NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB 1886.305-2020

National food safety standard - Food additives - Dxylose

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1 Scope

This Standard is applicable to the food additive D-xylose that uses corncob, wood as raw materials, is processed and produced by processes such as hydrolysis, decolorization, purification, evaporation, crystallization, and drying in the presence of sulfuric acid catalyst.

2 Molecular formula, relative molecular mass and

structural formula

2.1 Molecular formula

C5H10O5

2.2 Relative molecular mass

150.13 (according to 2016 international relative atomic mass)

Annex A Inspection methods

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

A.2 Identification test A.2.1 Reagents and materials Fehling reagent A.2.2 Analysis steps A.2.2.1 Take 1g of sample and dissolve in 20mL of water. Take 2 to 3 drops of sample

aqueous solution and add to 5mL of boiling Fehling reagent. Red precipitate is formed.

A.2.2.2 In the determination test of D-xylose content, 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 D-xylose content A.3.1 Reagents and materials A.3.1.1 Water: secondary distilled water or ultrapure water (pass 0.45um water system microporous membrane).

A.3.1.2 Xylose standard product: purity >=99.0%.

A.3.1.3 Xylose standard solution: Use ultrapure water to mix the standard xylose into 40mg/mL standard solution.

A.3.2 Instruments and equipment A.3.2.1 High performance liquid chromatograph: equipped with difference detector and column constant temperature system.

A.3.2.2 Ultrapure water processor.

A.3.2.3 Ultrasonic dissolver.

A.3.2.4 Analytical balance: resolution is 0.0001g.

A.3.2.5 Micro sampler: 10uL.

A.3.3 Reference chromatographic conditions A.3.3.1 Chromatographic column: Analytical column (300mmx7.8mm)

dedicated to sugar and sugar alcohol with lead-type strong acid cation exchange resin as a filler, or equivalent chromatographic column.

A.3.3.2 Column temperature: 75°C.

A.3.3.3 Mobile phase: ultrapure water.

A.3.3.4 Flow rate: 0.6mL/min~0.8mL/min.

A.3.3.5 Injection volume: 10uL.

A.3.4 Analysis steps A.3.4.1 Sample solution preparation Weigh an appropriate amount of sample (make the xylose content within the linear range of the standard solution). Use ultrapure water to set volume to 100mL. After shaking well, use 0.45um membrane to filter. Collect the filtrate as the sample solution.

A.3.4.2 Determination A.3.4.2.1 The standard solution is formulated into 6 standard solution series with different concentrations in the range of 0.4mg/mL~40mg/mL. After injection separately, Use the concentration of the standard sample versus the peak area to make a standard curve. The linear correlation coefficient shall be above 0.9990, otherwise the concentration range needs to be adjusted.

A.3.4.2.2 Inject the standard solution and the prepared sample solution separately. According to the retention time of the standard sample, qualitatively determine the chromatographic peaks of various sugar components in the sample. According to the peak area of sample, use external standard method or peak area normalization method to calculate the mass fraction of various sugars.

A.3.5 Result calculation mean.

A.6 Determination of chloride (calculated as Cl)

A.6.1 Reagents and materials A.6.1.1 Nitric acid solution: 1+9.

A.6.1.2 Silver nitrate solution: 17g/L.

A.6.1.3 Chloride standard solution: 0.05mg/mL.

A.6.2 Instruments and equipment Nessler colorimetric tube.

A.6.3 Analysis steps Weigh 1g of sample, to the nearest of 0.1g. Put in Nessler colorimetric tube.

Add 10mLof water to dissolve. Then add 10mL of nitric acid solution and 1mL of silver nitrate standard solution. Add water to set volume to 25mL. Place in a dark place for 5min.

Preparation of standard tube: Accurately draw 1.0mL of chloride standard solution and process the same with the sample tube at the same time.

A.6.4 Result determination The turbidity of the sample solution is shallower than that of the standard solution, that is, the chloride content is less than or equal to 0.005%.

A.7 Determination of sulfate (calculated as SO4)

A.7.1 Reagents and materials A.7.1.1 Hydrochloric acid solution: 1+9.

A.7.1.2 Potassium sulfate standard solution: Weigh 0.181g of potassium sulfate and place in a 1000mL measuring flask. Add an appropriate amount of water to dissolve and dilute to the scale. Shake well to obtain (each 1mL is equivalent to 100ug of SO4).

A.7.1.3 Barium chloride solution: 25%.

A.7.2 Analysis steps Weigh 4.0g of sample. Add water to dissolve and dilute to about 40mL (if the solution is alkaline, add hydrochloric acid dropwise to make it neutral). If the solution is not clear, it shall be filtered. Place in 50mL Nessler colorimetric tube.