



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

GB 1886.374-2024

National food safety standard - Food additive - Cellulose

食品安全国家标准 食品添加剂 纤维素

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Standardization Administration of the PRC**

Table of Contents

1 Scope
2 Chemical name, molecular formula, structural formula, relative molecular mass...
2.1 Chemical name Cellulose
2.2 Molecular formula (C ₆ H ₁₀ O ₅) _n
2.3 Structural formula
3 Technical requirements
Appendix A

1 Scope

GB 1886.374-2024 is the Chinese mandatory food safety standard for cellulose used as a food additive. Powdered cellulose is one of the workhorse additives of processed food, used as an anticaking agent, a bulking agent and a source of insoluble fibre, and because it is consumed in quantity the specification that governs its purity is a public health instrument rather than a trade convenience. The standard covers cellulose obtained by purifying and mechanically comminuting fibrous plant pulp containing alpha-cellulose. It gives the chemical name, molecular formula, structural formula and relative molecular mass, then the technical requirements, sensory and physicochemical, and then, in the appendices that make up most of the document, the test methods: the identification tests by solubility, suspension behaviour, infrared spectrum and degree of polymerisation, and the determinations of the individual purity criteria, together with the standard reference infrared spectrum of cellulose and the conversion between relative viscosity and the product of intrinsic viscosity and concentration. It was issued by the National Health Commission and the State Administration for Market Regulation and took effect on 8 August 2024. For a producer, importer or food manufacturer, this is the specification a batch is accepted against in China.

This standard applies to food additive cellulose, which is obtained by purifying and mechanically crushing fibrous plant pulp containing alpha-cellulose as raw material.

2 Chemical name, molecular formula, structural formula,
relative molecular mass

2.3 Structural formula

2.4 Relative molecular mass (162.14)_n (according to the 2018 international relative atomic mass)

3 Technical requirements

3.1 Sensory requirements Sensory requirements shall comply with the provisions of Table 1.

Appendix A

Test method A.1 Safety tips Some reagents used in the test method of this standard are toxic or corrosive. Appropriate safety and health measures shall be taken during operation. If splashed on the skin, rinse with water immediately. In severe cases, treatment shall be given immediately. When using flammable materials, it is strictly forbidden to use open flames for heating. A.2 General provisions The reagents and water used in this standard refer to analytical pure reagents and grade 3 water specified in GB/T 6682, unless otherwise specified. The standard titration solution, standard solution for impurity determination, preparations and products used in the test shall be prepared, in accordance with the provisions of GB/T 601, GB/T 602, GB/T 603, unless otherwise specified. The solutions used in the test refer to aqueous solutions unless otherwise specified. A.3 Identification test A.3.1 Solubility test Insoluble in water, ethanol, ether, diluted inorganic acid. Slightly soluble in 1 mol/L sodium hydroxide solution. A.3.2 Suspension test Mix 30 g of specimen with 270 mL of water. Stir the mixture with a high-speed stirrer (about 12000 r/min) for 5 min. The final solution is a suspension with poor fluidity, thick, lumpy matter. If a free-flowing suspension is obtained, take 100 mL of the solution; place it in a 100 mL measuring cylinder; let it stand for 1 h; then a precipitate will appear at the bottom of the measuring cylinder. A.3.3 Infrared spectrum identification The test is carried out according to GB/T 6040 using the potassium bromide tablet method. The infrared spectrum of the specimen shall be consistent with the standard reference spectrum of cellulose (see Appendix B). A.3.4 Polymerization test A.3.4.1 Reagents and materials Ethylenediamine copper dihydroxide solution:

1.0 mol/L. A.3.4.2 Instruments and equipment A.3.4.2.1 Balance: Sensitivity is

0.1 mg. A.3.4.2.2 Constant temperature water bath (tank). A.3.4.2.3 Ubbelohde viscometer: Capillary inner diameters are

0.5 mm ~

0.6 mm and

0.7 mm ~

0.8 mm, respectively. A.3.4.3 Analytical procedures Weigh about

0.25 g (m1) of specimen. Place it in a stoppered conical flask. Add 25 mL of water and 25 mL of

1.0 mol/L copper dihydroxide solution, respectively. Add the stopper and shake to

completely dissolve. Transfer an appropriate amount of the solution to an Ubbelohde viscometer (capillary inner diameter

0.7 mm ~

0.8 mm; select an appropriate viscometer constant K_1). Balance it in a $25\text{ }^{\circ}\text{C} \pm 0.1\text{ }^{\circ}\text{C}$ water bath for at least 5 min. Record the time the solution flows through the upper and lower scales of the Ubbelohde viscometer (do not reload the specimen; repeat the measurement twice; the difference in the flow time of the two measurements shall not exceed $\pm 0.5\%$ of the average value). Take the average of the two measurements as the outflow time t_1 of the solution. Calculate the kinematic viscosity ν_1 of the solution according to formula (A.1): Where: t_1 - The time the solution flows through the upper and lower scales of the Ubbelohde viscometer, in seconds (s); K_1 - Viscometer constant. Take an appropriate amount of

0.1 mol/L copper dihydroxide ethylenediamine solution. Mix it with an equal amount of water. Use an Ubbelohde viscometer (capillary inner diameter 0.5 ~

0.6 mm; select an appropriate viscometer constant K_2), to determine the outflow time t_2 in the same way. The kinematic viscosity ν_2 of the blank solution is calculated according to formula (A.2): Where: t_2 - The time for the solution to flow through the upper and lower scales of the Ubbelohde viscometer, in seconds (s); K_2 - Viscometer constant. Calculate the relative viscosity η_{rel} according to formula (A.3): Weigh about 125 mg of specimen (m_2), accurate to

0.1 mg. Use about 25 mL of water, to transfer it into a 300 mL conical flask. Add