

# Swimming Pool

**Test kit for performing colorimetric tests  
on free chlorine and on the pH value  
in swimming pool water**

**Methods:**

**Chlorine:** At a pH value of 5 to 6, free chlorine reacts with *N,N*-diethyl-1,4-phenylene diamine (DPD) and forms a red-violet dye.

**pH:** An indicator dye produces a specific and characteristic color for every pH value covered.

**Measurement ranges:**

**Cl<sub>2</sub>:** 0.1–2.0 mg/L Cl<sub>2</sub>      **pH:** 6.9–8.2

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

sufficient for 150 tests

- 18 mL Cl<sub>2</sub>-1\*
- 25 mL Cl<sub>2</sub>-2\*
- 20 mL pH-1\*
- 2 screw-plug measuring glasses
- 1 slide comparator
- 2 colour charts
- 1 plastic syringe 5 mL
- 1 instructions for use\*

**Hazard warning:**

Cl<sub>2</sub>-2 contains sulfuric acid 5–15%.

For further information please ask for a safety data sheet.

**Instructions for use:**

also refer to the pictograms on the back of the color charts

**a) Free chlorine**

1. Pour a 5 mL water sample into one of the measuring glasses using the plastic syringe and place it on position A in the comparator.

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

2. Fill the second measuring glass with **3 drops of Cl<sub>2</sub>-1**.
3. Add **3 drops of Cl<sub>2</sub>-2**.
4. Add a **5 mL water sample** using the plastic syringe, seal the glass and mix.
5. Open the glass and place it on position B in the comparator.
6. Slide the comparator until the colors match in the inspection hole on top. **Immediately** check the measurement reading in the recess on the comparator reed. Mid-values can be estimated.
7. After use, rinse out both measuring glasses thoroughly and seal them.

The chlorine reagents can be used for the **photometric evaluation** with the photometers PF-11/PF-12 and VISOCOLOR<sup>®</sup> photino.

**b) pH**

1. Pour a 5 mL water sample into each of the measuring glasses using the plastic syringe.  
Place a measuring glass on position A in the comparator.

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

2. Add **2 drops of pH-1**, seal the glass and mix.
3. Open the measuring glass 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.
5. After use, rinse out both measuring glasses thoroughly and seal them.

Both methods can be used also for analyzing sea water.

**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:**

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

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.

**Product data and ordering information**

<b>REF</b>	<b>931 090 (931 290)</b>
<b>Type</b>	<b>colorimetric test kit (refill pack)</b>
<b>Range</b>	<b>&lt; 0.1 · 0.1 · 0.2 · 0.3 · 0.4 · 0.6 · 0.9 · 1.2 · 2.0 mg/L (ppm) Cl<sub>2</sub> pH 6.9 · 7.2 · 7.4 · 7.6 · 7.8 · 8.2</b>
<b>Sufficient for</b>	<b>150 determinations</b>
<b>Shelf life</b>	<b>at least 1.5 years</b>
<b>Sea water suitability</b>	<b>yes</b>
<b>Detectable with PF-12</b>	<b>no</b>