



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

GB 23200.55-2016

Replacing SN/T 2238-2008

**Food safety national standard -- Determination of 21 fumigants
in foodstuffs -- Headspace gas chromatography**

食品中21种熏蒸剂残留量的测定 顶空气相色谱法

(English Translation)

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Foreword

This standard replaces SN/T 2238-2008 "21 kinds of fumigants in the import and export of food detection method headspace gas chromatography." Compared with SN/T 2238-2008, the main changes are as follows.

- Standard text format is modified to national standard text format for food safety;
- the name of the "import and export food" to "food";
- increase the "other food reference implementation" in the standard range.

This standard replaced the previous version of the standard release.

-SN/T 2238-2008.

National standards for food safety Determination of 21 fumigants in foodstuffs - Headspace gas chromatography

1 Scope

This standard specifies the presence of 1,1,1-trichloroethane, trans-1,3-dichloropropene, cis-1,3-dichloropropene, trichlorethylene, 1,2-bis Chloropropane, bromodichloromethane, 1,1,2-trichloroethane, tetrachlorethylene, tricetral chloride, bromoform, 1,1,2,2-tetrachloroethane, 1,3-Dichlorobenzene, 1,4-dichlorobenzene, 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, 1,2,3-trichlorobenzene, hexachlorobutadiene, Dibromoethane, 1,2-dichloroethane, carbon tetrachloride, trichloromethane 21 kinds of fumigant residues in the headspace gas chromatography detection method.

This standard applies to corn, brown rice, peanuts, soybeans, beans and other foods in the determination of 21 kinds of fumigant residues, other food can refer to carried out.

2 Normative reference documents

The following documents are indispensable for the application of this document. For dated references, only the dated edition applies to this file. For undated references, the latest edition (including all modifications) applies to this document.

GB 2763 National Standard for Food Safety - Maximum Residue Limit of Pesticides in Foodstuffs GB/T 6682 Analytical laboratory water specifications and test methods

3 Principle

In the sealed container, volatile fumigant molecules in a certain temperature in the gas-solid two-phase to achieve a dynamic balance. At this time the fumigant is in the air the concentration of the phase is proportional to its concentration in the solid phase, and the concentration of the fumigant can be calculated by measuring the concentration of the fumigant in the gas phase Quantitative and external standard method.

4 Reagents and materials

Unless otherwise specified, all reagents are of analytical grade and water is in accordance with the primary water specified in GB/T 6682.

4.1 Reagents

4.1.1

n-hexane (C₆H₁₄). pesticide residues.

4.1.2

anhydrous sodium sulfate (Na_2SO_4). 650 °C burning 4 h, set the dryer in the spare.

4.2 Standards

4.2.1

Fumigant Standard. Purity greater than or equal to 99%. (See Table A1 in Appendix A).

4.3 Standard solution preparation

4.3.1

Trichloromethane, carbon tetrachloride and other 21 kinds of fumigants Standard stock solution. accurate removal of chloroform, carbon tetrachloride, 1,2-dibromoethane and other 21 fumigants in the appropriate volume, and its density (see Appendix A, Table A1) for weight calculation, with n-hexane Respectively, with a concentration of 1000 $\mu\text{g/mL}$ of the standard stock solution. The solution is stored in a refrigerator at 0 to 4 ° C.

4.3.2

Trichloromethane, carbon tetrachloride and other 21 kinds of fumigants Standard mixed working solution. according to the need to use n-hexane diluted with the appropriate concentration of the standard Quasi-mixed working solution, the solution in 0 °C ~ 4 °C refrigerator.

5 Instruments and equipment

5.1

Gas Chromatograph. equipped with electronic capture detector.

5.2

Analysis of balance. 0.01 g and 0.0001 g.

5.3

Headspace syringe. 1.0 mL.

5.4

Headspace unit.

5.5

Headspace Bottle. 20.0 mL.

5.6

sealed plastic centrifuge tube. 50 mL.

5.7

Ultrasonic instrument.

6.1 Preparation of the sample

Replace the sample of about 500 g, the sampling site according to GB 2763 Appendix A implementation, into the clean container, sealed, marked mark.

6.2 Sample storage

The sample was stored at -18 ° C or lower. During sample and sample preparation, the sample should be protected from contamination or residue the change.

7.1 Extraction

Weigh the sample 5 g (accurate to 0.01 g) in 50 mL stoppered plastic centrifuge tube, accurately add 15.0 mL n-hexane dissolved and ultrasonic extraction 5 min, centrifuge. Accurately remove 10.0 mL of sample in a headspace bottle and immediately seal with a rubber stopper with a Teflon film lining Empty device, at 60 °C constant temperature 0.5 h, the extraction of.200 µL upper gas for gas chromatography analysis.

7.2.1 Gas Chromatographic Reference Conditions

- A) Column. HP-624 quartz capillary column, 30 m x 0.53 mm (id) x 2.05 m, or equivalent;
- B) Column temperature. 40 ° C (for 1 min) min/5 C 140 ° C (for 30 min);
- C) Inlet temperature..200 ° C.
- D) Detector temperature. 250 ° C.
- E) Carrier gas. helium, purity greater than or equal 99.999%, flow rate 1.2 mL/min;
- F) Injection volume..200 µL.

7.2.2 Determination of gas chromatography

According to the content of fumigant in the sample solution, the standard working solution with similar concentration, the standard working solution and the fumigant in the sample solution the response value should be within the linear range of the instrument detection. Standard working solution and sample volume.

The standard solution and sample solution were determined according to the conditions specified in 7.1. The gas chromatogram of the fumigant reference material and sample is shown in Appendix B.

B.1-B.6.