

**PROPOSED DRAFT REGIONAL STANDARD FOR SOYBEAN PRODUCTS FERMENTED WITH
BACILLUS SPECIES
(At Step 5/8)**

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 may be sticky and can be further processed into 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*. No material or ingredients shall be added after fermentation.

Natto shall be sticky and filamentous substance must be visible 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 only after fermentation. The final product, Cheonggukjang, which complies with the component requirement may be presented in the forms of powder, paste and spherical pellet.

2.2.3. 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 presented/added. The final product, Thua Nao, which complies with the component requirement may be presented in paste or dried forms, e.g. powder, sheet and pellet.

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 matters¹ in the products.

3.3. Component Requirement

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

Table 1

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	≥12.5	≥4.0
<i>Thua Nao</i>	≥53.0 (in case of dried form ≤15.0)	≥10.0	—

(wet weight basis)

3.4. Classification of “Defectives”

Any products that fail to meet the applicable quality requirements, as set out in Section 3.2 and 3.3, 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, when the number of “defectives”, as defined in Section 3.4, does not exceed the acceptance number (c) of the appropriate sampling plans with an AQL of 6.5 (Annex I).

4. FOOD ADDITIVES

None permitted.

5. 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* (CXS 193-1995).

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

¹ Any visible objectionable foreign detectable matter or material not usually associated with the raw material used.

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. Net weight

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 Pre-packaged Foods (CXS 1-1985).}

7.2. Lot Acceptance

The requirements for net weight should be deemed to be complied with when the average net weight of all containers examined is not less than the declared weight, provided that there is no unreasonable shortage in individual containers.

8. LABELLING

The products 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).

8.1. 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.

8.2. 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 SAMPLING²

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)

² The analytical methods will be removed when the standard is adopted by CAC and included in CXS 234-1999.

ANNEX I**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