

Water Chromium (VI) Content Assay Kit

Note: It is necessary to predict 2-3 large difference samples before the formal determination.

Operation Equipment: Spectrophotometer

Cat No: BC2830

Size: 50T/48S

Components:

Reagent I: Liquid 4mL×1, store at room temperature.

Reagent II: Powder×2, store at 2-8°C. Before use, add 1.6 mL of acetone to one bottle to fully dissolve it. Unused reagents can be stored at 2-8 °C for one week, and cannot be used again after the color becomes darker.

Standard: Liquid 1 mL×1, 2 μmol/mL Cr⁶⁺, store at room temperature. Dilute 160 times before use, prepare as 0.0125 μmol/mL standard solution. (Take 100μL standard solution and 900μL distilled water and mix to prepare 0.2μmol/mL Cr⁶⁺ standard solution, and then mix 50μL 0.2μmol/mL Cr⁶⁺ standard solution and 750μL distilled water to get 0.0125 μmol/mL Cr⁶⁺)

Description:

Cr⁶⁺ mainly comes from sewage and exhaust gas discharged from electroplating, smelting, surface treatment industries. Cr⁶⁺ enters the human body through the digestive tract, respiratory tract, skin, and mucous membranes, causing injury, even genetic mutation and carcinogenesis.

In an acidic environment, Cr⁶⁺ interacts with diphenylcarbazide to form a purple-red complex with characteristic absorption at 540 nm.

Required but not provided:

Spectrophotometer, transferpettor, 1mL glass cuvette, acetone and distilled water.

Protocol:

I. Sample preparation

1. Direct determination of colorless water samples.
2. Colored water sample: Take 1mL of water sample, add 50μL of Reagent I, cover tightly and mix well, put it in a boiling water bath for 2 minutes to fade; add 50μL of Reagent II after cooling, mix well; stand at room temperature for 10 minutes. The absorbance was measured at 540 nm and recorded as A measuring tube.

II. Measurement

1. Preheat spectrophotometer for 30 min, adjust wavelength to 540nm, set zero with distilled water.
2. Sample table:

Reagents (μL)	Blank tube (B)	Test tube (T)	Standard tube (S)
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Distilled water	1000		
0.2 μmol/mL standard			1000
Water sample		1000	
Reagent I	50	50	50
Reagent II	50	50	50
Mix thoroughly, react for 10 min at room temperature, and then detect the absorbance at 540nm, record A_B , A_S , A_T . $\Delta A_T = A_T - A_B$, $\Delta A_S = A_S - A_B$. Blank tubes and standard tubes only need to be done 1-2 times.			

III. Calculation:

$$Cr^{6+} \text{ content } (\mu\text{mol} / \text{mL}) = [CS \times (A_T - A_B) \div (A_S - A_B)] = 0.0125 \times (A_T - A_B) \div (A_S - A_B)$$

C_S : 0.0125 μmol/mL.

Note:

- When the iron in the water sample is about 50 times of hexavalent chromium, it will produce yellow color, which interferes with the determination, so it is not suitable to use this kit for determination; vanadium with 10 times of chromium can cause interference, but after 20 minutes of color development, the color of vanadium and the reagent is all developed. Disappeared; Molybdenum above 200mg/L interfered with mercury.
- Hexavalent chromium ions are toxic ions of heavy metals. During the measurement, attention should be paid to safety, and masks and gloves should be worn to avoid inhalation or contact.
- When the absorbance value is greater than 0.9, it is recommended to dilute the sample with distilled water and measure it. If the absorbance value of the measurement tube is lower than or close to the blank value, it is recommended to increase the sample size for measurement and pay attention to modify the calculation formula simultaneously.

Related Products:

BC2820/BC2825	Water Mercury Ion (Hg^{2+}) Content Assay Kit
BC2850/BC2855	Total Phosphorus Content Assay Kit
BC4350/BC4355	Tissue Iron Content Assay Kit
BC4380/BC4385	Blood Ammonia Content Assay Kit

Technical Specifications:

The detection limit: 0.0003491 μmol/mL

Linear range: 0.00039-0.025 μmol/mL