



**NATIONAL STANDARD OF THE  
PEOPLE'S REPUBLIC OF CHINA**

**GB 1886.243-2016**

Replacing GB 1976-2008

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**Food additive -- Sodium alginate**

食品安全国家标准 食品添加剂 海藻酸钠(又名褐藻酸钠)

**(English Translation)**

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### Foreword

This standard replaces GB 1976-2008 "food additive sodium alginate." this standard compared with GB 1976-2008, the main changes are as follows.

--- Standard name was changed to "national food safety standards for food additives Sodium alginate (also known as sodium alginate)";

--- Increasing the structural formula, molecular formula and molecular weight;

--- Increased identification test;

--- Remove the product specifications;

--- Remove the light transmittance;

--- Modifications lead indicators.

National Food Safety Standard Food additive sodium alginate (also known as sodium alginate)

### 1 Scope

This standard applies to the kelp (*Laminaria*), Sargassum (*Sargassum*), kelp (*Macrocystis*), *Ascophyllum nodosum* (*Ascophyllum*) brown algae and other plants, prepared by the extraction and processing of food additive sodium alginate (also known as sodium alginate).

### 2 Molecular formula, relative molecular mass and structural formula

Formula 2.1

$(C_6H_7O_6Na)_n$

## 2.2 Formula

--- G (1C4) --- G (1C4) --- M (4C1) --- M (4C1) --- G alpha-1,4 alpha-1,4 beta-1,4 beta-1,4

## 2.3 Relative molecular mass

### 2.3.1

structural units. the theoretical value of 198.11, the actual average of 222.

### 2.3.2

macromolecules typical average. from 10,000 to 600,000 (according to 2013 international relative atomic mass).

## 3.1 Sensory requirements

Sensory requirements shall comply with the requirements of Table 1.

Table 1 Sensory requirements

Project requires test methods Color white to pale yellow or light brown State filamentous, granular or powder form Take sample is placed in a clean, dry white porcelain dish, in natural light, and watch his color and state

## 3.2 Physical and Chemical Indicators

Physical and chemical indicators should be consistent with the provisions of Table 2.

Table 2. Physical and chemical indicators

Item Index Test Method Viscosity (20 °C) / mPa · s compliance claimed in Appendix A A.3 pH 6.0 ~ 8.0 GB/T 9724a Water, w /% <= 15.0 GB 5009.3 direct drying Water-insoluble, w /% <= 0.6 Appendix A A.4 Ash (dry basis), w /% 18.0 ~ 27.0 GB 5009.4 Lead (Pb)/(mg/kg) <= 5.0 GB 5009.75 Arsenic (As)/(mg/kg) <= 2.0 GB 5009.76 a 10g/L sample solution.

### Appendix A

#### Testing method

A.1 General Provisions Unless otherwise specified in this standard, the purity of the reagents used should be analytically pure, the standard titration solution, impurity measurement standard solution preparation and products, should be GB/T 601, GB/T 602, the provisions of the preparation of GB/T 603, the test water should be consistent with GB/T 6682 in the three water regulation set. Solution was used in the tests did not indicate what is formulated with solvent, it refers to an aqueous solution.

A.2 Identification Test A.2.1 Reagents and materials A.2.1.1 ethanol. chemically pure.

A.2.1.2 ether. chemically pure.

Sample solution A.2.1.3 (5g/L). Weigh 0.5g sample under stirring slowly added 100mL of water, stirring constantly, until it was all Uniform solution placed to bubble Tuojin aside.

A.2.1.4 calcium chloride. 25g/L.

A.2.1.5 saturated ammonium sulfate solution. Weigh 78g of ammonium sulfate was added 100mL of water, and dissolved under heat, allowed to stand overnight, the upper layer Clear liquid is a saturated solution of ammonium sulfate.

A.2.2 Identification Test A.2.2.1 soluble test Weigh about 0.5g sample 3 parts of water were added 100mL, 100mL ethanol and 100mL ether, slowly soluble form in water samples A glue-like liquid, insoluble in alcohol, ether.

A.2.2.2 calcium chloride precipitation test Take 5mL sample solution (A.2.1.3), calcium chloride is added 1mL solution immediately generated a large amount of gelatinous precipitates. The method can zone Divided sodium alginate and gum arabic, sodium carboxymethyl cellulose, carrageenan, gelatin, gum ghatti, karaya gum, locust bean gum, methyl cellulose and Tragacanth.

A.2.2.3 ammonium sulfate precipitation test Take 10mL sample solution (A.2.1.3), was added 5mL of saturated ammonium sulfate solution, no precipitate formed. The method can distinguish alginate and agar, sodium carboxymethyl cellulose, carrageenan, de-esterified pectin, gelatin, locust bean gum, methyl cellulose and starch.

A.3 Determination of viscosity A.3.1 principle of the method when viscometer rotor is rotated in the sodium alginate solution by viscous resistance, so that the torque generated gossamer connection pointer, and viscous resistance Force to contend with, and finally reach equilibrium value.

A.3.2 Instruments and Equipment Viscometer.

A.3.3 Analysis step

A.3.3.1 Weigh 5.0g ~ 6.0g sample was under stirring slowly added to the water, the sample solution is dubbed 10g L/500mL ~ 600mL, stirring constantly, until a homogeneous solution was allowed to stand until bubbles Tuojin aside.

A.3.3.2 first solution is adjusted to a temperature of  $20\text{ }^{\circ}\text{C} \pm 0.5\text{ }^{\circ}\text{C}$ , then viscometer operating procedures, first viscometer rotor immersed in the sample solution (A.3.3.1), and then start the viscometer switch, rotate about 0.5min, stable value to be displayed after the reading.

A.3.4 Calculation Results A.3.4.1 value viscometer Direct reading, is the viscosity value of the sample.

A.3.4.2 pointer viscometer Viscosity value  $w_1$ , the unit is mPas ( $\text{mPa} \cdot \text{s}$ ), according to formula (A.1) Calculated.

$$w_1 = S \cdot k \quad (\text{A.1})$$

Where.

S --- viscometer pointer readings in milli-Pascal seconds (mPa · s);

And the rotational speed of the rotor coefficient chosen k --- when measured.

The test results of the arithmetic mean of the parallel determination results shall prevail, twice under the same condition of independent determination results obtained absolute difference Value can not exceed 3.0% of the arithmetic mean.

A.4 Determination of insoluble matter A.4.1 principle of the method Sodium alginate aqueous solution by pressure filtration sand core crucible, the residue is washed and dried to constant mass, the mass fraction expressed.

A.4.2 Instruments and Equipment A.4.2.1 vacuum pump.

A.4.2.2 sand core crucible. filter plate aperture 30μm ~ 50μm.

A.4.2.3 oven. 105 °C ± 2 °C.

A.4.3 Analysis step

Weigh a sample of about 0.5g (accurate to 0.0002g) in 500mL beaker, add water to 200mL, covered with a watch glass, heated to boiling, Paul Support micro-boiling 1h (note agitation when heated). Serve hot with dried to constant weight (mass difference of no more than twice around for the constant weight 0.0002g, cooling operation should be strictly maintained for Unified cooling time) of the sand core crucible vacuum filtration, and washed thoroughly with hot water beaker and the sand core crucible, and then the sand Core crucible in an oven dried to constant mass (mass difference of not more than twice before and 0.0003g to constant weight).

A.4.4 Calculation Results the content of the sample water insolubles  $w_2$ , according to equation (A.2) Calculated.

$m_3 - m_2$

100% (A.2)

Where.

$m_3$  --- sand core crucible with water insoluble mass in grams (g);

$m_2$  --- sand core crucible mass in grams (g);

$m_1$  --- sample mass, in grams (g).

The test results of the arithmetic mean of the parallel determination results shall prevail, twice under the same condition of independent determination results obtained absolute difference Value can not exceed 15% of the arithmetic mean.