

REF 985 031

en

Test 0-31

03.15

NANOCOLOR® Cyanide 08**Method:**

Cyanide ions react with chloramine T to form cyanogen chloride. Combined with isonicotinic acid and 1,3-dimethylbarbituric acid, this forms a blue polymethine dye. The method identifies free cyanide and cyanide complexes that are decomposed by chlorine.

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|----------------------------|--------------------------------------|--|
| | Tube test | Semi micro cuvette 50 mm |
| Range: | 0.02–0.80 mg/L CN⁻ | 0.005–0.100 mg/L CN⁻ |
| Factor: | 00.49 | 00.12 |
| Wavelength (HW = 5–12 nm): | 585 nm | |
| Range: | 0.01–0.50 mg/L CN⁻ | 0.002–0.100 mg/L CN⁻ |
| Factor: | 00.25 | 0.065 |
| Wavelength (HW = 5–12 nm): | 605 nm | |
| Reaction time: | 10 min | |
| Reaction temperature: | 20–25 °C | |

Contents of reagent set:

20 test tubes Cyanide 08
 1 tube NANOFIX Cyanide 08 R2
 1 test tube with 11 mL Cyanide 08 R3

Hazard warning:

Reagent R2 contains chloramine T 10–100 %, reagent R3 contains sodium hydroxide solution 0.5–2 %. H314, H334 Causes severe skin burns and eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

P260, P261, P280, P301+330+331, P303+361+353, P304+340, P305+351+338, P342+311, P501 Do not breathe vapors. Avoid breathing dust. 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. If experiencing respiratory symptoms: Call a POISON CENTER/doctor/... Dispose of contents/container to regulated waste treatment. For further information ask for a safety data sheet.

Preliminary tests:

If the order of magnitude of the concentration in a sample is not known, a preliminary test with QUANTOFIX® Cyanide (1–30 mg/L CN⁻, REF 913 18) rapidly gives this information. From the order of magnitude the required dilution can be calculated and prepared directly.

Interferences:

Complexed cyanide is not or not completely detected. Reducing agents interfere since they react with the chlorinating agent. Thiocyanate, sulfide, bromide, iodide and metals like mercury or silver interfere even in low concentrations.

The following ions will not interfere: < 10 g/L Ca²⁺; < 1000 mg/L Al³⁺, Mg²⁺, Zn²⁺, Cl⁻, F⁻, PO₄³⁻, SO₄²⁻; < 500 mg/L Cd²⁺; < 200 mg/L Fe³⁺, Ni²⁺; < 100 mg/L NO₂⁻; < 50 mg/L Cr(III), Cr(VI), Cu²⁺; < 5 mg/L Mn²⁺, Mo(VI).

To circumvent interferences cyanide is separated by distillation before determination (see "Note").

The method can be applied also for the analysis of sea water after dilution (1+3).

Note:

For the determination of readily liberated cyanide and total cyanide, please contact MACHEREY-NAGEL for special working instructions.

Procedure:

Requisite accessories: piston pipette with tips

Open test tube, add
4.0 mL test sample (*the pH value of the sample must be between pH 1 and 13*) and
1 NANOFIX R2, close and mix.
(Close NANOFIX tube immediately after use.)
 Add
500 µL (= 0.5 mL) R3, close and mix.
 Clean outside of test tube and measure after 10 min.

Lower cyanide concentrations (0.002–0.100 mg/L CN⁻) can be determined by using semi-micro cuvettes 50 mm (REF 919 50):

| Test sample | Blank value |
|--|--|
| Open test tube, add 4.0 mL test sample (<i>the pH value of the sample must be between pH 1 and 13</i>) and 1 NANOFIX R2 , close and mix. <i>(Close NANOFIX tube immediately after use.)</i> Add 500 µL (= 0.5 mL) R3, close and mix. | Open test tube, add 4.0 mL distilled water and 1 NANOFIX R2 , close and mix. <i>(Close NANOFIX tube immediately after use.)</i> Add 500 µL (= 0.5 mL) R3, close and mix. |

Pour the contents of test tubes into semi-micro cuvettes 50 mm and measure after 10 min [method 1311].

Measurement:

For NANOCOLOR® photometers and PF-12 see manual, test 0-31.

Measurement when samples are colored or turbid:

For all NANOCOLOR® photometers see manual, use key for correction value.

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.