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

DZ/T 0253.4-2014

**Analytic methods for biologic samples in eco-geochemistry
assessment. Part 4: Determination of fluorine content.
Microdiffusion-fluorine reagents spectrophotometry**

生态地球化学评价动植物样品分析方法 第4部分：氟量的测定 扩散-分光光度法
清晰版

(English Translation)

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Foreword

DZ/T 0253 "Ecological Geochemical Evaluation of Animal and Plant Sample Analysis Methods" has four parts.

--- Part 1. Determination of the amount of 19 elements of lithium, boron, bismuth, etc. by inductively coupled plasma mass spectrometry (ICP-MS);

--- Part 2. Determination of selenium content by atomic fluorescence spectrometry;

---Part 3. Determination of total mercury - Cold atomic fluorescence spectrometry;

--- Part 4. Determination of the amount of fluorine - Spectrophotometric method.

This part is the fourth part of DZ/T 0253.

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

This part is proposed by the Ministry of Land and Resources of the People's Republic of China.

This part is under the jurisdiction of the National Land Resources Standardization Technical Committee.

This section drafted by. National Geological Experimental Testing Center.

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Introduction

The analysis of eco-geochemical survey and evaluation samples is carried out with the gradual development and deepening of multi-target geochemical survey work.

Project analysis, the purpose of which is based on multi-target geochemical survey results or other regional geochemical survey results for individual ecosystems, it includes river

ecosystems, farmland ecosystems, urban ecosystems, shallow sea ecosystems, and grassland ecosystems for evaluation.

In the evaluation stage of the eco-geochemical survey, based on the results of the soil circle survey, further recourse to elements in the lithosphere, soil circle, hydrosphere. Selecting typical and representative regions for migration and transformation in the biosphere, and selecting multi-media sampling and selectivity indicators for component analysis and activity analysis, organisms (including animals and plants) are one of the main targets of this phase of analysis and testing.

The elements that make up the organism come from the geological environment, and the organism exchanges substances with the environment continuously. This exchange involves solid phase (lithosphere) and liquid.

The phase (hydrosphere) and the gas phase (atmosphere) eventually tend to be a dynamic equilibrium. Geochemical elements from the surface of the earth's crust, weathered by the parent rock it is released into the soil and then activated into an effective state to be absorbed by the plant. The elements that enter the plant will inevitably affect its growth and development.

Sound, thus affecting the yield and quality of the plant, and then entering the animal and the human body through the food chain, and also the growth and health of the animal and the human body.

Important impact on life. Therefore, ecological geochemical evaluation will ultimately use biological sample analysis to illustrate the problem.

Ecological geochemical evaluation method for animal and plant samples Part 4.

Determination of the amount of fluorine Diffusion-spectrophotometry Cautions - Personnel using this section should have hands-on experience in formal laboratory work. This section does not point out all possible security questions.

question. It is the responsibility of the user to take appropriate safety and health measures and to ensure compliance with the conditions set by the relevant national regulations.

1 Scope

This section specifies the method for determining the amount of fluorine in animal and plant samples for eco-geochemical evaluation.

This section applies to the determination of the amount of fluorine in ecological and geochemical evaluation of animal and plant samples.

When the sample amount is 1 g, the detection limit of fluorine in the present method is 0.1 µg/g, and the lower limit of measurement is 0.4 µg/g.

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.

GB/T 6379.2 Accuracy of measurement methods and results (accuracy and precision) Part 2. Determination of standard method of measurement Basic method of sex and reproducibility GB/T 6379.4 Accuracy of measurement methods and results (accuracy and precision) Part 4. Determining the standard measurement method correctly Basic method of degree DZ/T 0253.1-2014 Eco-geochemical evaluation method for the analysis of animal and plant samples - Part 1 . 19 elements of lithium, boron, vanadium Inductively Coupled Plasma Mass Spectrometry (ICP-MS)

3 Principle

In the sample, the fluoride reacts with the acid in the diffusion box to generate hydrogen fluoride gas, which is absorbed by the sodium hydroxide by diffusion. Fluoride ion and cerium (III), Fluorine reagent (alkaline aminocarboxylate complexing agent) produces a blue ternary complex at a suitable pH (pH=4.2~5.0) on a spectrophotometer at the wavelength the absorbance is measured at 620 nm, and its absorbance is directly proportional to the fluorine content, which is quantitatively compared with the standard series.

4 Reagents

4.1

The water used in this section is deionized water containing no fluorine. In the analysis, analytical reagents conforming to national standards are used, all non-acidic.

The reagent is stored in a polyethylene plastic bottle.

4.2

sulfuric acid (3 1, volume ratio). Caution - Improper dilution is dangerous.

4.3

Silver sulfate (Ag_2SO_4)-sulfuric acid solution ($\rho=20\text{g/L}$). 2 g of silver sulfate was weighed and dissolved in 100 mL of sulfuric acid (4.2).

4.4

Sodium hydroxide-anhydrous ethanol solution ($\rho=40\text{g/L}$). Weigh 2g of sodium hydroxide, dissolve in absolute ethanol and dilute to 50mL, ice at 4 °C Saved in the box.