



**JOINT FAO/WHO FOOD STANDARDS PROGRAMME
FAO/WHO COORDINATING COMMITTEE FOR ASIA
Twenty-second Session
Virtual**

12, 13, 14, 17, 18 and 21 October 2022

**REVISED PROPOSED DRAFT REGIONAL STANDARD FOR SOYBEAN PRODUCTS
FERMENTED WITH *BACILLUS* SPECIES**

(Prepared by the chair of the Electronic Working Group (Japan) taking into account the comments in response to CL 2022/ 52(Rev)/ OCS-ASIA (CX/ASIA 22/22/7 Add.1))

1. SCOPE

This standard applies to products, as defined in Section 2, for direct consumption, including for catering purposes, repacking or further processing if required. This standard does not apply to the product covered by the *Regional Standard for Fermented Soybean Paste* (CXS 298R-2009).

2. DESCRIPTION

2.1. Product Definition

Soybeans fermented with *Bacillus* spp. (solely or together with other microorganisms), that normally retain the shape of soybeans and are not a type of paste, although some of the soybeans may be crushed during the manufacturing process. [The final products maybe sticky and could display various forms of products.]

2.2. Classification

2.2.1. Natto

Soybeans (including crushed soybeans, hereinafter referred to as soybeans) are soaked in water or dilute salty water, then steamed and fermented with *Bacillus subtilis* var. *natto*. [Optional ingredients described in Section 3.1.2.1 may be added.] No material [ingredients] shall be added after fermentation.

[Stickiness]

Natto shall be sticky and visible filamentous substance must be produced when a bean in *Natto* is picked up.

2.2.2. Cheonggukjang

Soybeans soaked in water are boiled, steamed or baked and then fermented with naturally occurring or cultivated microorganisms (i.e. *Bacillus* spp. including *Bacillus subtilis*) for a few days. [Optional ingredients described in Section 3.1.2.2, may be added.] [The powder, paste and spherical pellet type of the products shall be additionally permitted provided that it meets all requirements of this standard.]/[Final products may be processed to powder, paste and spherical pellet.]

[Stickiness]

[Various viscous (i.e. filamentous) substance may be visible when *Cheonggukjang* is lifted.]

2.2.3. [Kinema]

Soybeans are crushed lightly, after steamed, wrapped in broad leaves such as banana leave and fermented without spraying inoculums. After that, it may be dried in the sun. Furthermore, other microorganisms i.e. *Enterococcus*, *Candida*, *Geotrichum* may be [contained]/[naturally present].

(NB: Information on essential quality factors has not been provided. If it is not available to the meeting, it is impossible to include a class "Kinema" in this regional standard.)

[Stickiness]

[Thin filamentous substance may be visible when *Kinema* is lifted.]

2.2.4. Thua Nao

Soybeans are [soaked in water,] steamed or boiled, [and] wrapped in broad leaves such as banana leave. They are fermented with *Bacillus* spp. (solely or may contain other microorganisms). [Optional ingredients described in Section 3.1.2.3, may be added.] [Products may be processed to powder, paste and spherical pellet.]

[Stickiness]

[Thin filamentous substance may be produced.]

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1. Composition

3.1.1. Basic Ingredients

- (a) Soybeans
- (b) Potable water
- (c) *Bacillus* spp. (Naturally occurring or cultivated microorganisms). These are not pathogenic and do not produce toxins.

3.1.2. Optional Ingredients

3.1.2.1. Natto

- (a) Grains and/or flour (wheat, rice, barley, etc.)
- (b) Salt
- (c) Seaweed and/or seaweed powder
- (d) Other ingredients as appropriate

3.1.2.2. Cheonggukjang

- (a) Naturally occurring or cultivated microorganisms (other than *Bacillus* spp.). These are not pathogenic and do not produce toxins.
- (b) Salt
- (c) Garlic
- (d) Red pepper powder
- (e) Other ingredients as appropriate

3.1.2.3. Thua Nao

- (a) Other naturally occurring or cultivated microorganisms (other than *Bacillus* spp.). These are not pathogenic and do not produce toxins
- (b) Salt
- (c) Other ingredients as appropriate

3.2. Quality Criteria

The soybean products fermented with *Bacillus* spp. shall have the characteristic flavour, odour, colour, and texture of the product. There should be no visible foreign matters in the products.

3.3. Component Requirement

The soybean products fermented with *Bacillus* spp. should comply with the composition requirements listed in Table 1.

Table 1 Composition (wet weight basis)

Product name	Moisture content (% w/w)	Protein (% w/w)	Lipid (% w/w)
<i>Natto</i>	≥53.0	≥10.0	≥5.0
<i>Cheonggukjang</i>	≤58.0 (in case of powder type ≤15.0)	≥12.5	≥4.0
<i>Thua Nao</i>	≥53.0 [(in case of powder type ≤15.0)]	≥10.0	—
[kinema]			

3.4. Classification of “Defectives”

Any products that fails to meet the applicable quality requirements, as set out in Section 3.2, 3.3 [and 3.4], should be considered a "defective".

3.5. Lot Acceptance

[A lot should be considered as meeting the applicable quality requirements referred to in Section 3.2 [and 3.3], when the number of "defectives", as defined in Section 3.4, does not exceed the acceptance number (c) of the appropriate sampling plans.(FBD)(Appendix I)]

4. FOOD ADDITIVES

None permitted.

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).

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

6. HYGIENE

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), and other relevant Codex texts, such as Codes of Hygienic Practice and Codes of Practice.

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).

7. [Weights and measures

7.1. [Fill of Container]

7.1.1. Net weight

[The container should be filled with product without impairment of quality and shall be consistent with a proper declaration of contents for the product.]/[The weight of the products covered by the provisions of this Standard shall be indicated in accordance with the General Standard for the Labelling of Prepackaged Foods (CXS 1-1985).]

7.1.2 Classification of “Defectives”

A product that fails to meet the requirement of Section 7.1.1 should be considered as a “defective”.

7.1.3 Lot Acceptance

A lot should be considered as meeting the requirements of Section 7.1.1 when the number of “defectives”, as defined in Section 7.1.2 does not exceed the number (c) of the appropriate sampling plan.]

8. LABELLING

8.1. The products covered by the provisions of this standard shall be labelled in accordance with the *General Standard for the Labelling of Prepackaged Foods* (CXS 1-1985).

8.2. The Name of the Product

The products are soybean products fermented with *Bacillus* spp. The product should be designated with the appropriate term in Section 2.2. Other names may be used in accordance with the law and custom of the country of retail sale in the manner not to mislead consumers.

8.3. 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).

9. METHODS OF ANALYSIS AND SAMPLING¹

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) relevant to the provisions in this standard, shall be used.

9.1. Determination of Moisture Content

Natto: According to AOAC 925.09. (Type I [Gravimetry (vacuum oven)])

Cheonggukjang: According to AOAC 934.01. (Type I [Gravimetry])

Thua Nao: According to AOAC 925.09. (Type I [Gravimetry (vacuum oven)])

9.2. Determination of Protein Content

Natto: According to AOAC 988.05. (Type I [Titrimetry, Kjeldahl digestion])

(Nitrogen factor 5.71)

Cheonggukjang: According to AOAC 988.05. (Type I [Titrimetry, Kjeldahl digestion])

(Nitrogen factor 5.71)

Thua Nao: According to AOAC 988.05. (Type I [Titrimetry, Kjeldahl digestion])

(Nitrogen factor 5.71)

9.3. Determination of Lipid Content

Natto: According to AOAC 963.15. (Type I [Gravimetry (Soxhlet Extraction)])

(Quantity of sample:4g)

Cheonggukjang: According to AOAC 963.15. (Type I [Gravimetry (Soxhlet Extraction)])

(Quantity of sample:5g)

¹ The testing analytical methods will be removed when the standard is adopted by CAC and included in CXS 234-1999.

Sampling plans (AQL=6.5)

Sampling plan 1 – Normal sampling

Lot size (N)	Sample size (n)	Acceptance number (c)
4,800 or less	6	1
4,801-24,000	13	2
24,001-48,000	21	3
48,001-84,000	29	4
84,001-144,000	38	5
144,001-240,000	48	6
More than 240,000	60	7

Sampling plan 2 – Dispute, enforcement or need for better lot estimate

Lot size (N)	Sample size (n)	Acceptance number (c)
4,800 or less	13	2
4,801-24,000	21	3
24,001-48,000	29	4
48,001-84,000	38	5
84,001-144,000	48	6
144,001-240,000	60	7
More than 240,000	72	8