

REF 985 027

en

Test 0-27 06.16  
**NANOCOLOR® COD 40**

Chemical Oxygen Demand

#### Method:

Photometric determination of decrease in chromate concentration after oxidation with potassium dichromate/sulfuric acid/silver sulfate

Range:	2–40 mg/L COD
Wavelength:	345–365 nm
Reaction time:	2 h
Reaction temperature:	148 °C
Short time COD:	30 min at 160 °C*

#### Contents of reagent set:

20 test tubes COD 40

#### Hazard warning:

Test tubes contain sulfuric acid 80–98% and mercury(II) sulfate 0.74–1.50%.

H314 Causes severe skin burns and eye damage.

P260, P280, P301+330+331, P303+361+353, P304+340, P305+351+338, P501 Do not breathe vapors. Wear protective gloves/eye protection. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. 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. Dispose of contents/container to regulate waste treatment. For further information ask for a safety data sheet. When shaking COD test tubes use safety bottle (REF 916 37).

#### Interferences:

For **chloride contents above 1500 mg/L** the test sample must be diluted or use Chloride complexing agent (REF 918 911). For determination of the concentration of chlorides we recommend a preliminary test with QUANTOFIX® Chloride (REF 913 21).

Turbidity in the COD test tube after reaction in the heating block will result in COD readings which are too low. Wait until turbidities caused by precipitation of mercury sulphate have deposited.

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

#### Procedure:

Requisite accessories: NANOCOLOR® heating block, piston pipette with tips

**Note:** For samples with high chloride concentrations it is important to shake the test tube **before** the water sample is added in order to suspend the deposit.

This high-sensitivity COD test requires lower concentrations of potassium dichromate thereby resulting in reduced oxidation strength. For this reason determination of the „residual COD“ (often the substances, which are most difficult to degrade) can result in low test values.

#### according to DIN ISO 15705 at 148 °C

Open test tube, hold it **diagonally** and **slowly** add

**2.0 mL** test sample to contents **without** mixing so that two separate layers are formed; screw cap securely on to test tube, hold tube by the cap, place tube into the safety bottle and shake (*Caution, test tube becomes hot/Contents become turbid until heated*), then place tube into the heating block.

After 2 h remove test tube from heating block, after about 10 min (*test tube is still warm*) shake once and allow to cool to room temperature.

Clean outside of test tube and measure.

#### Short time COD at 160 °C

Open test tube, hold it **diagonally** and **slowly** add

**2.0 mL** test sample to contents **without** mixing so that two separate layers are formed; screw cap securely on to test tube, hold tube by the cap, place tube into the safety bottle and shake (*Caution, test tube becomes hot/Contents become turbid until heated*), then place tube into the heating block.

After 30 min remove test tube from heating block, after about 10 min (*test tube is still warm*) shake once and allow to cool to room temperature.

Clean outside of test tube and measure.

\* In contrast to the conditions described in the ISO 15705, the short time COD is characterized by a higher digestion temperature and reduced reaction time. Therefore we recommend to compare the results of the short time COD from time to time with measurements made under the conditions of ISO 15705 (150 ± 5 C/2 h ± 10 min).

#### Measurement:

For NANOCOLOR® photometers and PF-12 see manual, test 0-27.

#### 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) or Multistandard Sewage outflow 2 (REF 925 010)

#### Storage:

Store the test kit in a cool and dry place. Avoid exposing the test kit to sunlight.

#### References:

German standard methods for the examination of water, waste water and sludge (DIN 38 409 - H41-1 and DIN ISO 15 705 - H45)

British standard: Field and on-site test methods for the analysis of waters (BS 1427)

MACHEREY-NAGEL GmbH & Co. KG · Neumann-Neander-Str. 6–8 · 52355 Düren · Germany

Tel.: +49 24 21 969-0 · Fax: +49 24 21 969-199 · info@mn-net.com · [www.mn-net.com](http://www.mn-net.com)

PDF 14122 / A011693 / 985 27 / 0669