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

SN/T 1504.5-2017

Replacing SN/T 1504.5-2005

**Plastics used for food container and package. Part 5:
Determination of elemental content in polyolefins. X-ray
fluorescence spectrometry**

食品容器、包装用塑料原料 第5部分：聚烯烃中杂质元素含量的测定 X射线荧光
光谱法

(English Translation)

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and Quarantine**

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Foreword

SN/T 1504 "Food Containers, Plastic Materials for Packaging" is divided into 5 parts.

--- Part 1. Determination of phenolic antioxidants and succinic acid slip agents in polypropylene homopolymers.

--- Part 2. Determination of antioxidants and erucamide slips in polyethylene - Liquid chromatography;

---Part 3. Determination of butyl-hydroxytoluene in ethylene polymers and ethylene-vinyl acetate copolymers.

---Part 4. Determination of phenolic antioxidants in high-density polyethylene -

---Part 5. Determination of content of impurity elements in polyolefins by X-ray fluorescence spectrometry.

This part is the fifth part of SN/T 1504.

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

This part replaces SN/T 1504.5-2005 "Plastic materials for food containers and packaging - Part 5. Contents of impurity elements in polyolefins Determination of X-ray fluorescence spectrometry.

Compared with SN/T 1504.5-2005, the main technical changes in this section are as follows.

--- Added tests for fluorine, sodium, magnesium, aluminum, sulfur, calcium, titanium, chromium, etc.;

--- The thickness of the sample and the preparation of the sample were refined to accommodate the determination of different impurity elements.

The technical content of this part refers to the content of ASTM D6247-11, in which the title is modified as "food containers, plastic materials for packaging.

Part 5. Determination of content of impurity elements in polyolefins by X-ray fluorescence spectrometry.

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

This section drafted by. Tianjin Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China.

1 Scope

This part of SN/T 1504 specifies the impurity elements fluorine, sodium, magnesium, aluminum, silicon, phosphorus, sulfur, calcium, titanium in food containers and packaging polyolefins.

Wavelength dispersive X-ray fluorescence spectrometry for chromium and zinc content.

This section applies to the content of fluorine, sodium, magnesium, aluminum, silicon, phosphorus, sulfur, calcium, titanium, chromium and zinc in the food containers and packaging polyolefins.

Determination.

This section does not apply to the determination of the content of impurity elements in polyolefins containing bromine and cerium oxide flame retardants.

2 Normative references

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

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

ASTMC1118 Wavelength Dispersive X-Ray Fluorescence System Component Selection

ASTME1621 Standard Guide for X-Ray Divergence Spectroscopy

3 Method summary

Prepare a clean, uniform sample using compression molding or injection molding. Place the sample into the WDXRF instrument and use primary X-ray light.

Beam illumination, which causes each element to produce fluorescence at a specific wavelength (line), depending on the detector, concentration range, and other elements in the matrix.

The characteristic line of the test element and the instrument test conditions. The intensity of the line is compared using a standard curve to determine the content of the element to

be tested.

Note: The WDXRF can be corrected using the basic parameter method.

4 Reagents and materials.

4.1 P-10 gas. a mixture of 90% argon and 10% methane (ultra-high purity or equivalent ultra-high purity) with a barometer with adjustable flow.

4.2 Nitrogen. Pre-purified or equivalent to clean the melting chamber.

4.3 Standard sample of each element. The compound of the element to be tested is melted in the polymer standard sample. Each element compound should have a corresponding purity certificate Dry, dry before use, put in a desiccator to save.

4.4 Reference sample. Prepared as described in Chapter 6.

4.5 Monitoring samples. Calibrate instrument drift (eg electron beam change or long-range X-ray decay).

Note: Select a monitoring sample with durability that should contain elements close to the upper or lower limit of the analyte. Monitor sample measurements before standard calibration, Then perform periodic re-measurements (such as once a day), then you can explain the drift of the initial measurement and make appropriate corrections to maintain the standard.

The correction is relatively consistent with the initial conditions.

5 Instruments

5.1

X-ray fluorescence spectrometer, wavelength-dispersive X-ray fluorescence spectrometer, in accordance with ASTM C1118 and ASTM E1621 guidelines.