oils are ingredients.

9. Weights and Measures

9.1 Fill of Container

9.1.1 Minimum Fill

The container shall be well filled with asparagus and the product (including packing medium) shall occupy not less than 90% of the water capacity of the container. The water capacity of the container is the volume of distilled water at 20 °C which the sealed container will hold when completely filled.

9.1.2 Classification of "Defective"

A container that fails to meet the requirements for minimum fill (90 percent container capacity) of sub-section 6.1.1 shall be considered a defective.

9.1.3 Acceptance

A lot will be considered as meeting the requirements of sub-section 6.1.1 when the number of "defectives", as defined in sub-section 6.1.2, does not exceed the acceptance number of the appropriate sampling plan in ES 2834.

9.1.4 Minimum Drained Weight

9.1.4.1 The drained weight of the product shall not less than the following percentages, calculated on the basis of the weight of distilled water at 20 °C which the sealed container will hold when completely filled:

Peeled Asparagus

Long Shoots	60%
All other styles	58%

Unpeeled Asparagus

Long Shoots and Shoots	57%
All other styles	55%

9.1.4.2 The requirements for minimum drained weight shall be deemed to be complied with when the average drained weight of all containers examined is not less than the minimum required, provided that there is no unreasonable shortage in individual containers.

10. Packaging and Labeling

10.1 Packaging

10.1.1 Shall be clean, sound, free from insects and fungi infection and the packing material shall be of food grade quality.

10.1.2 The containers, including packaging material, shall be made of substances which are safe and suitable for their intended use. They shall not impart any toxic substance or undesirable odor or suitable flavor to the product.

NOTE 1: Packaging materials may be required to meet different regulations in Ethiopia.

10.2 Labeling

The labeling of containers of cottonseed oil shall comply with the requirements of CES 73 and shall be legibly and indelibly marked with the following:

10.2.1 The Name of the Food

10.2.1.1 The name of the product shall be "Asparagus" and the word "peeled" or "unpeeled" shall be declared, as appropriate, if national legislation so requires.

10.2.1.2 The following, as appropriate, shall be included as part of the name or in close proximity to the name:

10.2.1.2.1 The style -

"Long Shoots" or "Long Spears";
 "Shoots" or "Spears";
 "Tips" or "Points";
 "Cuts and heads" or "Cut Spears";
 "Cuts".

10.2.1.2.2 If the product is produced in accordance with the other styles provision (sub-section 3.3), the label shall contain in close proximity to the name of the product such additional words or phrases that will avoid misleading or confusing the consumer.

10.2.1.2.3 The colour -

"White";
 "White and Blue Tipped";
 "White and Green Tipped";
 "Green";
 "Mixed Colours".

10.2.1.2.4 A declaration of any special sauce and/or seasoning which characterizes the product,

e.g. "with X" or "In X", when appropriate. If the declaration is "With (or "In") Butter Sauce", the fat used shall only be butter fat.

10.2.2 Optional Declarations

10.2.2.1 Size representation - in styles of Long Shoots, Shoots, Tips

10.2.2.1.1 If these size names comply with the applicable requirements of this standard, they may be stated as "Small", "Medium", "Large", "Extra Large", "Blend of Sizes", or "Assorted Sizes", as appropriate.

10.2.2.1.2 The number of units present in the container may be shown by a range of approximate count, e.g. "approximately --- to --- Spears".

11. Sampling

Sampling of Canned asparagus shall be done in accordance with ES 2834.

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Organization and Objectives

The Ethiopian Standards Agency (ESA) is the national standards body of Ethiopia established in 2010 based on regulation No. 193/2010. ESA is established due to the restructuring of Quality and Standards Authority of Ethiopia (QSAE) which was established in 1998.

ESA's objectives are:-

- ❖ Develop Ethiopian standards and establish a system that enable to check whether goods and services are in compliance with the required standards,
- ❖ Facilitate the country's technology transfer through the use of standards,
- ❖ Develop national standards for local products and services so as to make them competitive in the international market.

Ethiopian Standards

The Ethiopian Standards are developed by national technical committees which are composed of different stakeholders consisting of educational institutions, research institutes, government organizations, certification, inspection, and testing organizations, regulatory bodies, consumer association etc. The requirements and/or recommendations contained in Ethiopian Standards are consensus based that reflects the interest of the TC representatives and also of comments received from the public and other sources. Ethiopian Standards are approved by the National Standardization Council and are kept under continuous review after publication and updated regularly to take account of latest scientific and technological changes.

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International Involvement

ESA, representing Ethiopia, is a member of the International Organization for Standardization (ISO), and Codex Alimentarius Commission (CODEX). It also maintains close working relations with the International Electro-technical Commission (IEC) and American Society for Testing and Materials (ASTM). It is a founding member of the African Regional Organization for standardization (ARSO).

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