

Oxygen

Test kit for performing colorimetric tests on dissolved oxygen in surface water and sewage

Method:

modified Winkler method

In the alkaline range, dissolved oxygen oxidizes manganese(II) ions to higher manganese hydroxides. Acidification leads to the release of manganese(III) ions which react with a special reagent forming a dark red dye.

Measurement range:

1–10 mg/L O₂

Contents of test kit (*refill pack):

sufficient for 50 tests

15 mL O₂-1*

15 mL O₂-2*

30 mL O₂-3*

2 screw-plug measuring glasses

1 slide comparator

1 colour chart

1 plastic syringe 1 mL

1 instructions for use*

additionally required: oxygen reaction bottle (REF 915 498)

Hazard warning:

Reagent O₂-1 contains manganese(II) chloride 25–83 %, reagent O₂-2 contains sodium hydroxide solution 20–55 %, reagent O₂-3 contains sulfuric acid 80–98 % and 4-hydroxy-1,3-phenylenediammonium dichloride 1–10 %.

H314, H317, H334 Causes severe skin burns and eye damage. May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

P260, P261, P272, P280, P301+330+331, P302+352, P303+361+353, P304+340, P305+351+338, P333+313, P342+311, P363, P501 Do not breathe vapors. Avoid breathing dust. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves / eye protection. IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN: Wash with plenty of water / ... IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water / 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. If skin irritation or rash occurs: Get medical advice / attention. If experiencing respiratory symptoms: Call a POISON CENTER / doctor / ... Wash contaminated clothing before reuse. Dispose of contents / container to regulated waste treatment. For further information ask for a safety data sheet.

Instructions for use:

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

Cover the working surface with a polyethylene-coated filter paper.

1. Pour a **1 mL water sample** into one of the measuring glasses and place it on position A in the comparator.
2. Rinse the **oxygen reaction bottle** several times with the water to be tested and fill until it overflows without air bubbles.
3. Add **5 drops of O₂-1**.
4. Add **5 drops of O₂-2**, close the bottle with the stopper (avoid air bubbles) and mix by shaking.
5. After **1 min** add **12 drops of O₂-3**, close the bottle and shake well until the deposit is dissolved.
6. Pour **1 mL** of the resultant reaction solution into the second measuring glass and place it on position B in the comparator.
7. 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.
8. After use, rinse out the oxygen reaction bottle and both measuring glasses thoroughly and seal them.

The reagents can be used for the **photometric evaluation** with photometer PF-12 / PF-12^{Plus}.

The method can be applied also for the analysis of 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:

Most oxidizing and reducing substances interfere, e. g. active chlorine, higher manganese compounds, ascorbic acid, iodide, nitrite, sulfide and sulfite. Organic compounds interfere, if the potassium permanganate consumption exceeds 60 mg/L.

Conversion table:

mg/L O ₂	mmol/m ³
1	31
2	63
3	94
4	125
6	190
8	250
10	310

Storage:

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