

Translated English of Chinese Standard: GB/T14215-2021
www.ChineseStandard.net → Buy True-PDF → Auto-delivery.
Sales@ChineseStandard.net

GB

NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 67.080.20

CCS X 77

GB/T 14215-2021

Replacing GB/T 14215-2008

General Quality Requirements for Canned Tomato Paste

(CODEX STAN 57-2013, Codex

Standard for Processed Tomato Concentrates, NEQ)

番茄酱罐头质量通则

Issued on: August 20, 2021

Implemented on: September 01, 2022

Issued by: State Administration for Market Regulation;

Standardization Administration of the People's Republic of China.

Table of Contents

Foreword.....	3
1 Scope.....	4
2 Normative References.....	4
3 Product Classification and Code.....	4
4 Requirements	5
5 Test Method	6
6 Inspection Rules.....	7
7 Marking, Packaging, Transportation and Storage.....	8
Appendix A (Normative) Method for Determination of Value of Chromatism of Tomato Paste	9
Appendix B (Normative) Method for Determination of Lycopene Content in Tomato Paste	10
Appendix C (Normative) Method for Determination of Viscosity of Tomato Paste ...	13

General Quality Requirements for Canned Tomato Paste

1 Scope

This Document specifies the product classification and code, requirements, test methods, inspection rules, packaging, marking, transportation and storage of canned tomato paste.

This Document applies to canned tomato paste made from ripe tomatoes or tomato paste as the main raw material, which is pretreated, concentrated, seasoned (or unseasoned), filled or sub-packaged, sealed, sterilized or aseptically filled.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 317 White Granulated Sugar

GB 5009.44 National Food Safety Standard - Determination of Chloride in Foods

GB/T 5461 Edible Salt

GB/T 8269 Citric Acid

GB/T 10786 Test methods of canned foods

QB/T 1006 Inspection Rules for Canned Food

QB/T 4631 Packaging, Labeling, Transportation and Storage for Canned Food

3 Product Classification and Code

3.1 According to different tomato crushing processes, it is divided into:

--- Cold crushed canned tomato paste: products produced by cold crushing process (crushing temperature no higher than 70°C);

--- Warm crushed canned tomato paste: products produced by warm crushing process

(crushing temperature at 70°C~85°C);

--- Hot-broken canned tomato paste: products produced by heat-broken process (the crushing temperature at above 85°C).

3.2 According to whether sub-packaged, it is divided into:

--- Direct filled canned tomato paste: canned tomato paste that has not been sub-packaged;

--- Sub-packaged canned tomato paste: made from concentrated tomato paste; the canned food that is diluted with water or without water; added or not added sugar, salt or citric acid; and prepared by subpackaging, filling, sealing, sterilization or aseptic filling.

3.3 According to the different soluble solid contents, the direct filled canned tomato paste can be divided into:

--- Canned tomato paste with low-concentration: tomato paste with a soluble solid content of 12.5% to 22% (excluding 22%), the product code is 847 1;

--- Canned tomato paste with medium concentration: tomato paste with a soluble solid content of 22%~28% (excluding 28%), the product code is 847 2;

--- Canned tomato paste with high-concentration: tomato paste with a soluble solid content of 28% to 36% (excluding 36%), product code is 847;

--- Canned tomato paste with extra-high-concentration: tomato paste with a soluble solid content of no less than 36%, product code is 847 3.

4 Requirements

4.1 Raw and auxiliary materials

4.1.1 Tomatoes

Use fresh or well-stored tomatoes that have not been attacked by diseases and insect pests.

4.1.2 Citric acid

It shall meet the requirements of GB/T 8269.

4.1.3 Edible salt

It shall meet the requirements of GB/T 5461.

4.1.4 White granulated sugar

It shall meet the requirements of GB/T 317.

5.3 Soluble solids content

5.3.1 Determination method for hot-broken canned tomato paste products: cool the sample to room temperature (20°C) and apply it on the prism surface of a refractometer (hand-held sugar meter, Abbe refractometer, automatic refractometer, etc.); and spread evenly without gaps; make sure that the prism is completely covered; cover the shading plate; and read the displayed value.

5.3.2 Others shall be determined according to the methods specified in GB/T 10786.

5.4 pH

It is measured according to the method specified in GB/T 10786.

5.5 Sodium chloride content

Determine the chloride content (by Cl⁻) according to the method specified in GB 5009.44; and calculate the sodium chloride content according to the Formula (1):

$$X_1 = X_2 \times \frac{58.5}{35.5} \dots\dots\dots (1)$$

Where:

X_1 – sodium chloride content in the specimen, in %;

X_2 - chloride content (by Cl⁻) in the specimen, in %.

5.6 Value of chromatism

It is measured according to the method specified in Appendix A.

5.7 Lycopene

It is measured according to the method specified in Appendix B.

5.8 Viscosity

It is measured according to the method specified in Appendix C.

6 Inspection Rules

6.1 The sampling rules for bulk tomato paste shall meet the following requirements:

- a) Use sterile aluminum foil bags to regularly extract the end products on the production line, and the time interval between each extraction shall not exceed 2 hours;

Appendix B

(Normative)

Method for Determination of Lycopene Content in Tomato Paste

B.1 Principle

The tomato paste is dehydrated with methanol to remove the yellow pigment; and then the lycopene is extracted with toluene; the absorbance of the extract is measured by spectrophotometry; and the lycopene content is calculated according to the standard curve.

B.2 Reagents

B.2.1 Methanol: analytically pure.

B.2.2 Toluene: analytically pure.

B.2.3 Absolute ethanol: analytically pure.

B.2.4 Sudan I pigment: refined product.

B.3 Instruments

B.3.1 Routine laboratory instruments.

B.3.2 Spectrophotometer: the wavelength range is 360nm~600nm, and the accuracy is ± 3 nm.

B.4 Analysis procedures

B.4.1 Drawing of standard curve

B.4.1.1 Preparation of standard solution

Weigh 0.025g of Sudan I pigment, accurate to 0.1mg; dissolve it with a small amount of absolute ethanol; quantitatively transfer it into a 50mL volumetric flask; dilute to the mark with absolute ethanol; and shake well.

B.4.1.2 Draw standard curve

Accurately pipette 0.26mL, 0.52mL, 0.78mL, 1.04mL, 1.30mL of the standard solution; respectively inject them into a set of 50mL volumetric flasks; dilute to the mark with absolute ethanol; shake well; namely, it is equivalent to mass concentration of 0.5 μ g/mL, 1.0 μ g/mL, 1.5 μ g/mL, 2.0 μ g/mL, 2.5 μ g/mL of lycopene standard solution. Then, pour them into 1cm

cuvettes one by one; and measure the absorbance respectively at the maximum absorption wavelength (about 485nm) of the lycopene extract with absolute ethanol as the blank solution. Take the measured absorbance as the ordinate; and the lycopene concentration corresponding to the Sudan I pigment standard solution as the abscissa; draw a standard curve; or establish a linear regression equation.

NOTE: Since the pure lycopene standard product is extremely unstable and the preparation method is cumbersome; while the Sudan I pigment is stable and easy to store, its ethanol solution is similar to the lycopene extract in maximum absorption wavelength, so this Standard adopts Sudan I pigment instead of pure lycopene to draw the standard curve.

B.4.2 Extraction of lycopene in the specimen

B.4.2.1 Sampling

Weigh 0.1g ~ 0.2g of specimen, accurate to 0.1mg; placed in a 10mL small beaker.

B.4.2.2 Removal of yellow pigment

Add a small amount of methanol into the small beaker containing the specimen; and immediately stir it fully with a glass rod to extract the yellow pigment in the tomato paste. Transfer the extract to a glass funnel with filter paper and filter. A small amount of methanol is added to the remaining residue in the beaker; and the above operation is repeated until the filtrate was colorless; and the filtrate is discarded. Save the residue for later use.

B.4.2.3 Extraction of lycopene

According to the above procedures, the lycopene in the residue is extracted with a small amount of toluene for several times until the filtrate was colorless. Collect the filtrate in a 50mL brown volumetric flask; make constant volume with toluene; and shake well to obtain the lycopene extract.

B.4.3 Determination

Inject the above extract (B.4.2.3) into a 1cm cuvette; measure its absorbance with a spectrophotometer at the maximum absorption wavelength (about 485nm) of the lycopene extract, using toluene as a blank solution. Find the concentration of lycopene in the specimen extract from the standard curve (or use linear regression equation to calculate).

B.5 Calculation of results

The lycopene content in the specimen is calculated according to Formula (B.1):

$$X_3 = \frac{5 \times \rho}{m} \dots\dots\dots (B.1)$$

Where:

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----