



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

GB 4806.14-2023

**National food safety standard - Ink for food contact materials
and products**

食品安全国家标准 食品接触材料及制品用油墨

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Foreword

This document was issued on 6 September 2023 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 6 September 2024.

It is a GB standard without the /T suffix: compliance is mandatory in China.

1 Scope

GB 4806.14-2023 covers inks for food contact materials and products, and the printed ink layers those inks form. Ink sits on packaging, and its components can reach food either because the printed layer touches the food or because the ink is somewhere that does not touch food yet still has a path to it; the standard divides products into two categories on exactly that basis, direct contact and indirect contact. Around that division it sets basic requirements, which tie the ink back to the general standard GB 4806.1 and place the duty of controlling raw material safety on the ink manufacturer, and technical requirements covering basic raw materials and additives. A further clause sends migration testing to GB 31604.1 and GB 5009.156, and Appendix A gives the determination of lead, mercury, cadmium, chromium and arsenic in the ink itself. Printing is the last thing done to most food packaging and often the least visible line in a food safety file, which is where an uncontrolled ink becomes a contamination route nobody audits. A mandatory national food safety standard, addressed to ink makers, converters and packaging printers, and to the brand owners and inspection bodies who have to show that packaging is compliant.

This standard applies to inks for food contact materials and products and the printing ink layers formed thereon.

2 Terms and definitions

2.1 Inks for food contact materials and products

Ink that is expected to be printed on food contact materials and products, in direct contact with food or in indirect contact with food but whose components may be transferred to food. It also includes varnish used with inks.

3 Product categories

According to whether they are in direct contact with food, inks for food contact materials and products can be divided into two categories.

4 Basic requirements

4.1 Inks used for food contact materials and products shall comply with the requirements of GB 4806.1.

4.2 Ink manufacturers for food contact materials and products shall control the safety risks of ink products, through formula design,

4.3 Enterprises printing food contact materials and products shall control safety risks arising from inks, through packaging design, raw material selection, printing process control, product information transmission and/or adding effective barrier layers.

5 Technical requirements

5.1 Raw material requirements

5.1.1 Basic raw materials

5.1.2 Additives

5.2 Sensory requirements

The sensory requirements of food contact materials and products printed with ink shall comply with the provisions of Table 1.

5.3 Physical and chemical indicators

5.3.1 General physical and chemical indicators

5.3.1.1 The residual amount of heavy metals in inks for food contact materials and

5.3.2 Other physical and chemical indicators

5.3.2.1 The printing ink layer that indirectly contacts food shall comply with the

requirements of relevant national food safety standards and announcements for the physical and chemical indicators, such as the specific migration limit (SML), specific total migration limit [SML(T)], maximum residue (QM).

6 Others

6.1 Migration test

The migration test shall be carried out in accordance with the provisions of GB 31604.1 and GB 5009.156.

6.2 Label marking

6.2.1 Label marking shall comply with the provisions of GB 4806.1.

Appendix A

Determination of lead, mercury, cadmium, chromium, arsenic in inks for food contact materials and products

A.1 Scope

This Appendix specifies the inductively coupled plasma emission spectrometry method for the determination of lead, mercury, cadmium, chromium, arsenic in inks for food contact materials and products.

A.2 Principle

The ink is pulverized after the coating film is dried; converted into a solution state through acid digestion. After diluting the obtained solution to a constant volume, it is measured using an inductively coupled plasma emission spectrometer.

A.3 Reagents and materials

Unless otherwise stated, the reagents used in this method are of superior purity or higher; the water is grade-1 water specified in GB/T 6682.

A.4 Instruments and equipment

Note. All glassware shall be soaked in nitric acid solution (A.3.2.2) overnight and rinsed repeatedly with water.

A.4.1 Inductively coupled plasma optical emission spectrometer (ICP-OES).

A.4.2 Analytical balance. The sensitivity is 0.1 mg.

A.4.3 Microwave digestion instrument or pressure digester. Equipped with polytetrafluoroethylene digestion inner tank.

A.4.4 Constant temperature drying oven.

A.4.5 Ultraviolet light curing machine (UV curing machine). UV wavelength 365 nm or 395 nm.

A.4.6 Ultrasonic water bath.

A.4.7 Glass plates.

A.4.8 Nylon screen. Pore diameter 4 mm (5 mesh).

A.4.9 Filter membrane. Polyethersulfone material, pore size 0.45 μm .

A.5 Analytical procedures

A.7 Precision

The absolute difference between two independent determination results, as obtained under repeatability conditions, shall not exceed 15% of the arithmetic mean.

A.8 Others

When the sample weight is 0.5 g and the constant volume is 25 mL, the method detection limits and quantitation limits of each element are as shown in Table A.5.

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