

# Water Chromium (VI) Content Assay Kit

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

**Operation Equipment:** Spectrophotometer/ microplate reader

**Cat No:** NA0422

**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, 2 $\mu$ mol/mL Cr<sup>6+</sup>, store at room temperature. Dilute 80 times before use, prepare as 0.025  $\mu$ mol/mL standard solution.

## Description:

Cr<sup>6+</sup> mainly comes from sewage and exhaust gas discharged from electroplating, smelting, surface treatment industries. Cr<sup>6+</sup> 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, Cr<sup>6+</sup> 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 ( $\mu$ L)	200		
0.2 $\mu$ mol/mL standard ( $\mu$ L)			200
Water sample ( $\mu$ L)		200	
Reagent I ( $\mu$ L)	10	10	10
Reagent II ( $\mu$ L)	10	10	10

Mix thoroughly, react for 10 min at room temperature, take 200  $\mu$ L 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  $\mu\text{L}$  of Reagent I, cover, mix well and place in a boiling water bath for 2 minutes, fade; after cooling, add 10  $\mu\text{L}$  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  $\text{Cr}^{6+}$ , 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.  $\text{Cr}^{6+}$  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:**

- NA0665/NA0423 Water Mercury Ion( $\text{Hg}^{2+}$ ) Content Assay Kit  
NA0662/NA0379 Total Phosphorus Content Assay Kit  
NA0302/NA0301 Tissue Iron Content Assay Kit  
NA0296/NA0295 Blood Ammonia Content Assay Kit

**Technical Specifications:**

The detection limit: 0.000295  $\mu\text{mol}/\text{mL}$

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