

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×1, store at 4°C. Dissolve with 1.4 mL of acetone (**self-provided**) before use. It can't be used after the color becomes darker.

Standard: Liquid 3 mL×1, 2μmol/mL Cr⁶⁺, store at room temperature. Dilute 80 times before use, prepare as 0.025 μmol/mL standard solution.

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, transferpeltor, micro glass cuvette/ 96-well flat-bottom plate, acetone and distilled water.

Protocol:

1. Preheat spectrophotometer/microplate reader for 30 min, adjust wavelength to 540 nm, 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 . $\Delta A_T = A_T - A_B$, $\Delta A_S = A_S - A_B$.

Calculation:

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

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

Note:

- 1 Directly measure colorless water samples;
- 2 Colored water sample: Take 0.2 mL of water sample, add 10 μL of Reagent I, cover, mix well and place in a boiling water bath for 2 minutes, fade; after cooling, add 10 μL of Reagent II, mix thoroughly; leave at room temperature for 10 minutes. The absorbance is measured at 540 nm and recorded as A_B .
3. When the iron in the water sample is about 50 times of Cr^{6+} , it will cause yellow and interfere with the measurement. It is not suitable to use this kit for measurement; 10 times of vanadium can cause interference, but the color of vanadium and the reagent will disappear after 20 min; Molybdenum and mercury sinks above 200 mg/L cause interference.
4. Cr^{6+} is toxic ions of heavy metals. Pay attention to safety during the measurement. Wear masks and gloves to avoid inhalation or contamination.
5. When the absorbance is greater than 1.5, it is recommended to determine the sample after dilution.

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: 0.000295 $\mu\text{mol}/\text{mL}$

Linear range: 0.00078-0.1 $\mu\text{mol}/\text{mL}$