

# Chlorine 1

**Test kit for performing colorimetric tests on free and total chlorine in drinking water, swimming pools, and water reservoirs**

**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.

**Measurement range:**

0.1–2.0 mg/L Cl<sub>2</sub>

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

sufficient for 150 tests

- 6 g Cl<sub>2</sub>-1\*
- 30 mL Cl<sub>2</sub>-2\*
- 1 measuring spoon 70 mm\*
- 2 screw-plug measuring glasses
- 1 slide comparator
- 1 color chart
- 1 plastic syringe 5 mL
- 1 instructions for use\*

**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:****I. colorimetric determination with color chart**

also refer to the pictogram on the back of the color chart

**a) Free chlorine**

1. Pour a 5 mL water sample into each of the measuring glasses using the plastic syringe (*the pH value of the sample must be between pH 4 and 8.*) Place a measuring glass on position A in the comparator.

**Only add the reagent to measuring glass B.**

2. Add **1 level measuring spoon of Cl<sub>2</sub>-1**, seal the glass and shake well for 20 s.
3. Open the glass **after 1 min** and place it on position B in the comparator.
4. Slide the comparator until the colors match in the inspection hole on top. Check the measurement reading in the recess on the comparator reed. Mid-values can be estimated.

**b) Total chlorine**

5. Add **3 drops of Cl<sub>2</sub>-2**. Seal the glass and mix.
6. Open the glass **after 2 min**, place it on position B in the comparator and read off the chlorine value as described above.
7. After use, rinse out both measuring glasses thoroughly and seal them.

**c) Combined chlorine**

The content of combined chlorine can be calculated as difference of total and free chlorine.

**II. photometric determination**

The reagents are also suitable for **photometric evaluation**. Please refer to the separate instructions for photometric performance.

This technique can be used also for analyzing 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:**

The determination of free chlorine measures bromine, bromamine, chloramine, iodine and, in part, chlorine dioxide as well. Higher manganese compounds simulate free chlorine.

Chlorine concentrations above 10 mg/L can bleach the red reaction color (low results).

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

**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>.

**Conversion table:**

mg/L Cl <sub>2</sub>	mg/L ClO <sub>2</sub>	mg/L OCl <sup>-</sup>	mg/L NaOCl	mg/L Br <sub>2</sub>	mg/L I <sub>2</sub>
0.1	0.2	0.1	0.2	0.2	0.4
0.2	0.4	0.3	0.4	0.5	0.7
0.3	0.6	0.4	0.6	0.7	1.1
0.4	0.8	0.6	0.8	0.9	1.4
0.6	1.1	0.9	1.3	1.4	2.1
0.9	1.7	1.3	1.9	2.0	3.2
1.2	2.3	1.7	2.5	2.7	4.3
2.0	3.8	2.9	4.2	4.5	7.2

**For swimming pools (in Germany) please note:**

If the content of free chlorine is below 0.3 mg/L, add some chlorinating reagent. If the content is above 0.6 mg/L, add fresh water. The ideal pH value is 7.4.

**Storage:**

Store the test kit in a cool (< 25 °C) and dry place.