



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

**GB 29225-2012**

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**National food safety standards -- Food additives -- Attapulgate  
clay**

食品添加剂 凹凸棒粘土

**(English Translation)**

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### 1 Scope

This standard applies to the attapulgite clay as raw material using acid activation, roasting process production of food additives attapulgite clay.

#### 2.1 Molecular formula

(Mg, Al)  $2\text{Si}_4\text{O}_{10}(\text{OH})_4\text{H}_2\text{O}$

#### 2.2 Relative molecular mass

463.85 (according to the 2007 International Relative Atomic Quality)

#### 3.1 Sensory requirements

Shall comply with the provisions of Table 1.

Table 1 sensory requirements

The project requires a test method Color gray or light yellow State powder Take the appropriate amount of sample in a 50 mL beaker Under the light to observe the color and state

#### 3.2 Physical and chemical indicators

Shall comply with the provisions of Table 2.

Table 2 Physical and chemical indicators

Item Index Test Method Decolorization rate, %  $\geq 70$  Appendix A, A.4 Moisture, w / %  $\leq 10.0$  Appendix A, A.5 Free acid (calculated as  $\text{H}_2\text{SO}_4$ ), w / %  $\leq 0.20$  Appendix A A.6 Fineness (through 75  $\mu\text{m}$  mesh), w / %  $\geq 85$  Appendix A A.7 Bulk density/(g/cm<sup>3</sup>) 0.5 to

1.0 Appendix A A.8 Heavy metals (Pb)/(mg/kg)  $\leq 40$  GB/T 5009.74 Total arsenic (in As)/(mg/kg)  $\leq 3$  GB/T 5009.76 Appendix A Testing method A.1 Warning Some of the reagents used in the test methods of this standard are toxic or corrosive and require careful operation such as splashing on the skin that is, rinse with water, severe cases should be treated immediately.

A.2 General provisions Unless otherwise stated, only the reagents identified as analytical reagents and the tertiary water specified in GB/T 6682-2008 are used in the analysis. test Method used in the standard titration solution, impurity determination standard solution, preparation and products, without any other requirements, according to GB/T 601, GB/T 602 and GB/T 603; the solution used in the absence of specified solvent, refers to the aqueous solution.

A.3 Identification test A.3.1 X-ray diffraction spectroscopy identification the X-ray diffraction spectrum of attapulgite clay should be consistent with Figure B.1 in Appendix B.

A.3.2 Magnesium oxide (MgO) content test the mass fraction of magnesium oxide measured by X-ray fluorescence spectrometer should not be less than 6%.

A.4 Determination of decolorization rate A.4.1 Methodological Summary Take a certain amount of neutralized soybean oil, add a certain quality of the sample for decolorization, measured decolorization after the oil absorbance. According to the absorbance Decrease the value to calculate the decolorization rate as a percentage.

A.4.2 Reagents and materials A.4.2.1 Soybean oil. clarifies fresh and neutralized soybean oil with an absorbance between 0.2 and 0.4.

A.4.2.2 Medium speed qualitative filter paper.

A.4.3 Instruments and equipment A.4.3.1 Spectrophotometer. with 1cm cuvette.

A.4.3.2 Constant temperature magnetic stirrer.

A.4.4 Analysis steps Weighed 0.4000 g of the sample which had been dried at  $105^{\circ}\text{C} \pm 3^{\circ}\text{C}$  and placed in a 50 mL dry grinding flask and added with soybean oil 40.00g, the oil into the thermometer and sealed with a casing, it will be placed on the preheated constant temperature magnetic stirrer, while heating and stirring, heating Time control in about 10min. The strength of the agitation is preferably in the form of a swirling motion of the entire oil sample. Keep the thermometer always submerged in the oil sample.

The temperature was raised to  $110^{\circ}\text{C}$ , and the temperature was maintained at  $115^{\circ}\text{C} \pm 5^{\circ}\text{C}$  and stirred for 25 min. After decolorization, take advantage of the double layer Quick-quality filter paper filter in 50mL dry beaker. The above-mentioned clarified oil samples were measured on a spectrophotometer at a wavelength of 520 nm the absorbance of the oil sample (with 1cm cuvette, water for reference, calibration zero). Simultaneous determination of non-decolorized soy and neutralized oil at 520 nm the

absorbance at the wavelength.

A.4.5 Calculation of results the decolorization rate  $X_1$  is calculated according to formula (A.1)  $X_1 = \frac{A_0 - A_1}{A_0} \times 100\%$  (A.1) where.

$A_0$  --- non-decolorized oil samples at 520nm wavelength absorbance.

$A_1$  - the absorbance of the decolored oil sample at the wavelength of 520 nm.

The experimental results are based on the arithmetic mean of the parallel measurement results, and the absolute difference between the two parallel measurements is not more than 2%.

A.5 Determination of moisture Determination of moisture by GB 5009.3 direct drying method, the drying temperature of  $105\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ .

A.6 Determination of free acid (measured in  $\text{H}_2\text{SO}_4$ ) A.6.1 Methodological summary the free acid in the sample was leached with water and titrated with sodium hydroxide as the indicator. The titration of the sample was calculated by titration.

Acid content.

A.6.2 Reagents and materials A.6.2.1 Sodium hydroxide standard titration solution.  $c$  ( $\text{NaOH}$ ) = 0.02 mol/L.

A.6.2.2 phenolphthalein indicator solution. Weigh 0.1g phenolphthalein ( $\text{C}_{20}\text{H}_{14}\text{O}_4$ ), dissolved in 100mL anhydrous ethanol.

A.6.2.3 Medium speed qualitative filter paper.

A.6.3 Analysis steps Weigh the sample about 1g, accurate to 0.0001g, placed in a 150mL beaker, add 50mL of water, boil for 3min. Filter on 250mL Erlenmeyer flask, wash the beaker with hot water and filter paper 4 to 5 times (total water consumption of about 50mL), covered with caustic soda asbestos drying tube glue Plug, cool to room temperature. Remove the rubber stopper, wash the cone wall with water, add 2 to 3 drops of phenolphthalein indicator solution, immediately with sodium hydroxide standard titration solution Liquid titration to reddish and keep for 30s without fading as the end. At the same time as a blank experiment.

A.6.4 Calculation of results the mass fraction  $w_1$  of the free acid (calculated as  $\text{H}_2\text{SO}_4$ ) is calculated according to formula (A.2)  $w_1 = \frac{(V - V_0)}{1000} \times c \times M \times 100\%$  (A.2) where.

$V$  - titration sample solution consumes the volume of sodium hydroxide standard titration solution in milliliters (mL);

$V_0$  --- titration blank solution consumes the volume of sodium hydroxide standard titration solution in milliliters (mL);

$c$  - the concentration of sodium hydroxide standard solution in moles per liter (mol/L);

M - sulfuric acid ( $1/2H_2SO_4$ ) molar mass in grams per mole (g/mol) ( $M = 49.04$ );

m --- sample quality, in grams (g);

1000 --- conversion factor.

The experimental results are based on the arithmetic mean of the parallel measurement results, and the absolute difference between the two measurements is not more than 0.04%.

**A.7 Determination of fineness**  
**A.7.1 Methodological Summary** Take a certain amount of the sample in a standard sieve of 75 $\mu$ m sieve, dry sieve, the screen sieve residue weighing, calculated through the screen of the hundred fraction.

**A.7.2 Instruments and equipment**  
**A.7.2.1 Standard sieve.** 75 $\mu$ m sieve, in line with GB/T 6003.1 requirements.

**A.7.2.2** plate 6 brush.

**A.7.3 Analysis steps** Weigh the sample about 20g, accurate to 0.0001g, placed in a standard sieve, with a brush on the 6th brush gently brush until the sieve sample brush no less Only, the quality of the sieve residue is measured, accurate to 0.0001g.

**A.7.4 Calculation of results** the fineness (through the 75  $\mu$ m mesh)  $w_2$  is calculated as the mass fraction, according to formula (A.3)  $w_2 = \frac{m-m_1}{m} \times 100\%$  (A.3) where.

m --- the quality of the sample, in grams (g);

$m_1$  --- did not pass the quality of the standard sieve sample, in grams (g).

The experimental results are based on the arithmetic mean of the parallel measurement results, and the absolute difference between the two parallel measurements is not more than 2%.

**A.8 Determination of bulk density**  
**A.8.1 Methodological Summary** the sample was placed in a funnel of a bulk density measuring device and allowed to fall into a known volume of the tank and then measured in a loose bulk the mass of the unit sample volume.

**A.8.2 Instruments and equipment** Bulk density measurement device shown in Figure A.1, tank volume is known, the volume measurement method see Appendix C.

1 --- material tank;

2 - stent;

3 --- funnel.

Figure A.1 Bulk density measuring device

**A.8.3 Analysis steps**  
**A.8.3.1** Install the bulk density measuring device as shown in Figure A.1.