

REF 985028

en

**Test 0-28**      **07.17**  
**NANOCOLOR® COD 15000**

Chemical Oxygen Demand

**Method:**

Photometric determination of chromium(III) concentration after oxidation with potassium dichromate/sulfuric acid / silver sulfate

Range:	1.0–15.0 g/L COD (1000–15000 mg/L COD)
Wavelength (HW = 5–12 nm):	605 / 620 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 15000  
 1 test tube with blank value "NULL"

**Hazard warning:**

Test tubes contain sulfuric acid 51–65%, potassium dichromate 0.32–0.38% and mercury(II) sulfate 0.37–0.74%. Blank value "NULL" contains sulfuric acid 51–65%.

H314, H317, H340, H350 Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause genetic defects. May cause cancer.

P201, P260sh, P280sh, P303+361+353, P305+351+338, P310, P405 Obtain special instructions before use. Do not breathe dust / vapors. Wear protective gloves / eye protection. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER / doctor. Store locked up. For further information ask for a safety data sheet. When shaking COD test tubes use safety bottle (REF 91637).

**Interferences:**

For **chloride contents above 15000 mg/L** the test sample must be diluted. For determination of the concentration of chlorides we recommend a preliminary test with QUANTOFIX® Chloride (REF 91321).

Turbidity in the COD test tube after reaction in the heating block will result in COD readings which are too high. Wait until turbidities caused by precipitation of mercury sulfate have deposited. When interpreting the results please remember the high dilution.

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.

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

Open test tube, hold it **diagonally** and **slowly** add  
**0.2 mL (= 200 µL)** test sample,  
 screw cap securely on to test tube, hold tube by the cap, place tube into the safety bottle and shake,  
 then place tube into the heating block and start.  
 After 2 h remove test tube from heating block, after 10 min (*test tube is still warm*) shake once and allow  
 to cool to room temperature.  
 Clean outside of the test tube and measure.

**Short time COD at 160 °C**

Open test tube, hold it **diagonally** and **slowly** add  
**0.2 mL (= 200 µL)** test sample,  
 screw cap securely on to test tube, hold tube by the cap, place tube into the safety bottle and shake,  
 then place tube into the heating block and start.  
 After 30 min remove test tube from heating block, after 10 min (*test tube is still warm*) shake once and  
 allow to cool to room temperature.  
 Clean outside of the 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 ( $150 \pm 5 \text{ °C} / 2 \text{ h} \pm 10 \text{ min}$ ).

**Measurement:**

For MACHEREY-NAGEL photometers see manual, test 0-28.

**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 15000 (REF 92528) or Multistandard Seepage water (REF 925013)

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