

REF 963026

en

Test 0-26

11.17

**NANOCOLOR® COD 160 Hg-free**

Chemical Oxygen Demand

**Method:**

Photometric determination of decrease in chromate concentration after oxidation with potassium dichromate / sulfuric acid / silver sulfate **without** use of mercury salts

Range:	<b>15–160 mg/L COD</b>	<b>15–160 mg/L COD</b>
Factor:	<b>0220.</b>	<b>0212.</b>
Wavelength (HW = 5–12 nm):	<b>436 nm</b>	<b>445 nm</b>
Reaction time:	<b>2 h</b>	
Reaction temperature:	<b>148 °C</b>	
Short time COD:	<b>30 min at 160 °C*</b>	

**Contents of reagent set:**

20 cartridges for chloride elimination  
20 test tubes COD 160 Hg-free  
1 test tube with blank value "NULL"

**Hazard warning:**

Cartridges contain silver sulfate 10–100%, test tubes contain sulfuric acid 80–98%, blank value "NULL" contains sulfuric acid 51–80%.

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 regulated waste treatment. For further information ask for a safety data sheet. When shaking COD test tubes use safety bottle (REF 91637).

**Interferences:**

**Chloride contents up to 2000 mg/L** are eliminated by cartridge pretreatment, and thus do **not** interfere. For chloride contents > 2000 mg/L the test sample must be diluted with COD-free water (REF 918993). Alternatively, the chloride interferences can be eliminated by the use of several cartridges (REF 963911). For the determination of the chloride content we recommend a preliminary test with QUANTOFIX® Chloride (REF 91321).

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

**Note:**

*The cartridge contents are sensitive to heat and light. Thus, it is recommended to open the cartridge packaging just before use. Avoid contact with the cartridge content. In case of contact with skin, rinse thoroughly with water. Light color changes of the cartridge content do not interfere with the determination.*

**Procedure:**

Requisite accessories: reaction tubes 16 mm OD (REF 91680), alternatively beaker, piston pipette with tips, NANOCOLOR® heating block

**Pretreatment**

Open packaging and take out cartridge.

Dip cartridge into test sample and draw up plunger **slowly** until about 5 mL of sample solution are inside the cartridge. Shake cartridge well for 30 s. Afterwards, press out sample solution carefully; **reject the first drops (ca. 0.5 mL)** and fill the remaining contents (**clear solution**) into an **empty** reaction tube by slowly pouring the solution down the inner side of the tube.

**Digestion at 148 °C**

Open COD test tube, hold it **at an angle** and **slowly** add

**2.0 mL** of the pretreated sample solution from the reaction tube **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*). Place tube into the heating block. Start heating programme.

After 2 h remove test tube from heating block, allow to cool down to room temperature and shake gently several times.

Clean outside of test tube and measure.

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

**Short time COD at 160 °C**

Open COD test tube, hold it **at an angle** and **slowly** add

**2.0 mL** of the pretreated sample solution from the reaction tube **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*). Place tube into the heating block. Start heating programme.

After 30 min remove test tube from heating block, allow to cool down to room temperature and shake gently several times.

Clean outside of test tube and measure.

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

*\* In contrast to the digestion at 148 °C, 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 (150 ± 5 °C / 2 h ± 10 min).*

**Measurement:**

For NANOCOLOR® photometers and PF-12 see manual, test 0-26.

The same method is called up as for the mercury-containing COD 160 (REF 985026).

**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:**

NANOCOLOR COD 160 (REF 92526) or Multistandard Sewage outflow 1 (REF 925011)

**Storage:**

Store the test kit in a cool (2–8 °C) and dry place. Avoid exposing the test kit to sunlight.