

Order number

**170 114**

## Water test kit for the determination of organo- phosphates (total phosphate) Measuring range: 2 – 15 mg/l PO<sub>4</sub><sup>3-</sup>

**ATTENTION !**

**This water test kit contains chemicals that – if applied incorrectly - may be hazardous to the health and safety of the user. Make sure the water test kit is stored out of the reach of children. Prior to starting the work, carefully read the instructions indicated on the genuine containers and take suitable safety measures. For detailed information, please refer to the EC safety data sheets that we would be pleased to supply upon request.**

**Contents**

- 1 PE funnel Ø 60 mm
- 1 Pack of carbon filter paper, containing 100 sheets
- 1 Colour comparison scale with empty ampoules
- 1 Hotplate
- 1 PE splash bottle 1 l
- 1 Erlenmeyer flask with measuring scale 100-300 ml
- 1 Plexiglass measuring cylinder 100 ml
- 1 Pack of boiling stones 100 g
- 1 PE dripping bottle 100 ml with 6 mol sulphuric acid
- 1 PE bottle 1000 ml with demineralised water
- 1 Spatula
- 50 g Ammonium peroxodisulphate

Phosphate reagent I: 250 ml  
Phosphate reagent II: 250 ml

**Designated application**

Ortho- and polyphosphates are used in the treatment of drinking water (EXADOS®).

Orthophosphate is also added to boiler water (GENO®-phos). In cooling water, mainly organophosphates are used (KW 1300, KW 1510, KW 1620, KW 1830, KW 5510 and others). By means of this test kit, all phosphates may be determined.

**Notes**

Only orthophosphates may be determined directly. Poly- and organophosphates first have to be decomposed and then determined in the form of orthophosphate. During the decomposition of organophosphates, the polyphosphates will be decomposed at the same time.

**Measuring range:** 2 - 15 mg/l PO<sub>4</sub><sup>3-</sup>

**Execution****Determination of orthophosphate**

1. Filter the water to be examined, if necessary.
2. Fill the water into the test tube up to the 20 ml mark.
3. Add phosphate reagent I and shake well (by pressing the bottle, 1 ml of the solution will automatically be dosed in the bottle's neck.)
4. Add phosphate reagent II and shake again.
5. Wait for 10 minutes.
6. Determine the phosphate concentration of the sample by comparing the blue colouring with the colour comparison scale.
7. If the measuring range of the comparison scale is exceeded, repeat the test with a diluted water sample.

- a) Phosphate excess up to 20 mg/l:

5 ml of the water sample and 15 ml of distilled water: The phosphate concentration equals 4 times the measured value.

- b) Phosphate excess up to 50 mg/l:

2 ml of the water sample and 18 ml of distilled water: The phosphate concentration equals 10 times the measured value.

**Decomposition of polyphosphate**

1. Filter the water to be examined, if necessary
2. Put 100 ml of the water sample into a 300 ml Erlenmeyer flask.
3. Add 1 - 2 boiling stones.
4. Add 15 drops of a 6 molar sulphuric acid to the sample.

**ATTENTION! Always add the acid to the sample, never pour water into sulphuric acid.**

5. Heat the sample on the hotplate for 30 minutes, bringing it to boiling.

**ATTENTION: Do not let the sample boil down, always refill distilled water!**

6. Let the sample cool down.
7. Put the cool sample into the measuring cylinder and fill it up with distilled or fully demineralised water to 100 ml.
7. **Continue with point 2. of the determination of orthophosphate.**

**Decomposition of organophosphate**

1. Filter the water to be examined, if necessary.
2. Put 100 ml of the water sample into a 300 ml Erlenmeyer flask.
3. Add 2 - 5 boiling stones.
4. Add 15 drops of a 6 molar sulphuric acid.

**ATTENTION! Always add the acid to the sample, never pour water into sulphuric acid.**

5. Add 1 gram (two spatula tips) of ammonium peroxodisulphate.
6. Heat the sample on the hotplate for 60 minute, bringing it to boiling.

**ATTENTION: Do not let the sample boil down, always refill distilled water!**

7. Let the sample cool down.
8. Put the cool sample into the measuring cylinder and fill it up with distilled or fully demineralised water to 100 ml.

9. Continue with point 2. of the determination of orthophosphate.

**Calculations**

- a) After **oxidative decomposition**, a total phosphate concentration is obtained. If desired, this may be broken down into **organo-, poly- and orthophosphate**.
- b) The **orthophosphate** concentration may be determined **directly** from the water sample, without decomposition.
- c) The **difference a) - b)** is the sum of **poly- and organophosphates**.
- d) After decomposition of the polyphosphates, the sum of ortho- and polyphosphates is obtained.
- e) The **polyphosphate** concentration is the **difference d) - b)**.
- f) The **organophosphate concentration** is the **difference a) - d)**.

**Storage**

Store the water test kit in a dry and well ventilated location which is inaccessible to children. Please observe the information and data regarding the product's shelf-life indicated on the containers.

**Delivery**

The water test kit will be delivered as complete kit. Spare parts and reagents may be ordered separately. Please indicate the corresponding order number listed in the table below.

Please note that it is possible to upgrade the water test kit no. 170 103 to 170 113 or 170 114 by reordering.

**Information**

Grünbeck  
Wasseraufbereitung GmbH  
Laboratory  
89420 Hochstaedt/Germany  
Phone +49 9074 41-304  
Fax +49 9074 41-70304  
Email: info@gruenbeck.de

<b>Spare parts and reagents</b>	
<b>Designation</b>	<b>Order no.</b>
PE funnel Ø 60 mm	888 06 006
Carbon filter paper, 100 sheets	888 09 011
Colour comparison scale for the determination of phosphate, complete with	170 800
- Colour comparison scale 2 - 15 mg PO <sub>4</sub> <sup>3-</sup> /l	170 801
Empty ampoule with plastic stopper 2 - 20ml	170 802
PE bottle 250 ml phosphate reagent I	170 501
PE bottle 250 ml phosphate reagent II	170 502
Erlenmeyer flask (measuring glass 100 - 300 ml)	888 08 025
Plexiglass measuring cylinder 1 - 100ml	888 05 053
Hotplate	888 30 080
PE spray bottle 1000 ml (for fully demineralised water)	888 03 100
Boiling stones 100 g	888 25 100
PE dripping bottle 100 ml with 6 mol sulphuric acid	170 710
PE bottle with fully demineralised water 1000 ml	170 090
Spatula	888 12 021
Ammonium peroxodisulphate, 50 g	170 711