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

GB/T 8538.1-1987

**National food safety standard - Methods for examination of
natural mineral drinking water
(English Translation)**

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Foreword

This standard replaces GB 8538-2016 "National Food Safety Standard Drinking Natural Mineral Water Inspection Method".

Compared with GB 8538-2016, the main changes are as follows.

- *Pseudomonas aeruginosa* added the content of confirmation test;
- Added the methods and requirements for sampling and preservation of water samples for microbial testing in Appendix B;
- Coliform modified the multi-tube fermentation test method and its scope of application;
- *Clostridium perfringens* modified confirmatory test and enumeration method and enumeration medium.

national food safety standards Test method for drinking natural mineral water

1 Scope

This standard specifies the color, taste and odor, state, turbidity, pH, total dissolved solids, total hardness, total alkalinity of drinking natural mineral water degree, total acidity, multi-element determination, potassium and sodium, calcium, magnesium, iron, manganese, copper, zinc, total chromium, lead, cadmium, total mercury, silver, strontium, lithium, barium, vanadium, antimony, cobalt, nickel, Aluminum, Selenium, Arsenic, Borate, Metasilicic Acid, Fluoride, Chloride, Iodide, Carbon Dioxide, Nitrate, Nitrite, Carbonate and Bicarbonate, Sulfur Acid salts, oxygen consumption, cyanide, volatile phenolic compounds, anionic synthetic detergents, mineral oil, bromate, sulfide, phosphate, total beta radioactivity, tritium, ²²⁶Ra radioactivity, coliforms, *Streptococcus faecalis*, *Pseudomonas aeruginosa*, *Clostridium perfringens* determination method.

This standard applies to the determination of drinking natural mineral water indicators.

2.1 Principle

It is formulated with potassium chloroplatinate and cobalt chloride to make a standard color with the same hue as natural water yellow for visual colorimetric determination of water samples. Regulation the color of 1mg/LPt [existing in the form of (PtCl₆)²⁻] is used as a chromaticity unit, which is called 1 degree. Even slight turbidity can interfere with the measurement, so turbid water samples need to be centrifuged to make them clear.

2.2 Reagents and materials

Unless otherwise specified, the reagents used in this method are of analytical grade, and the water is grade 3 water specified in GB/T 6682.

2.2.1

Potassium chloroplatinate (K₂PtCl₆).

2.2.2

Cobalt chloride (CoCl₂·6H₂O).

2.2.3

Platinum-cobalt standard solution. accurately weigh 1.246g potassium chloroplatinate (K_2PtCl_6) and 1.000g dry cobalt chloride ($\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$), dissolve in 100mL water, add 100mL hydrochloric acid ($\rho_{20} = 1.19\text{g/mL}$), dilute to 1000mL with water. The color of this standard solution is 500 degrees.

2.3 Instruments and equipment**2.3.1**

Colorless colorimetric tube with stopper. 50mL.

2.3.2

Centrifuge.

2.3.3

Analytical balance. the sensed amount is 0.1 mg.

2.4.1 Sample processing

Pipette 50mL of transparent water sample into a colorimetric tube. If the color of the water sample is too high, take less water sample, add water to dilute the color, and multiply the result by dilution factor.

2.4.2 Determination

Take another 11 colorimetric tubes, add platinum-cobalt standard solution (2.2.3) 0mL, 0.50mL, 1.00mL, 1.50mL, 2.00mL, 2.50mL, 3.00mL, 3.50mL, 4.00mL, 4.50mL and 5.00mL, add water to the mark, shake well, that is, the chromaticity is 0 degrees, Standard series of 5 degrees, 10 degrees, 15 degrees, 20 degrees, 25 degrees, 30 degrees, 35 degrees, 40 degrees, 45 degrees and 50 degrees.

Compare the water sample with the platinum-cobalt standard color series, if the color tone of the water sample is inconsistent with the standard series, it is a different color, which can be described in words.

2.5 Presentation of analysis results

The chromaticity in the sample is calculated according to formula (1).

$$\text{Chroma} = V_1 \times 500 / V(1)$$

In the formula. chromaticity---unit is degree;

V_1 --- equivalent to the amount of platinum-cobalt standard solution, in milliliters (mL);

V-volume of water sample, in milliliters (mL).