

REF 985 093

en

Test 0-93

08.16

NANOCOLOR® TOC 25

Total organic carbon

Method:

The determination of TOC is carried out in two steps:

1. Disposing of the inorganic carbon (TIC)
2. Decomposition of the organic carbon (TOC) and detection of the carbon dioxide formed by means of an indicator

Range:	2.0–25.0 mg/L C
Wavelength (HW = 5–12 nm):	585 nm
Decomposition time:	2 h
Decomposition temperature:	120 °C

Content of reagent set:

- 10 test tubes TOC 25
- 1 test tube with 6 mL TOC R0
- 1 brown glass bottle with 1 g TOC R2
- 1 measuring spoon 70 mm
- 1 test tube with blank value „NULL“
- 2 thermo caps
- 10 round stickers

Hazard warning:

Reagent R0 contains sodium hydrogen sulfate 10–25 %, reagent R2 contains sodium peroxodisulfate 20–100 %.
 H317, H318, H334 May cause an allergic skin reaction. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
 P261, P272, P280, P302+352, P304+340, P305+351+338, P333+313, P342+311, P363 Avoid breathing dust. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/eye protection. IF ON SKIN: Wash with plenty of water/... IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If skin irritation or rash occurs: Get medical advice/attention. If experiencing respiratory symptoms: Call a POISON CENTER/doctor/... Wash contaminated clothing before reuse. For further information ask for a safety data sheet.

Interferences:

The following quantities will not interfere: $\leq 1000 \text{ mg/L Cl}^-$; $\leq 500 \text{ mg/L TIC}$

This method can not be applied for the analysis of sea water.

Procedure:

Requisite accessories: piston pipettes with tips, glass beaker 100 mL, magnetic stirring unit, minimagnet, NANOCOLOR® heating block

Please use a magnetic stirrer which can run at least at 900 rpm. The stir bar's size should fit the dimension of the beaker. For example, in case of a 100 mL beaker with 4.5 cm diameter, we suggest a stir bar of 3 cm length and at least 0.5 cm width (please also see NANOCOLOR® accessory sets for TOC determinations).

Recommended accessories for disposing of TIC:

- NANOCOLOR® accessory set for the determination of TOC (small), content:
1 magnetic stirrer (1 stir position), 2 beakers 100 mL, 2 magnetic stir bars 35 mm (REF 916 990)
- NANOCOLOR® accessory set for the determination of TOC (big), content:
1 magnetic stirrer (15 stir positions), 6 beakers 100 mL, 6 magnetic stir bars 35 mm (REF 916 991)
- NANOCOLOR® beaker 100 mL with magnetic stir bar 35 mm, pack of 2 (REF 916 992)

1. Disposing of inorganic carbon (TIC)

Fill

10.0 mL test sample (*the pH value of the sample must be between pH 1 and 12*) and
0.5 mL R0 into a glass beaker 100 mL with a mini-magnet and stir for **10 min** at maximum speed.

If samples are high in carbonates (high TIC content), we recommend to increase the stirring time. Depending on the sample matrix, it is necessary to check and adjust stirring time individually. Recommendation: When running the test for the first time or if changes in the sample matrix occur, we suggest to test a series of samples with different stirring times (e.g. 10, 30, 60 min) until TOC contents remain constant.

2. Decomposition

2 h / 120 °C

Open test tube, add

5.0 mL of the sample solution from step 1 and

1 measuring spoon R2, close with thermo cap and mix.

Place test tube **standing on its head** (*thermo cap at the bottom*) into the heating block with the blue indicator solution on top.

Set heating block to 120 °C and 2 h and press start.

After 2 h remove test tube from the heating block and leave the tube **standing on its head to cool down for 60 min** (*do not cool with cold water!*).

After 60 min turn test tube upside down, clean outside of tube and measure the colored solution in the photometer.

Adjust photometer to zero by using blank value "NULL".

Measurement:

For NANOCOLOR® photometers and PF-12 see manual, test 0-93.

Note:

NANOCOLOR® thermo caps for TOC decomposition are reusable. After measurement replace the thermo cap by the screw cap. Clean thermo cap with distilled water, dry and use for further determinations.

Photometers of other manufacturers:

For other photometers check whether measurement of round glass tubes is possible. Verify factor for each type of instrument by measuring standard solutions.

Analytical quality control:

NANOCONTROL COD 60 (REF 925 22): $12.0 \pm 2.0 \text{ mg/L C}$; decomposition of the standard without disposing and without addition of R0.