

Water Chromium (VI) Content Assay Kit

Note: Take two or three different samples for prediction before test.

Operation Equipment: Spectrophotometer/ microplate reader

Cat No: BC2835

Size: 100T/96S

Components:

Reagent I: Liquid 1.1 mL×1, store at room temperature.

Reagent II: Powder×2, store at 2-8°C. Before use, take 1 bottle and add 0.8 mL of acetone to fully dissolve it. Unused reagents can be stored at 2-8 °C for a week, and can not be used after the color becomes darker.

Standard: Liquid 1mL×1, 2μmol/mL Cr⁶⁺, store at room temperature. Dilute 80 times before use, that is, 0.025 μmol/mL Cr⁶⁺. (Draw 100μL standard solution and 900μL distilled water and mix to prepare 0.2μmol/mL Cr⁶⁺ standard solution, then mix 50μL 0.2μmol/mL Cr⁶⁺ standard solution and 350μL distilled water to get 0.025 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/microplate reader, transferpettor, micro glass cuvette/ 96-well flat-bottom plate, acetone and distilled water.

Protocol:

Determination

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; leave at room temperature for 10 minutes. The absorbance was measured at 540 nm and recorded as A measuring tube.

Measurement

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

| Reagents | Blank tube (B) | Test tube (T) | Standard tube (S) |
|----------------------|----------------|---------------|-------------------|
| Distilled water (μL) | 200 | | |

| | | | |
|--|----|-----|-----|
| 0.2 μmol/mL standard (μL) | | | 200 |
| Water sample (μL) | | 200 | |
| Reagent I (μL) | 10 | 10 | 10 |
| Reagent II (μL) | 10 | 10 | 10 |
| Mix thoroughly, react for 10 min at room temperature, take 200 μL into a micro glass cuvette/96 well plate, 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 tube and standard tube only need to do 1-2 times) | | | |

Calculation:

$$Cr^{6+} (\mu\text{mol} / \text{mL}) = [C_S \times (A_T - A_B) \div (A_S - A_B)] = 0.025 \times (A_T - A_B) \div (A_S - A_B)$$

$$C_S: 0.025 \mu\text{mol} / \text{mL};$$

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:

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|---------------|--|
| 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: 0.000295 μmol/mL

Linear range: 0.00078-0.1 μmol/mL