

Cyanide

High sensitivity test kit for the determination in the range of 0.002 – 0.04 mg/L CN⁻

Method:

Polymethine dye according to the barbituric acid-pyridine method

Contents of test kit (*refill pack):

sufficient for 50 tests

- 10 g CN-1*
- 6 g CN-2*
- 30 mL CN-3*
- 30 mL CN-4*
- 1 black measuring spoon 85 mm*
- 1 orange measuring spoon 85 mm*
- 1 plastic beaker for sampling
- 2 round glass tubes with screw caps
- 1 comparator block
- 1 color comparison disc Cyanide

Hazard warning:

Cyanide-1 contains chloramine T 5–10 % and di-sodium hydrogen phosphate 25–100 %. Cyanide-4 contains pyridine 32–44 %.

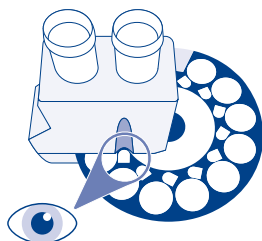
H314, H334 Causes severe skin burns and eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

P260sh, P280sh, P303+361+353, P304+340, P305+351+338, P310 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 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. Immediately call a POISON CENTER/doctor.

Procedure:

1. Insert color comparison disc (see illustration).
2. Open both round glass tubes, rinse left tube several times with the water sample and fill up to the mark with the water sample.
3. Add 1 level black measuring spoon of CN-1 to the left tube, close and shake until contents are dissolved (about 30 s).
4. Add 1 level orange measuring spoon of CN-2 to the right tube.
5. Add 15 drops CN-3 to the right tube. Swing tube for about 1 min. A turbid solution is formed which should not contain any larger reagent particles. If larger particles remain continue to shake the tube.
6. Add 15 drops CN-4 to the right tube.
7. Add contents of the left tube to the right tube, close tube and mix.
8. Fill left tube again with the water sample (do not add reagents!). Wait 3 min.
9. Reading: Turn color disc until both colors match by transmitted light from above. Read test results from the mark on the front side of the comparator (see illustration). Intermediate values can be estimated.
10. After use clean both round glass tubes thoroughly and close.

mg/L CN ⁻	mmol/m ³
0.002	0.08
0.004	0.15
0.007	0.27
0.010	0.38
0.015	0.58
0.020	0.77
0.025	0.96
0.030	1.2
0.040	1.5



The method can be used for analysing sea water. Depending on the composition of the sea water the result may be too low as much as one value on the color scale.

Disposing of the samples:

The used analysis specimens can be flushed down the drain with tap water and channelled off to the local sewage treatment works.

Interferences:

Thiocyanate ions give the same reaction as cyanides. In this case a distillation must precede the determination of cyanide (see DEV D 13–2.2: Separation of cyanides which can easily be liberated). Silver ions in excess of 2 mg/L cause turbidity and thus interfere with the determination of cyanide. For elimination of this interference see point 1.

Iron(III) ions in excess of 5 mg/L and iron(II) ions in excess of 2 mg/L interfere causing turbidities and discolourations. For elimination see point 1.

Chromium(VI) ions interfere in excess of 5 mg/L causing discolourations. For elimination see point 1. Cyanide complexes of iron and cobalt are not determined with this test, nickel complexes are only detected partially (about 5 %).

For the determination of total cyanide a distillation according to DEV D 13–2.1 has to precede the analysis.

Note:

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