



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

GB 31604.2-2016

**Food safety national standard -- Food contact materials and
products -- Determination of potassium permanganate
consumption**

(English Translation)

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Foreword

This Standard replaced the determination of potassium permanganate consumption stipulated in the following standards, such as GB/T 5009.60-2003 Method for Analysis of Hygienic Standard of Products of Polyethylene, Polystyrene and Polypropylene for Food Packaging, GB/T 5009.61-2003 Method for Analysis of Hygienic Standard of Products of Tripolycyanamide for Food Packaging, GB/T 5009.64-2003 Method for Analysis of Hygienic Standard of Rubber Sheet (Ring) for Food Use, GB/T 5009.65-

2003 Method for Analysis of Hygienic Standard of Rubber Sealing Ring for Pressure

Cooker for Food Use, GB/T 5009.66-2003 Method for Analysis of Hygienic Standard of Nipple of a Feeding Bottle, GB/T 5009.67-2003 Method for Analysis of Hygienic Standard of Product of Polyvinyl Chloride for Food Packaging, GB/T 5009.68-2003 Method for Analysis of Hygienic Standard of Perchlorovinyl-Coating for Inner Wall of Food Container, GB/T 5009.69-2003 Method for Analysis of Hygienic Standard of Epoxy Phenolic Coatings for Inner Wall of Food Cans, GB/T 5009.70-2003 Method for Analysis of Hygienic Standard of Epoxy Coating For Inner Wall of Food Container, GB/T 5009.79-2003 Hygienic Analytical Method of Rubber Hose for Food Use, GB/T 5009.80-2003 Method for Analysis of Hygienic Standard of Polytetrafluorethylene Coating for Inner Wall of Food Cotainer, GB/T 5009.98-2003 Method for Analysis of

Hygienic Standard of Unsaturated Polyester Resin and Glass Fibre Reinforced Products, GB/T 5009.99-2003 Method for Analysis of Hygienic Standard of Polycarbonate Resin Used as Food Containers and Packaging, GB/T 5009.100-2003 Method for Analysis of Hygienic Standard of Products of Foamed Polystyrene for Food Packaging.

Compared with GB/T 5009.60-2003, GB/T 5009.61-2003, GB/T 5009.64-2003, GB/T 5009.65-2003, GB/T 5009.66-2003, GB/T 5009.67-2003, GB/T 5009.68-2003, GB/T 5009.69-2003, GB/T 5009.70-2003, GB/T 5009.79-2003, GB/T 5009.80-2003, GB/T 5009.98-2003, GB/T 5009.99-2003, and GB/T 5009.100-2003, this Standard has the major changes as follows.

--- Modified the standard name into "National Food Safety Standard on Determination of Potassium Permanganate Consumption in Food Contact Materials and Products";

--- Modified the standard scope;

--- Modified the calculation formula and unit.

National Food Safety Standard -

Food Contact Materials and Products -

Determination of potassium permanganate consumption

1 Scope

This Standard specifies the determination method of potassium permanganate consumption in food contact materials and products.

This Standard is applicable to the determination of potassium permanganate consumption in food contact materials and products.

2 Principle

Under acidic condition, use standard potassium permanganate solution to titrate the sample soaking solution; calculate the potassium permanganate consumption in the sample according to the volume of titration solution consumed by the sample.

3 Reagents and Materials

Unless otherwise is specified, all reagents used in this method shall be analytically pure, while the water used shall be Class-II water stipulated in GB/T 6682.

3.2.1 Sulfuric acid solution (1+2). take 100mL of sulfuric acid, carefully add 200mL of

water, then mix evenly.

3.2.2 0.04% potassium permanganate solution. weigh 0.4g of potassium permanganate, add water dissolved to 1000mL.

3.2.3 Standard oxalic acid solution. prepare, calibrate or

commercialize the products according to GB/T 601.

3.2.4 Standard oxalic acid titration solution. absorb

10.0mL of standard oxalic acid solution, place into the 100mL volumetric flask, use water to make constant volume to the scale.

3.3 Standard substance

Standard potassium permanganate solution. prepare, calibrate or commercialize products according to GB/T 601.

3.4 Preparation of standard solution

Standard potassium permanganate titration solution. absorb 10.0mL standard potassium permanganate solution, place into 100mL volumetric flask, use water to make constant volume to the scale.

4.1 Sampling method

Operate according to GB 5009.156.

4.2 Specimen cleaning

Operate according to GB 5009.156.

4.3 Selection of food simulation substance and simulation condition of specimen

Operate according to corresponding product standard.

4.4 Pre-treatment method for migration test of specimen

Operate according to GB 5009.156.

4.5.2 Titration

Accurately absorb 100mL of water soaking solution (sampling amount can be adjusted as per the actual situation), place into the 250mL conical flask treated as above; add 5mL of sulfuric acid (1+2) and 10.0mL of standard potassium permanganate titration solution (0.01mol/L); then add 2 glass beads; after accurately boiling for 5min, immediately add 10.0mL of standard oxalic acid titration solution (0.01mol/L);

5.1 The potassium permanganate consumption in the specimen shall be calculated

as per Formula (1).

5.2 Calculation of the potassium permanganate consumption in the specimen as per

the actual use situation shall abide by Formula (2).

6 Precision

The absolute difference between the two independent determination results obtained under the repeated conditions shall not exceed 20% arithmetic mean.

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