

# Chlorine

High sensitivity test kit for the determination in the range of 0.02–0.60 mg/L Cl<sub>2</sub>

## Method:

At a pH value of 6.2 to 6.5 in a phosphate buffered system, free chlorine reacts with *N,N*-diethyl-1,4-phenylene diamine (DPD) and forms a red-violet dye. In the presence of iodide ions, the content of total chlorine (free and combined chlorine together) can be determined.

## Contents of test kit (\*refill pack):

sufficient for 2 x 160 tests

24 g Cl<sub>2</sub>-1\*

100 mL Cl<sub>2</sub>-2\*

30 mL Cl<sub>2</sub>-3\*

1 black measuring spoon 85 mm\*

1 plastic beaker for sampling

2 round glass tubes with screw caps

1 comparator block

1 color comparison disc Chlorine

## Hazard warning:

Information regarding safety can be found on the box' label and in the safety data sheet. You can download the SDS from [www.mn-net.com/SDS](http://www.mn-net.com/SDS).

## Procedure:

1. Insert color comparison disc (see illustration).
2. Open both round glass tubes, rinse several times with the water sample and fill up to the mark with the sample.
3. Add 1 level black measuring spoon Cl<sub>2</sub>-1 to the right glass tube.
4. Add 12 drops Cl<sub>2</sub>-2 to the right glass tube, close and mix.
5. Read immediately: 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. 1<sup>st</sup> reading = free chlorine
6. Add 3 drops Cl<sub>2</sub>-3 to the right glass tube, close and mix. Wait 2 min. Read value as described above. 2<sup>nd</sup> reading = total chlorine

The bound chlorine can be calculated as difference between 2<sup>nd</sup> reading (total chlorine) and 1<sup>st</sup> reading (free chlorine).

Free chlorine: dissolved, elementary chlorine, hypochlorous acid, and hypochlorite ions

Bound chlorine: inorganic and organic chloroamines

The method can be applied also for the analysis of sea water.

## Disposing of the samples:

Information regarding disposal can be found in the safety data sheet. You can download the SDS from [www.mn-net.com/SDS](http://www.mn-net.com/SDS).

## Interferences:

Higher manganese compounds simulate free chlorine.

Chlorine contents above 4 mg/L can destroy the red dye (low results).

The temperature of the water sample should be between 15 and 30 °C.

Rinse glass tubes several times thoroughly. Residues of Cl<sub>2</sub>-3 can cause higher values for free chlorine!

## Conversion:

0.10 mg/L Cl<sub>2</sub>  $\triangleq$  0.18 mg/L ClO<sub>2</sub>  $\triangleq$  0.15 mg/L OCl<sup>-</sup>  $\triangleq$  0.21 mg/L NaOCl  $\triangleq$  0.23 mg/L Br<sub>2</sub>  $\triangleq$  0.36 mg/L I<sub>2</sub>

## Note:

Determination of bromine besides chlorine: If chlorine is present in the sample, it can be destroyed by adding a spatula of glycine (approx. 20 mg) to 25 mL sample. The sample for the bromine determination is taken from this solution. Result in mg/L Cl<sub>2</sub> x 2.25 = mg/L Br<sub>2</sub>.

