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# GAIN Report

Global Agricultural Information Network

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## China - Peoples Republic of

**Post:** Beijing

### China announces standards for Vegetable Protein for Food Industry as WTO SPS Notification 1010

**Report Categories:**

FAIRS Subject Report

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**Report Highlights:**

On November 19, 2015, China notified the WTO of the National Food Safety Standard of Vegetable Protein for Food Industry (an update of the GB/T 20371), issued by the National Health and Family Planning Commission (NHFPC), as SPS/N/CHN/1010. This standard applies to vegetable protein products intended for food preparation and food industry, using plants as main raw material, prepared by various separation and extraction. This standard does not apply to single celled vegetable protein. The deadline for submission of final comments to China is January 18, 2016. The proposed date of entry is yet to be determined. Comments can be sent to China's SPS Enquiry Point at [sps@aqsiq.gov.cn](mailto:sps@aqsiq.gov.cn). The following report contains an unofficial translation of this draft measure.

## **General Information:**

### **BEGIN TRANSLATION**

## **National Food Safety Standard Vegetable Protein for Food Industry**

### **Preface**

This standard replaces GB/T 20371-2006 "Soybean Protein for Food Industry"

Compared with GB/T 20371-2006, this standard has the following changes:

- Changed the name of the standard to "National Standard for Food Safety - Vegetable Protein for Food Industry";
- Revised the scope;
- Added the terms and definitions
- Revised the physical and chemical indexes;
- Revised the health requirements;
- Added the mycotoxin limit.
- Revised Appendix A.

## **National Standard for Food Safety Vegetable Protein for Food Industry**

### **1 Scope**

This standard applies to the vegetable protein for food preparation and for the purpose of food industry used in the food processing industry, produced with plants as the main raw materials by different separation and extraction processes.

This standard doesn't apply to the single cell protein.

### **2 Terms and Definitions**

#### **2.1 Vegetable Protein**

The products obtained by removing or partially removing the non-protein components (such as moisture, fat, carbohydrate, etc.) from the plant raw materials until the protein content not less than 40% (at the dry basis, with a coefficient of the protein converted from nitrogen of 6.25). The main products include soy (such as soybeans, peas and horse-beans) protein, cereal (such as wheat, corn, rice, oats) protein, nut and seed (such as peanuts) protein, tuber (such as potato) protein and other plant proteins.

#### **2.2 Crude Extracts of Protein**

The products made by the primary extraction to partially remove the non-protein components (such as moisture, fat, carbohydrate, etc.) from the plant raw materials.

#### **2.3 Concentrated Protein**

The products obtained by extracting, concentrating, separating and other processes to removing or partially remove the non-protein components (such as moisture, fat, carbohydrate, etc.) from the plant raw materials.

Including the potato coagulated protein obtained by extracting, heating and solidifying, and other processes.

#### 2.4 Isolated Protein

The products obtained by extracting, concentrating, separating, purification and other processes to remove or partially remove the non-protein components (such as moisture, fat, carbohydrates, etc.) from the plant raw materials.

#### 2.5 Hydrolyzed Protein

The products with protein as the main component obtained by moderately acid or enzyme treatment of the plant protein (restrictive hydrolysis).

#### 2.6 Tissue Protein

The products with specific structure and with the plant protein as the raw material processed by extruding or spinning process.

### 3 Technical Requirements

#### 3.1 Raw Materials Requirements

The raw materials shall be in accordance with the corresponding food standards and the relevant regulations.

#### 3.2 Sensory Requirements

The sensory requirements shall be in accordance with the regulations in Table 1.

Table 1 Sensory Requirements

Items	Requirements	Inspection Method
Color	It has the color as the product <del>should have</del>	Take an appropriate sample, place it in a white porcelain plate to observe its color and status under natural light. smell its odor, and then gargle with warm boiling water to taste its flavor
Taste and	It has the taste and smell as the product should have, without	
Status	It has the status as the product should have, without normally visible foreign matters	

#### 3.3 Physical and Chemical Indexes

The physical and chemical indexes shall be in accordance with the regulations in Table 2.

Table 2 Physical and Chemical Indexes

Items		Indexes			Inspection method
		Crude extracts of protein	Concentrated protein	Isolated protein	
Proteins (at dry basis)/ (g/100g)	Soybean protein Peanut protein Rice protein Potato protein	$50 \leq X < 65$	$65 \leq X < 90$	$X \geq 90$	GB 5009.5
	Pea protein	$50 \leq X < 65$	$65 \leq X < 80$	$X \geq 80$	
	Other proteins <sup>a</sup> $\geq$	40			
Moisture <sup>b</sup> / (g/100g)	$\leq$	10.0			GB 5009.3
Urease (urea ferment) activity <sup>c</sup>	Negative				GB 5413.31 <sup>e</sup> Or the methods in Appendix A <sup>f</sup>
	Non-negative <sup>d</sup>				
<sup>a</sup> In addition to the 5 proteins above, the vegetable proteins also include the hydrolyzed protein and tissue protein. <sup>b</sup> It doesn't apply to the tissue protein and cream-like soybean protein. <sup>c</sup> It applies only to the soybean protein. <sup>d</sup> It applies only to the products that are edible only when they are treated by heating to destroy the enzyme. <sup>e</sup> For the qualitative detection, the sampling amount of the creamed liquid-state products shall be converted according to the dry substance content. <sup>f</sup> For the quantitative detection, the urease activity indicator of the negative products shall be $\leq 0.02$ U/g.					

### 3.4 Contaminant limit and Mycotoxin Limit

#### 3.4.1 Contaminant Limit

The contaminant limit shall be in accordance with the regulations of the corresponding products in GB2762. Where for the soy protein, refer to the soybean products, for the peanut protein, refer to the peanuts, for the wheat protein, refer to the gluten, for the maize protein and oat protein, refer to the grain products, for the potato protein, pea protein and horse-bean protein, refer to the vegetable products, and for the rice protein refer to the regulations for rice.

#### 3.4.2 Mycotoxin Limit

The mycotoxin limit shall comply with the regulations for the corresponding products in GB 2761. Where for the peanut protein, refer to the peanut, for the maize protein, refer to the grain products, and for the rice protein, refer to the regulations for rice.

### 3.5 Microbial Limit

3.5.1 The pathogenic bacteria limit shall be in accordance with the regulations for the food products in GB 29921.

3.5.2 The microbial limit shall also be in accordance with the regulations in Table 3.

Table 3 Microbial Limit

Items	Sampling plan <sup>a</sup> and limit				Inspection Method
	N	C	m	M	
Total number of colonies (CFU/g)	5	2	5x10 <sup>4</sup>	10 <sup>5</sup>	GB 4789.2
Coliform group(CFU/g)	5	1	10	10 <sup>2</sup>	GB 4789.3 plate counting method
<sup>a</sup> The sampling and processing shall be implemented according to GB 4789.1.					

### 3.6 Food Additives

The use of food additives shall be in accordance with the regulations of GB 2760.

### 4 Others

4.1 The product name should be marked with specific plant source, such as: soy protein, wheat protein, maize protein, pea protein and potato protein, etc.

4.2 The product names can be labeled with specific classification, taking the soybeans, peanuts as an example, such as soybean crude extract of protein, soy concentrated protein, soybean isolated protein, soy tissue protein, peanut crude extract of protein, peanut concentrated protein, peanut isolated protein, peanut tissue protein, etc.

4.3 The product names may include the words describing the physical form of the formed product, such as particles, debris, powder, etc.

4.4 The name of hydrolysis protein shall be marked based on the specific plant sources, such as: soy hydrolysis protein, wheat hydrolysis protein, maize hydrolysis protein, corn protein hydrolysate, pea hydrolysis protein and potato hydrolysis protein, etc.

4.5 The soy protein products shall be labeled with text description of urease activity and safety.

The text description of urease activity and safety can be identified with the following methods:

The urease activity is negative;

The urease activity is non-negative (the products are edible only when they are treated by heating to destroy the enzyme).

## Appendix A

### Method for Inspection of Urease Activity in Soy Protein

#### A.1 Instrumentation

A.1.1 Crusher: no strong heat should be generated when crushing;

A.1.2 Sample sieve: aperture 200 $\mu$ m;

A.1.3 Analytical balance: reciprocal sensitivity 0.1mg;

A.1.4 Constant temperature water bath: controllable temperature 30°C $\pm$ 0.5°C;

A.1.5 Timer;

A.1.6 Acidometer: accuracy 0.02, attached with magnetic stirrer and titration apparatus;

A.1.7 Commonly used glassware in laboratory.

#### A.2 Reagents and Solutions

The reagents are analytically pure and the water shall comply with the provisions of GB/T6682.

##### A.2.1 Urea Buffer Solution (pH7.0 $\pm$ 0.1):

Weigh up 8.95g disodium hydrogen phosphate ( $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$ ), 3.40g potassium dihydrogen phosphate ( $\text{KH}_2\text{PO}_4$ ) and dissolve it in water and dilute it to 1000ml, and then dissolve 30g urea in the buffer solution, valid for 1 month.

##### A.2.2 Hydrochloric Acid Solution [c(HCl)=0.1mol/L]

Take out 8.3mL hydrochloric acid and dilute it to 1000mL with water.

##### A.2.3 Sodium Hydroxide Solution [c(NaOH)=0.1mol/L]

Weigh up 4 sodium hydrate and dissolve it in water, and dilute it to 1000mL, implement preparation and calibration according to the methods specified in GB/T 601.

##### A.2.4 Ethanol Solution of Methyl Red and Bromocresol Green Mixture

Weigh up 0.1g methyl red, dissolve it in 95% ethanol and dilute it to 100ml, and then weigh up 0.5g bromocresol green, dissolve it in 95% ethanol and dilute it to 100ml; mix these two solutions in equal volume and store it in a brown bottle.

#### A.3 Preparation of Reagent

Crush the representative sample with crusher (A.4.1), making it all pass through the sample sieve (A.4.2). For the special samples (the samples with high contents of water or volatile matter and can't be crushed) should be pre-dried in the laboratory temperature before crushing, and the weight loss due to drying should be included in the calculation of the results.

#### A.4 Determination Procedure

Weigh up about 0.2g prepared specimen (A.6) accurate to 0.1mg, put it into the glass tube (if it has a high activity, weigh 0.05g specimen), add 10mL urea buffer solution (A.5.1) and immediately cover the tube to vigorously shake the tube; put the tube in a constant-temperature water bath of 30°C±0.5°C (A4.4) at once and keep it 30min±10s by timing. To keep the same time interval to add urea buffer solution into each sample is required. When the reaction is stopped, add 10mL hydrochloric acid solution (A.5.2) at the same time interval and shake the tube immediately before rapidly cooling it to 20°C. Transfer the contents of the tube all into a small beaker, flush the tube several times with 20ml water and use an acidometer (A.4.6) to titrate the standard sodium hydroxide solution (A.5.3) to pH4.70. If the indicator is used, then transfer all the content of the test tube into a 250mL conical flask, add 8-10 drops of mixed indicator (A.5.4) and titrate the standard sodium hydroxide solution (A.5.3) until the solution appears blue-green.

Take another test tube for blank test: weigh up about 0.2g prepared specimen (A.6) accurate to 0.1mg, put it into the glass tube (if it has a high activity, weigh up 0.05g specimen), add 10ml hydrochloric acid solution (A.5.2) and shake it, and then add 10ml urea buffer solution (A.5.1), cover the tube immediately and vigorously shake it, place the tube in a constant-temperature water bath of 30°C±0.5°C (A4.4) at once and keep it 30min ± 10s by timing. When the reaction is stopped, cool it quickly to 20°C. Transfer all the content of the tube into a small beaker and flush the tube for several times with 20ml water, and use an acidometer (A.4.6) to titrate the standard sodium hydroxide solution (A.5.3) to pH4.70. If the indicator is used, then transfer all the content of the test tube to a 250mL conical flask, add 8-10 drops of mixed indicator (A.5.4) and titrate the standard sodium hydroxide solution (A.5.3) until the solution appears blue-green.

## A.5 Result Calculation

A.5.1 The activity X of urease in soybean products expressed in urease activity unit per gram (U/g) is calculated with equation (1). If the sample is pretreated by drying before crushing, then calculate it with equation (2):

$$X = \frac{14}{30 \times m} \times c(V_0 - V) \text{-----(1)}$$

$$\frac{X}{30 \times m} = \frac{14}{30 \times m} \times c(V_0 - V) \times (1-S) \text{-----(2)}$$

Where:

X - The urease activity of sample, in the unit of activity per gram (U/g);

c - The concentration of standard titration solution of sodium hydroxide, in the unit of moles per liter (mol/L);

V<sub>0</sub> - The volume of standard titration solution of sodium hydroxide consumed by blank, in the unit of milliliter (mL);

V - The volume of standard titration solution of sodium hydroxide consumed by the sample, in the unit of milliliter (mL);

14 - The molar mass of nitrogen,  $M(N_2) = 14\text{g/mol}$ ;

30 - The reaction time, in the unit of minute (min);

m - The quality of the sample, in the unit of gram (g);

S - The mass fraction of the sample weight loss during pre-drying, %.

The calculated results shall be rounded off to two decimals.

A.5.2 Repeatability: The same analyst uses the same method to determine the activity, when the activity is  $\leq 0.2$  in two determinations at the same time or consecutively, the difference of the results doesn't exceed 20% of the average value, and when the activity is  $> 0.2$ , the difference of the results doesn't exceed 10% of the average value, the results is expressed in arithmetic average value.

END OF TRANSLATION