

C O D E X A L I M E N T A R I U S

INTERNATIONAL FOOD STANDARDS



Food and Agriculture
Organization of
the United Nations



World Health
Organization

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STANDARD FOR PROCESSED TOMATO CONCENTRATES

CXS 57-1981

Adopted in 1981. Revised in 2007, 2017. Amended in 2013, 2022, 2023.

2022 Amendments

Following decisions taken at the Forty-fifth Session of the Codex Alimentarius Commission in December 2022, amendments were made in Section 8.4 Labelling of non-retail containers.

2023 Amendments

Following decisions taken at the Forty-sixth Session of the Codex Alimentarius Commission in December 2023, amendments were made in Section 9. Methods of analysis and sampling.

1. SCOPE

This standard (formerly CAC/RS 57-1972) applies to the product as defined in Section 2 below, and offered for direct consumption, including for catering purposes or for repacking if required. This standard also applies to the product when indicated as being intended for further processing. The standard does not include products that contain seeds and skins such as “pizza toppings” and other “homestyle” products as well as products commonly known as tomato sauce, chilli sauce, and ketchup, or similar products which are highly seasoned products of varying concentrations containing characterizing ingredients such as pepper, onions, vinegar, etc., in quantities that materially alter the flavour, aroma and taste of the tomato component.

2. DESCRIPTION

2.1 Product definition:

Processed tomato concentrate is the product:

- a) prepared by concentrating the juiceⁱ or pulp obtained from substantially sound, mature red tomatoes (*Lycopersicon/Lycopersicum esculentum* P. Mill) strained or otherwise prepared to exclude the majority of skins, seeds and other coarse or hard substances in the finished product; and
- b) preserved by physical means.

The tomato concentration shall be seven percent or more of natural total soluble solidsⁱⁱ, but not dehydrated to a dry powder or flake form.

2.2 Product designation:

Tomato concentrate may be considered “Tomato Puree” or “Tomato Paste” when the concentrate meets these requirements:

2.2.1 “Tomato Puree” – Tomato concentrate that contains no less than seven percent but less than 24 percent of natural total soluble solids.

2.2.2 “Tomato Paste” – Tomato concentrate that contains at least 24 percent of natural total soluble solids.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Composition

3.1.1 Basic ingredients

Processed tomato concentrate as defined in Section 2.1.

3.1.2 Other permitted ingredients

- a) salt (sodium chloride) in accordance with the *Standard for Food Grade Salt* (CXS 150-1985);¹
- b) spices and aromatic herbs (such as basil leaf, etc.) and their natural extracts;
- c) lemon juice (single strength or concentrated) used as an acidulant; and
- d) water.

3.2 Quality criteria

Processed tomato concentrates shall have good flavour and odour, fairly good red colour, and shall possess a homogeneous (evenly divided) texture, characteristic of the product.

3.2.1 Definition of defects

Processed tomato concentrates shall be prepared in accordance with good manufacturing practices (GMP), from such materials and under such practices that the product is substantially free of extraneous plant materials, this including other objectionable material and shall be practically free of mineral impurities.

ⁱ In this standard, “juice” must not be intended as the fruit juice (including tomato juice) as defined in the *General Standard for Fruit Juices and Nectars* (CXS 247-2005).

ⁱⁱ The concentrations are measured on the product without added salt.

Consistent with its intended use, these conditions are fulfilled when:

- a) the product is practically free of objectionable tomato peel;
- b) the product is practically free of seeds or particles of seeds;
- c) the presence of any extraneous plant material other than seed and peel and other than those used as seasonings cannot be detected by the naked eye, and can only be seen under microscope; and
- d) the product is practically free of dark specks or scale-like particles.

3.2.2 Defects and allowances

3.2.2.1 Mineral impuritiesⁱⁱⁱ

The mineral impurity content does not exceed 0.1 percent of the natural total soluble solids content.

3.2.2.2 Lactic acid

The content of lactic acid (total) does not exceed one percent of the natural total soluble solids content.

3.2.2.3 Mould count

Mould count for processed tomato concentrates to be set according to the legislation of the country of retail sale.

3.2.2.4 pH

The pH must be below 4.6.

3.3 Classification of “defectives”

A container that fails to meet the natural total soluble solids requirements, as set out in Section 2.2, and/or one or more of the applicable quality requirements, as set out in Section 3.2, should be considered as a “defective”.

3.4 Lot acceptance

A lot should be considered as meeting the applicable quality requirements referred to in Section 3.2 when:

- a) the number of “defectives”, as defined in Section 3.3, does not exceed the acceptance number c) of the appropriate sampling plan with an AQL of 6.5; and
- b) the maximum allowance for mould count is not exceeded (see Section 3.2.2.3).

These acceptance criteria do not apply to non-retail containers.

4. FOOD ADDITIVES

Only certain acidity regulators as indicated in Table 3 of the *General Standard for Food Additives* (CXS 192-1995)² are acceptable for use in foods conforming to this standard.

5. CONTAMINANTS

5.1 The products covered by this standard shall comply with the maximum levels of the *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995).³

5.2 In order to consider the concentration of the product, the determination of the maximum levels for contaminants shall take into account the natural total soluble solids, the reference value being 4.5 for fresh fruit.

5.3 The products covered by this standard shall comply with the maximum residue limits for pesticides established by the Codex Alimentarius Commission.

5.4 In order to consider the concentration of the product, the determination of the maximum pesticide residue limits shall take into account the natural total soluble solids, the reference value being 4.5 for fresh fruit.

6. HYGIENE

6.1 It is recommended that the products covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CXC 1-1969),⁴ and other relevant Codex texts such as codes of hygienic practice and codes of practice.

ⁱⁱⁱ Sand, soil and any other impurities insoluble in hydrochloric acid.

6.2 The products should comply with any microbiological criteria established in accordance with the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997).⁵

7. WEIGHTS AND MEASURES^{iv}

7.1 Fill of container

7.1.1 Minimum fill

The container should be well filled with the product which should occupy not less than 90 percent (minus any necessary head space according to GMP) 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.

7.1.2 Classification of “defectives”

A container that fails to meet the requirement for minimum fill of Section 7.1.1 should be considered as a “defective”.

7.1.3 Lot acceptance

A lot should be considered as meeting the requirement of Section 7.1.1 when the number of “defectives”, as defined in Section 7.1.2, does not exceed the acceptance number c) of the appropriate sampling plan with an AQL of 6.5.

8. LABELLING

8.1 The product covered by the provisions of this standard shall be labelled in accordance with the *General Standard for the Labelling of Pre-packaged Foods* (CXS 1-1985).⁶ In addition, the following specific provisions apply:

8.2 Name of the product

The name of the product shall be:

- a) “Tomato Puree” if the food contains not less than 7 percent but less than 24 percent natural total soluble solids;
- b) “Tomato Paste” if the food contains not less than 24 percent natural total soluble solids;
- c) another denomination usually employed in the country accompanied by the declaration of the percentage of the natural total soluble solids; or
- d) if an added ingredient, as defined in Section 3.1.2, alters the flavour characteristic of the product, the name of the food shall be accompanied by the term “flavoured with X” or “X flavoured” as appropriate.

8.3 Declaration of the percentage of natural total soluble solids

The percentage solids may be included on the label in either of the following manners:

- a) the minimum percentage of natural total soluble solids (example: “Minimum Solids – 20%”); or
- b) range within two percent of the natural total soluble solids (example: “Solids – 20% to 22%”).

8.4 Labelling of non-retail containers

The labelling of non-retail containers should be in accordance with the *General Standard for the Labelling of Non-Retail Containers of Foods* (CXS 346-2021).⁷

9. METHODS OF ANALYSIS AND SAMPLING

For checking the compliance with this standard, the methods of analysis and sampling contained in the *Recommended Methods of Analysis and Sampling* (CXS 234-1999)⁸ relevant to the provisions in this standard, shall be used.

^{iv} The provisions in this section do not apply to non-retail containers.

NOTES

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- ¹ FAO and WHO. 1985. *Standard for Food Grade Salt*. Codex Alimentarius Standard, No. CXS 150-1985. Codex Alimentarius Commission. Rome.
- ² FAO and WHO. 1995. *General Standard for Food Additives*. Codex Alimentarius Standard, No. CXS 192-1995 Codex Alimentarius Commission. Rome.
- ³ FAO and WHO. 1995. *General Standard for Contaminants and Toxins in Food and Feed*. Codex Alimentarius Standard, No. CXS 193-1995. Codex Alimentarius Commission. Rome.
- ⁴ FAO and WHO. 1969. *General Principles of Food Hygiene*. Codex Alimentarius Code of Practice, No. CXC 1-1969. Codex Alimentarius Commission. Rome.
- ⁵ FAO and WHO, 1997. *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods*. Codex Alimentarius Guideline, No. CXG 21-1997. Codex Alimentarius Commission. Rome.
- ⁶ FAO and WHO. 1985. *General Standard for the Labelling of Pre-packaged Foods*. Codex Alimentarius Standard, No. CXS 1-1985 Codex Alimentarius Commission. Rome.
- ⁷ FAO and WHO. 2021. *General Standard for the Labelling of Non-Retail Containers of Foods*. Codex Alimentarius Standard, No. CXS 346-2021. Codex Alimentarius Commission. Rome.
- ⁸ FAO and WHO. 1999. *Recommended Methods of Analysis and Sampling*. Codex Alimentarius Standard, No. CXS 234-1999. Codex Alimentarius Commission. Rome.