

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

SN/T 4675.16-2016

**Determination of fumaric acid in wine for export--LC-MS/MS
method**

出口葡萄酒中富马酸的测定 液相色谱—质谱/质谱法

(English Translation)

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and Quarantine**

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Foreword

SN/T 4675 "Export Wine Quality Analysis Method" is divided into 30 parts.

- SN/T 4675.1 Determination of glycerol in exported wines;
- SN/T 4675.2 Determination of 2,3-butanediol in exported wines by gas chromatography;
- SN/T 4675.3 Determination of the stable carbon isotope ratio of ethanol in exported wines;
- SN/T 4675.4 Determination of lactic acid in exported wines;
- SN/T 4675.5 Determination of organic acids in exported wines by ion chromatography;
- SN/T 4675.6 Determination of glucose, fructose and sucrose in exported wines;
- SN/T 4675.7 Determination of acetaldehyde in exported wines by gas chromatography-mass spectrometry;
- SN/T 4675.8 Determination of 5-hydroxymethylfurfural in exported wines by liquid chromatography;
- SN/T 4675.9 Determination of diethylene glycol in exported wines by gas chromatography-mass spectrometry;
- SN/T 4675.10 Determination of ochratoxin A in exported wines by liquid chromatography-mass spectrometry/mass spectrometry;
- SN/T 4675.11 Determination of seven anthocyanins in exported wines by ultra performance liquid chromatography;
- SN/T 4675.12 Determination of lysozyme in exported wines by liquid chromatography;
- SN/T 4675.13 Determination of 2,4,6-trichloroanisole residues in exported wines by gas chromatography-mass spectrometry;

- SN/T 4675.14 Determination of natamycin in exported wines by liquid chromatography-mass spectrometry/mass spectrometry;
- SN/T 4675.15 Determination of salicylic acid, dehydroacetic acid and p-chlorobenzoic acid in exported wines by liquid chromatography;
- SN/T 4675.16 Determination of fumaric acid in exported wines by liquid chromatography-mass spectrometry/mass spectrometry;
- SN/T 4675.17 Determination of butyl tin content in exported wines by gas chromatography - mass spectrometry/mass spectrometry;
- SN/T 4675.18 Determination of residual dithiocarbamate in exported wines.
- SN/T 4675.19 Determination of sodium, magnesium, potassium, calcium, chromium, manganese, iron, copper, zinc, arsenic, selenium, silver, cadmium and lead in exported wines;
- SN/T 4675.20 Determination of rare earth elements in exported wines by inductively coupled plasma mass spectrometry;
- SN/T 4675.21 Determination of soluble inorganic salts in exported wines by ion chromatography;
- SN/T 4675.22 Determination of total sulfur dioxide in exported wines;
- SN/T 4675.23 Determination of ammonia nitrogen in exported wines and grape juices - Continuous flow analyzer method;
- SN/T 4675.24 Determination of the export wine Fulin-Shoka index spectrophotometer method;
- SN/T 4675.25 Determination of the color of exported wine CIE1976 ($L^* a^* b^*$) color space method;
- SN/T 4675.26 Determination of turbidity of exported wines by scattered light method;
- SN/T 4675.27 Determination of alkaline ash in exported wines;
- SN/T 4675.28 Counting bacteria, mold and yeast for exporting wine;
- SN/T 4675.29 Real-time fluorescent PCR method for wine yeast test in exported wine;
- SN/T 4675.30 In the wine, the Bayesian yeast test real-time fluorescent PCR method.

This part is the 16th part of SN/T 4675.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This part is proposed and managed by the National Certification and Accreditation Administration.

This section drafted by. Shanghai Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China, Guangdong Province Entry and Exit Inspection Epidemic situation.

1 Scope

This part of SN/T 4675 specifies the liquid chromatography-mass spectrometry/mass spectrometry method for the determination of fumaric acid in wine.

This section applies to the detection of fumaric acid in wine.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 6682 Analytical laboratory water specifications and test methods

3 Method summary

The fumaric acid in the sample is extracted by mobile phase, centrifuged at high speed (or filtration membrane), and detected by liquid chromatography/tandem mass spectrometry, and quantified by external standard method.

4 Reagents and materials

Unless otherwise stated, all reagents were of analytical grade and water was the primary water specified in GB/T 6682.

4.1

Methanol. Chromatographically pure.

4.2

Formic acid. chromatographically pure.

4.3

Formic acid solution (0.1%). Add 1 mL of formic acid (4.2) to 1000 mL of water.

4.4

Reference material. fumaric acid (CAS number. 110-17-8). purity 99.5%.

4.5

Standard stock solution (1.0mg/mL). Accurately weigh 50.7mg fumaric acid standard (4.4) in 50mL volumetric flask, dissolve with methanol and make up to the scale. The solution was stored at 4 ° C in the dark and could be used for 3 months.

4.6

Standard intermediate solution (10µL/mL). accurately transfer 0.50mL of fumaric acid standard stock solution (4.5) in a 50mL volumetric flask for flow the phase was diluted and brought to volume to give a concentration of 10 µg/mL. The solution was stored at 4 ° C in the dark and could be used for 3 months.

4.7

Standard working solution. accurately transfer the appropriate amount of fumaric acid standard intermediate solution (4.6) into a 50mL volumetric flask and dilute to the mark with mobile phase.

Shake well to obtain concentrations of 0.10 µg/mL, 0.20 µg/mL, 0.30 µg/mL, 0.50 µg/mL, 0.80 µg/mL, and 1.0 µg/mL, respectively.

5.0 µg/mL. The solution was stored at 4 ° C in the dark and could be used for 3 months.

4.8

Needle filter (0.22 µm hydrophilic PTFE) or similar filter.

4.9 10mL volumetric flask.

5 Instruments and equipment

5.1

Ultra Performance Liquid Chromatography-Tandem Mass Spectrometry. Distribution Spray Ionization Source (ESI).

5.2

Balance. The sensitivity is 0.1mg.

5.3

vortex oscillator.