

Test kit for the determination of chloride in water

Method: Mercuric Titration

Contents of test kit (*refill pack):

sufficient for 300 tests with an average chloride content of 200 mg/L Cl⁻

- 10 mL indicator CL 500*
- 30 mL nitric acid 4%*
- 100 mL titration solution TL CL 500*
- 1 test tube with ring mark
- 1 titration syringe 0–500 mg/L Cl⁻
(1 graduation mark \triangle 5 mg/L)
- 2 plastic dropping tips



Hazard warning:

TL CL 500 contains mercury(II) nitrate < 1 % Hg.

Toxic by inhalation, in contact with skin and if swallowed. Danger of cumulative effects. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Keep away from food, drink and animal feedingstuffs. After contact with skin, wash immediately with plenty of water. This material and its container must be disposed of as hazardous waste. Avoid release to the environment. Refer to special instructions/safety data sheets.

Procedure:

1. Rinse test tube several times with the test sample and fill to ring mark.
2. Add **1 drop** indicator CL 500 and dissolve while shaking. The test sample turns **blue** (if the sample turns yellow after addition of indicator add dropwise sodium hydroxide solution (10 %) until the test sample turns blue).
3. Add slowly dropwise nitric acid until the solution turns **yellow** while continuously shaking. Normally one drop is sufficient.
4. Put dropping tip onto the titration syringe, press down plunger, dip the tip into the titration solution TL CL 500 and draw up plunger slowly, until the lower rim of the black plunger O-ring agrees with value 0 on the barrel scale. The small air pocket below the plunger tip does not disturb the determination.

5. **Addition of the titration solution:** We recommend taking the syringe in the left hand and the test tube in the right hand (see drawing) and adding titration solution dropwise while smoothly shaking the test tube until the yellow colour turns **violet**. Read off chloride content in mg/L Cl⁻ from the syringe barrel (lower rim of the black plunger O-ring). Colour change is followed easily when holding test tube before a light background (e.g. sheet of white paper).
6. If the first syringe filling is not enough to reach colour change (values > 500 mg/L Cl⁻), fill syringe once more with titration solution TL CL 500 and titrate to colour change (as above). Read off chloride content and add for each used syringe filling 500 mg/L Cl⁻. Rinse test tube immediately with plenty of water!

The method can be applied also for the analyse of sea water after dilution (1+49).

Disposal:

Collect the contents of the test tube as mercury containing waste disposal. Please observe local regulations concerning waste.

Interferences:

Bromide and iodide ions are determined too. Fe > 5 mg/L interferes. This interference can be circumvented by adding of 2 drops of a sodium pyrophosphate solution 5%.

Interferences of sulphide or sulphite ions are circumvented by adding dropwise diluted H₂O₂ solution. H₂S is evaporated by boiling.

The following ions do not interfere:

- < 5 mg/L NO₂⁻
- < 10 mg/L CrO₄²⁻
- < 50 mg/L Cu
- < 100 mg/L Al, Pb, Cr, Ni, Zn

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