



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

GB 1886.352-2021

**National Food Safety Standard - Food Additive -
beta-cyclodextrin**

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1 Scope

This Standard applies to the food additive beta-cyclodextrin that is prepared by enzymatic hydrolysis and purification of starch.

2.1 Molecular formula

$(C_6H_{10}O_5)_7$

2.2 Relative molecular mass

1134.987 (according to the international relative atomic mass in 2018)

3.1 Sensory requirements

Sensory requirements shall meet the requirements of Table 1.

3.2 Physical and chemical indicators

Physical and chemical indicators shall meet the requirements of Table 2.

Appendix A Inspection method

A.1 General provisions The reagents and water used in this Standard refer to analytical reagents and grade-3 water in accordance with GB/T 6682, when other requirements are not indicated. The standard solutions used in the test, the standard solutions for impurity determination, the preparations and products, unless otherwise specified, shall be prepared in accordance with GB/T 601, GB/T 602 and GB/T 603. The solution used in the test refers to an aqueous solution, when it is not specified which solvent is used to prepare it.

A.2 Identification test
A.2.1 Specific rotation test Weigh 1.00 g of the sample and dissolve it in 100 mL of water; measure it according to the method that is specified in GB/T 613. The specific rotation shall be $+160^\circ \sim +164^\circ$.

A.2.2 Chromatographic test In the beta-cyclodextrin content determination test, the retention time of the main peak of the sample solution chromatogram shall be consistent with the retention time of the main peak of the standard solution chromatogram.

A.3 Determination of beta-cyclodextrin content (on a dry basis)

A.3.1 Reagents and materials A.3.1.1 Methanol: chromatographically pure.

A.3.1.2 Water: Grade-1 water specified in GB/T 6682.

A.3.1.3 beta-cyclodextrin standard substance: purity $\geq 99.5\%$.

A.3.2 Instruments and equipment High performance liquid chromatograph: equipped with a refractive index detector.

A.3.3 Reference chromatographic conditions A.3.3.1 Chromatographic column: 10 μm porous silica gel chromatographic column ($\Phi 4.6 \text{ mm} \times 25 \text{ cm}$) with octadecylsilane-bonded silica gel as the filler, or other equivalent chromatographic column.

A.3.3.2 Mobile phase: water: methanol = 85: 15.

A.3.3.3 Column temperature: 30 $^{\circ}\text{C}$.

A.3.3.4 Detector temperature: 35 $^{\circ}\text{C}$.

A.3.3.5 Flow rate: 1.5 mL/min.

A.3.3.6 Injection volume: 10 μL .

A.3.4 Analysis steps A.3.4.1 Preparation of standard solution Weigh 0.05 g of beta-cyclodextrin standard substance, accurate to 0.000 1 g; place it in a 10 mL volumetric flask; use the mobile phase to dissolve it and dilute to the mark; mix well. Use a 0.45 μm microporous membrane for filtration before chromatographic analysis.

A.3.4.2 Preparation of sample solution Weigh 0.05 g of the sample, accurate to 0.000 1 g; place it in a 10 mL volumetric flask; use the mobile phase to dissolve it and dilute to the mark; mix well. Use a 0.45 μm microporous membrane for filtration before chromatographic analysis.

A.3.5 Determination Under the reference chromatographic conditions of A.3.3, respectively determine the standard solution and sample solution. The system suitability means that, for 5 repeated injections of the standard solution, the relative standard deviation of the response area obtained is less than 2.0%.

A.3.6 Result calculation The mass fraction w_1 of the beta-cyclodextrin content (on a dry basis) is calculated according to Formula (A.1).

Where:

A_u - the peak area value of beta-cyclodextrin in the sample solution;