GB

NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

ICS 71.100.70

Y 42

GB/T 35957-2018

Determination of prohibited substances cesium-137, cesium-134 in cosmetics - Gamma spectrometry

化妆品中禁用物质铯-137、铯-134 的测定

γ 能谱法

Issued on: February 06, 2018 **Implemented on: September 01, 2018**

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

Standardization Administration of the People's Republic of China.

Table of Contents

Determination of prohibited substances cesium-137, cesium-134 in cosmetics - Gamma spectrometry

1 Scope

This Standard specifies reagents and materials, instruments and equipment, analytical procedures, calculation of results, recovery rate and precision, allowable differences, etc. of gamma spectrometry determination method for prohibited substances cesium-137, cesium-134 in cosmetics.

This Standard is applicable to the determination of cesium-137, cesium-134 in powder, cream, lotion, liquid cosmetics.

The lower detection limit of cesium-137, cesium-134 in this Standard is 10 Bq/kg.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 6682, *Water for laboratory use; Specifications*

3 Principle

The sample is directly dosed into a sample box of a certain shape and volume. Measure γ ray characteristic peak intensity of cesium-137, cesium-134 on gamma spectrometer. Compare with standard product so as to determine the radiation specific activity of cesium-137, cesium-134.

4 Reagents and materials

Unless otherwise stated, the reagents used in this method are analytically pure and the water is the laboratory grade three water specified in GB/T 6682.

4.1 2% nitric acid.

4.2 Standard sample: cesium-137, cesium-134 standard solutions, specific

measurement range. Before the test, the instrument shall be pressurized and preheated to a steady state.

6.2.2 Standard solution measurement

Take a certain amount (about 5Bq respectively) of cesium-137, cesium-134 standard stock solutions. Add into the weighed sample measurement box. And add water to make the amount of the solution as 50 g (to the nearest of 0.1g). Cover, seal and mix well. The activity of cesium-137, cesium-134 in the sample box shall be calculated according to the amount of suction. Radiation decay correction shall be performed according to the fixed value date and date of use.

Place the sample box on the gamma spectrometer detector. Place the detector with the center axis of the sample box in a straight line. The measurement live time can be set according to the efficiency of the instrument. However, it shall be ensured that the peak area of the characteristic energy peak is not less than 1000. After the end of the measurement, the measured live time, the characteristic energy peak of cesium-137 (energy of 661.6 keV), and the peak area of the characteristic energy peak of cesium-134 (604.7 keV) shall be recorded. For the gamma energy spectrum of the cesium-137, cesium-134 standard solutions, see Figure A.1 in Annex A.

6.2.3 Sample measurement

Place the sample measurement box on the gamma spectrometer detector. Its position shall be consistent with the position of the standard solution measurement. The measurement live time is generally around 10000 s. The measurement live time can be adjusted according to the detector efficiency and the radionuclide content in the sample under the premise of ensuring the quantitative detection limit. After the end of the measurement, the measured live time, the characteristic energy peak of cesium-137 (energy of 661.6 keV), and the peak area of the characteristic energy peak of cesium-134 (604.7 keV) shall be recorded.

6.3 Blank test

Blank test uses 50 g of water as a sample. Carry out the test according to the above measurement conditions and procedures.

7 Calculation of results

Calculate according to equation (1). The calculation result retains 2 significant digits.

This is an excerpt of the PDF (Some pages are marked off intentionally)

------ The End ------