



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

GB 28307-2012

**National food safety standard - Food additive - Maltitol and
Maltitol Syrup**

食品添加剂 麦芽糖醇和麦芽糖醇液 含第1号修改单

(English Translation)

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1 Scope

This Standard applies to food additive - maltitol and maltitol syrup, which take starch as raw material, are processed and manufactured by liquefaction, saccharification, hydrogenation, refinement.

2 Chemical name, formula and relative molecular

mass

2.1 Chemical name

4-O-alpha-D- glucopyranosyl sorbitol.

2.2 Formula

C₁₂H₂₄O₁₁.

2.3 Relative molecular mass

344.31 (in accordance with 2007 international relative atomic mass).

3.2 Maltitol syrup

Liquid mixture composed by a large number of maltitol, a small amount of sorbitol, oligosaccharide alcohol and polysaccharide alcohol.

4 Technical requirements

4.1

Sensory requirements. it shall comply with provisions of Table 1.

Appendix A

Inspection methods

A.1 General rules

Reagents and water used in this Standard, in the absence of other requirements specified, all refer to analytical reagents and grade three water stipulated in

GB/T 6682-2008. Standard solution used in test, standard solution, preparations and products used in determination of impurities, in the absence of other requirements specified, are prepared in accordance with provisions in

GB/T 601, GB/T 602, GB/T 603. Solution in test all refers to aqueous solution when it does not indicate which solvent shall be used for preparation.

A.2.2.1 High performance liquid chromatography. equipped with refractive

index detector, or other equivalent detectors.

A.2.3 Reference chromatographic conditions

A.2.3.1 Mobile phase. GB/T 6682-2008, grade one water.

A.2.3.2 Column temperature. 80°C.

A.2.3.3 Mobile phase flow rate. about 0.5 mL/min.

A.2.3.4 Injection volume. 20 µL.

A.2.4.1 Preparation of standard solution

Weight about 0.1 g (accurate to 0.001 g) of maltitol product. Use mobile phase to dissolve. Move it to 10 mL flask. Add mobile phase to make constant volume to scale. Use 0.22 µm membrane to filter the obtained solution. The filtrate is for later use.

A.3.1 Reagents and materials

A.3.1.1 Water. GB/T 6682-2008, grade one water.

A.3.1.2 Maltitol and sorbitol standard product. purity shall be greater than

99.0%. Use each standard product to prepare 6 different concentration of standard solution series within 0.1 mg/mL ~ 10 mg/mL.

A.3.2.1 High performance liquid chromatography. equipped with refractive

index detector, or other equivalent detectors.

A.3.2.2 Mobile phase filtration vacuum degasser and 0.22 µm membrane.

A.3.2.3 Chromatographic column. specially used for analysis of sugars or

sugar alcohols which takes Ca type strong acid cation exchange resin as filler (column size. Phi 7.8 mm x 300 mm), or equivalent chromatographic column.

A.3.2.4 Analytical balance. accuracy is 0.1 mg.

A.3.2.5 Micro-injector. 50 μ L.

A.2.4.1 Preparation of sample solution

Weight about 0.1 g (in dry basis; it shall make content of various sugar alcohol components within the scope of standard solution series, otherwise it can appropriately increase or reduce sample weight). Weigh it accurate to 0.0001 g. Use mobile phase to dissolve. Move it to 10 mL flask. Add mobile phase to make constant volume to scale. Use 0.22 μ m membrane to filter the obtained solution. The filtrate is for later use.

A.3.4.2 Standard curve drawing

After use maltitol standard solution, sorbitol standard solution to respectively inject, take peak area of standard sample concentration to draw standard curve.

The linear correlation coefficient shall be greater than 0.9990.

A.4.1 Karl Fischer method (arbitration law)

Determine in accordance with Karl Fischer method of GB 5009.3.

A.4.2 Direct drying method

A.4.2.1 Apparatus.

A.4.2.1.1 Electric oven.

A.4.2.2 Analysis steps

Weigh 1 g of sample. Make it accurate to 0.0002 g. Place it in a weighing bottle that has been dried to constant weight. Cover it. Slightly move it, so as to pave it as a thin layer. Put the weighing bottle with sample and the removed cover into the dryer. Solidly dry it in a 105°C $\pm$ 2°C electric oven for 5 h. Move it into dryer to cool. Weigh it in 30 min.

A.5.1 Apparatus

A.5.1.1 Analytical balance.

A.5.1.2 Iodine bottle.

A.5.2.1 Alkaline copper citrate test solution. weigh 2.5 g of copper sulfate, 5.4

g of citric acid, 1.4 g of anhydrous sodium carbonate; use water to dilute it to 100 mL (Modified by No.1 "Amendment Sheet", September 22, 2015).

A.5.2.1 Alkaline copper citrate test solution. weigh 2.5 g of copper sulfate, 5.0

g of citric acid, 14.4 g of anhydrous sodium carbonate; use water to dilute it to 100 mL. (No.1 "Amendment Sheet", September 22, 2015).

A.5.2.2 Acetic acid solution. 2+3.

A.5.4 Result determination

A.5.4.1 Weigh 10 g (liquid product is calculated in dry basis) of sample. 0.05 mol/L sodium thiosulfate consumed by titration is not less than 12.8 mL.

Standard of reducing sugar is $\leq 0.1\%$.

A.5.4.2 Weigh 5 g (liquid product is calculated in dry basis) of sample. 0.05 mol/L sodium thiosulfate consumed by titration is not less than 12.8 mL.

Standard of reducing sugar is $\leq 0.2\%$.

A.5.4.3 Weigh 3.3 g (liquid product is calculated in dry basis) of sample. 0.05 mol/L sodium thiosulfate consumed by titration is not less than 12.8 mL.

Standard of reducing sugar is $\leq 0.3\%$.

A.6.1 Apparatus

High temperature furnace.

A.6.2 Reagents and materials

Sulfuric acid.

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