

Method: **Tube test**
Acidic oxidation of chromium(III) to chromium(VI) and subsequent determination with diphenylcarbazide

Range: 0.1 - 4.0 mg/l Cr
0.05 - 2.0 mg/l Cr

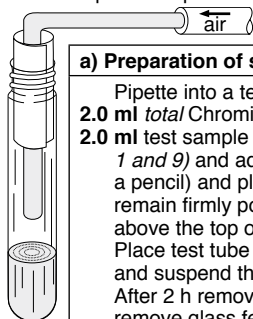
NANOCOLOR® reagent sets: *total* Chromium (REF 918 253) and Chromate 5 (REF 985 024)
or
NanOx Metal (REF 918 978) and Chromate 5 (REF 985 024)

Wavelength: 540 nm

Interferences: The following ions will not interfere:
Al, Ba, Bi, Ca, Mn(II), Ni, Pb, Sn, Zn
Copper > 0.5 mg/l and iron > 10 mg/l interfere and cause falsely low results.
The method can also be applied for the analysis of sea water.

Method
0243
0244

Procedure A: with *total* Chromium (REF 918 253)
Requisite accessories: *NANOCOLOR®* heating block, electric air pump with glass feed tube (REF 916 55), *NANOCOLOR®* test tubes 14 mm ID (REF 916 80), piston pipette with disposable tips



a) Preparation of sample **2 h / 148 °C**

Pipette into a test tube
2.0 ml *total* Chromium R1, add
2.0 ml test sample solution (*the pH value of the sample must be between pH 1 and 9*) and add one glass spiral, mix. Roll a strip of paper (e. g. around a pencil) and place inside test tube (see sketch). The paper should remain firmly positioned against the side of the test tube and protrude just above the top of the test tube.
Place test tube in heating block and press „START“. Switch on air pump and suspend the glass feed tube in the test tube as shown in the figure.
After 2 h remove test tube with the residue (first switch off air pump and remove glass feed tube from test tube). Allow test tube to cool down.
Remove the strip of rolled paper from the test tube.

b) Oxidation **30 min / 100 °C**

Carefully add
4.0 ml *total* Chromium R2, mix. Add
1 level spoon *total* Chromium R3,
close tube with screw cap and mix.
Place test tube in heating block. Press „START“.

c) Determination of chromium

Open chromate test tube, add
4.0 ml of preoxidized test sample, close, mix (Chromate R2 is not required).
Clean outside of test tube and measure after 5 min.

Measurement: Insert test tube, select method **0243** and perform measurement.

Procedure B:
with NANOCOLOR®
NanOx Metal
(REF 918 978)

Requisite accessories:
NANOCOLOR® heating block, NANOCOLOR® test tubes 14 mm ID (REF 916 80), piston pipette with disposable tips

a) Oxidation	30 min / 120 °C
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Pipet 5.0 ml test sample into a reaction tube, add 1 level orange measuring spoon NanOx Metal decomposition reagent, close and shake thoroughly. Place the reaction tube into the heating block and press „START“. Remove tube from the heating block, shake gently and leave it cool. Open the reaction tube and test the decomposition solution for peroxides using <i>QUANTOFIX</i> ® Peroxide 25 test sticks (REF 913 19).
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b) Determination of chromium

Open chromate test tube, add 4.0 ml of preoxidized test sample, close, mix (Chromate R2 is not required). Clean outside of test tube and measure after 5 min.
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Measurement:

Insert test tube, select method **0244** and perform measurement.

Chromium(III) = *total* chromium – chromium(VI)

= *total* chromium – (chromate x 0.45)

Analytical
quality control:

NANOCONTROL multistandard Metals 1 (REF 925 015)