



# Chromate Test



## 1. Method

In weakly phosphoric solution chromium(VI) ions react with diphenylcarbazide to form chromium(III) and diphenylcarbazone, which form a red-violet complex. The concentration of chromate is measured **semiquantitatively** by visual comparison of the reaction zone of the test strip with the fields of a color scale.

## 2. Measuring range and number of determinations

Measuring range / color-scale graduation <sup>1)</sup>	Number of determinations
3 - 10 - 30 - 100 mg/l CrO <sub>4</sub> <sup>2-</sup>	100
1.3 - 4.5 - 13 - 45 mg/l Cr	

<sup>1)</sup> for conversion factors see section 8

## 3. Applications

This test measures chromium(VI) present in the sample as chromate or dichromate ions.

### Sample material:

Wastewater, especially from the electroplating industry and from the pickling and tanning industries

## 4. Influence of foreign substances

This was checked in solutions with 10 and 0 mg/l CrO<sub>4</sub><sup>2-</sup>. The determination is not yet interfered with up to the concentrations of foreign substances given in the table.

Concentrations of foreign substances in mg/l					
Ag <sup>+</sup>	1000	Fe <sup>2+</sup>	1	Ni <sup>2+</sup>	1000
Al <sup>3+</sup>	1000	Fe <sup>3+</sup>	25	NO <sub>2</sub> <sup>-</sup>	1000
Ba <sup>2+</sup>	1000	[Fe(CN) <sub>6</sub> ] <sup>3-</sup>	50	NO <sub>3</sub> <sup>-</sup>	1000
Ca <sup>2+</sup>	1000	Hg <sup>+</sup>	25	PO <sub>4</sub> <sup>3-</sup>	1000
Cd <sup>2+</sup>	1000	Hg <sup>2+</sup>	100	S <sup>2-</sup>	1
Cl <sup>-</sup>	1000	IO <sub>3</sub> <sup>-</sup>	10	Sn <sup>2+</sup>	1
CN <sup>-</sup>	1	IO <sub>4</sub> <sup>-</sup>	10	SO <sub>3</sub> <sup>2-</sup>	1
Co <sup>2+</sup>	1000	Mg <sup>2+</sup>	1000	SO <sub>4</sub> <sup>2-</sup>	1000
Cu <sup>2+</sup>	100	MnO <sub>4</sub> <sup>2-</sup>	10	S <sub>2</sub> O <sub>3</sub> <sup>2-</sup>	1
F <sup>-</sup>	1000	MoO <sub>4</sub> <sup>2-</sup>	25	Zn <sup>2+</sup>	1000

## 5. Reagents and auxiliaries

**Please note the warnings on the packaging materials!**

The test strips and the test reagent are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

### Package contents:

Tube containing 100 test strips  
1 bottle of reagent CrO<sub>4</sub><sup>2-</sup>-1  
1 test vessel

### Other reagents:

Universal indicator strips pH 0 - 14,  
Cat. No. 109535 (USA/CAN: 9590)  
Chromate standard solution CertiPUR®, 1000 mg/l CrO<sub>4</sub><sup>2-</sup>, Cat. No. 119780

## 6. Preparation

Samples containing more than 100 mg/l CrO<sub>4</sub><sup>2-</sup> must be diluted with distilled water.

## 7. Procedure

Rinse the test vessel several times with the pretreated sample.

Pretreated sample (15 - 30 °C)	5 ml	Fill the test vessel to the 5-ml mark. <b>Add until the pH of the solution is below 1.</b> Check with universal indicator strips.
Reagent CrO <sub>4</sub> <sup>2-</sup> -1	dropwise <sup>1)</sup>	

Immerse the reaction zone of the test strip in the measurement sample **for 1 sec.**

Allow excess liquid to run off via the long edge of the strip onto an absorbent paper towel and **after 15 sec** determine with which color field on the label the color of the reaction zone coincides most exactly.

Read off the corresponding result in mg/l CrO<sub>4</sub><sup>2-</sup> or Cr.

<sup>1)</sup> **Hold the bottle vertically while adding the reagent!**

### Notes on the measurement:

- The color of the reaction zone may continue to change after the specified reaction time has elapsed. This must not be considered in the measurement.
- If the color of the reaction zone is equal to or more intense than the darkest color on the scale, repeat the measurement using **fresh**, diluted samples until a value of less than 100 mg/l CrO<sub>4</sub><sup>2-</sup> (45 mg/l Cr) is obtained.

Concerning the result of the analysis, the dilution (see also section 6) must be taken into account:

Result of analysis = measurement value x dilution factor

## 8. Conversions

Units required	=	units given	x	conversion factor
mg/l Cr		mg/l CrO <sub>4</sub> <sup>2-</sup>		0.448
mg/l CrO <sub>4</sub> <sup>2-</sup>		mg/l Cr		2.23

## 9. Method control

To check test strips, test reagent, and handling: Dilute the chromate standard solution with distilled water to 10 mg/l CrO<sub>4</sub><sup>2-</sup> and analyze as described in section 7.

Additional notes see under [www.qa-test-kits.com](http://www.qa-test-kits.com).

## 10. Notes

- **Reclose** the reagent bottle and **the tube containing the test strips immediately after use.**
- Rinse the test vessel **with distilled water only.**