

ICS 67.040
CCS C 53



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

GB/T 21928-2008

**Determination of phthalate esters in food plastic packaging
materials**

(English Translation)

Issued on: June 3, 2008

Implemented on: December 1, 2008

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

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Preface

Appendixes A, B, C and D are informative.

This standard was proposed by China Standardization Institute.

This standard shall be under the jurisdiction of the National Food Safety Emergency Standardization Working Group.

Drafting organization of this standard. Beijing Haidian District Product Quality Supervision and Inspection Institute (National Food Quality Safety Supervision and Inspection Center).

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Determination of phthalate esters
in food plastic packaging materials

1 Scope

This standard specifies the test method of gas chromatography - mass spectrometry (GC-MS)

of phthalate esters substance-content in food plastic packaging materials.

This standard is applicable to determination of phthalate esters (16 kinds, see Appendix A) substance-content in food plastic packaging materials.

In this standard, the detection limit of each phthalate esters compounds is 0.05 mg/kg.

2 Principle

After extracted and purified, the food plastic packaging materials is determined by gas chromatography - mass spectrometry instrument Adopt characteristics of selected ion monitoring scan mode (SIM). Use abundance of fragment for qualitative determination. And use standard sample quantitative ion external standard method for quantitative determination.

3 Reagents

Water used in the standard is all-glass re-distilled water. Reagents are chromatographic pure

(or re-distilled analytical pure), stored in glass bottle.

3.2 Acetone.

3.3 16 kinds of phthalate esters standard products. dimethyl phthalate (DMP), diethyl phthalate (DEP), diisobutyl phthalate (DIBP), Dibutyl phthalate (DBP), bis(2-methoxyethyl) phthalate (DMEP), bis(4-methyl-2-pentyl) phthalate (BMPP), bis(2-ethoxyethyl) phthalate (DEEP), dipentyl phthalate (DPP), dihexyl phthalate (DHXP), benzyl butyl phthalate (BBP), bis(2-n-butoxyethyl) phthalate (DBEP), dicyclohexyl phthalate (DCHP), bis(2-ethylhexyl) phthalate (DEHP), diphenyl phthalate, di-n-octyl phthalate (DNOP), dinonyl phthalate (DNP).

The purity is shown in Appendix B.

5.1 Sample treatment

Pulverize the sample to fine particles of which the single particle ≤ 0.02 g. Mix well.

Accurately weigh 0.2 g of (accurate to 0.1 mg).

5.2 Blank test

The reagent used in the shall be treated according to 5.1 treatment. Then perform GC-MS

analysis.

5.3.1 Chromatographic conditions

Column. HP-5MS capillary column [30 m x 0.25 mm (inner diameter) x 0.25 μ m] or equivalent type column;

5.3 The instrument is under the condition of 5.3. The selected ion chromatogram peaks of test

sample solutions OCCUR at the same retention time (0.5%) to that of the standard products.

5.5 Quantitative Analysis

This standard adopts the external standard calibration curve method for quantitative determination.

6 Calculation results

Content of phthalate esters compounds (mg/kg) is calculated according to formula (1).

7 Precision

When the content of phthalate esters in food plastic packaging materials is in the range of

0.05 mg/kg - 0.2 mg/kg, the absolute difference of 2 independent test results, obtained under

the repeatability condition of this standard, must not exceed 30% of the arithmetic mean.

Appendix A

(Informative)

Information of phthalate esters compounds

Appendix B

(Informative)

Standard product purity of phthalate esters compounds

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