



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

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Analytical methods of wine and fruit wine

食品安全国家标准 食品中甲醇的测定

(English Translation)

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1 Scope

This method specifies the determination method of methanol in alcohol, distilled wine, prepared wine and fermented wine.

This method is applicable to the determination of methanol in alcohol, distilled wine, prepared wine and fermented wine.

2 Principle

The distillation removes fermented wine and non-volatile substances in its prepared wine. Add into internal standard (alcohol, distilled wine as well as its prepared wine can be directly added into the internal standard). Separate through gas chromatography. Use hydrogen flame ionization detector to detect. Determine its nature according to retention time. Quantify it according to the external standard method.

3 Reagents and materials

Unless otherwise stated, the reagents used in this method are of analytical grade and water is grade-two water specified in GB/T 6682.

3.1 Reagent

Ethanol (C₂H₆O). chromatographic pure

3.2 Preparation of reagent

Ethanol solution (40%, volume fraction). weigh 40 mL of ethanol; use water to set volume to 100 mL; mix evenly.

3.3.1 Methanol (CH₄O, CAS number. 67-56-1). purity $\geq 99\%$; or standard

substances that are certified by the State and are awarded to the standard substance certificate.

3.3.2 Tert-amyl alcohol (C₅H₁₂O, CAS number. 75-85-4). purity $\geq 99\%$.

The reference conditions for instrument are listed as follows.

- a) chromatographic column. polyethylene glycol quartz capillary column; column length is 60 m; inner diameter is 0.25 mm; film thickness is 0.25 μm ; or equivalent column;
- b) chromatographic column temperature. initial temperature is 40°C; maintain for 1 min; rise to 130°C at 4.0°C/min, to 200°C at 20°C/min then maintain for 5 min;
- c) detector temperature. 250°C;
- d) inlet temperature. 250°C;
- e) carrier gas flow. 1.0 mL/min;
- f) injection volume. 1.0 μL ;
- g) split ratio. 20.1.

5.3 Standard curve making

Respectively pipet 10 mL of methanol series of standard working solutions into 5 test tubes. Then add 0.10 mL of tert-amyl alcohol standard solution.

Evenly mix. Determine the methanol and internal standard tert-amyl alcohol peak areas. Take concentration of methanol series standard working solutions as abscissa, the ratio of methanol to tert-amyl alcohol peak area as ordinate to draw a standard curve (see Figure A.1 for methanol and internal standard tert-amyl alcohol standard gas chromatogram).

5.4 Determination of sample solution

Pour the prepared sample solution into a gas chromatograph. Determine its nature according to retention time. Meanwhile, record the ratio of methanol to tert-amyl alcohol peak area. Obtain the methanol concentration in the solution for test according to the

standard curve.

6.1 Calculate the content of methanol in the sample according to equation

(1).

where,

X - content of methanol in sample, in milligrams per liter (mg/L);

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