LCK 349 Phosphate

DOC312.53.94021

0.05–1.50 mg/L PO_4-P, 0.15–4.50 mg/L PO_4 or 0.15–3.50 mg/L P_2O_5 **LCK 349**

Scope and application: For wastewater, drinking water, boiler water, surface water and process analysis.

Test preparation

Test storage

Storage temperature: 15–25 °C (59–77 °F)

pH/Temperature

The pH of the water sample must be between pH 2–10.

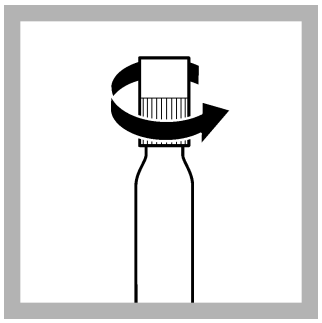
The temperature of the water sample and reagents must be between 15–25 °C (59–77 °F).

Before starting

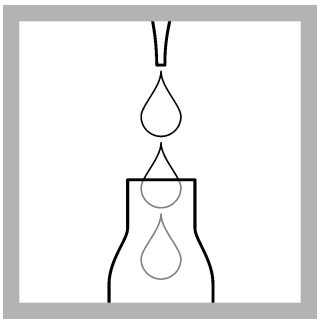
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.
Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.
Without hydrolysis, only the **(dissolved) orthophosphate** is measured. The result of the orthophosphate measurement can be expressed as: mg/L PO_4-P (e.g., process analysis), mg/L PO_4 (e.g., drinking water or boiler water analysis), mg/L P_2O_5 (e.g., soil analysis).
With hydrolysis, all of the **phosphorus (Total-P, P_{total})** is measured. The result of the total phosphorus measurement can be expressed as: mg/L P_{tot} = Display mg/L PO_4-P (e.g., for monitoring threshold values in wastewater), mg/L PO_4 (e.g., drinking water or boiler water analysis), mg/L P_2O_5 (e.g., soil analysis).
Inverting the cuvette after hydrolysis improves the reliability of the result.
In case of not working at the right recommended temperature an incorrect result may be obtained.

Procedure total phosphorus

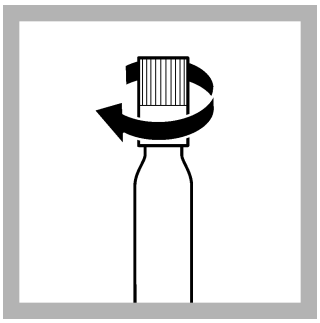
1. Carefully remove the foil from the screwed-on DosiCap Zip.



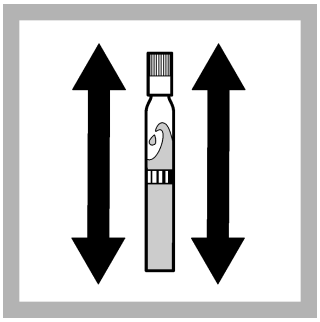
2. Unscrew the DosiCap Zip.



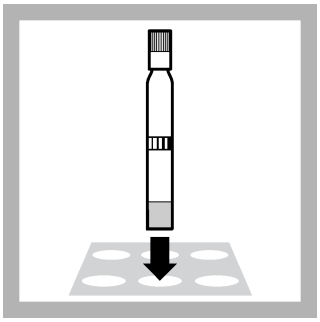
3. Carefully pipet **2.0 mL** of **sample**.



4. Immediately screw the DosiCap Zip back on **tight**; **fluting at the top**.



5. Shake **vigorously**.

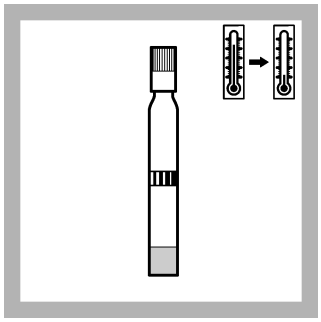


6. Heat in the thermostat.
HT 200 S: in the standard program HT for **15 minutes**.

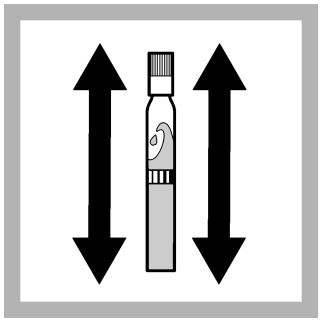
Thermostat:

for **60 minutes** at **100° C (212° F)** or

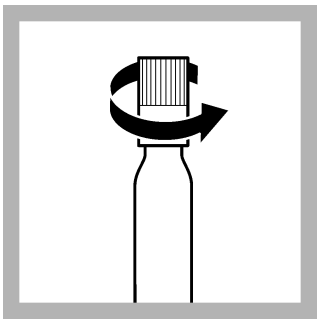
for **30 minutes** at **120° C (248° F)**.



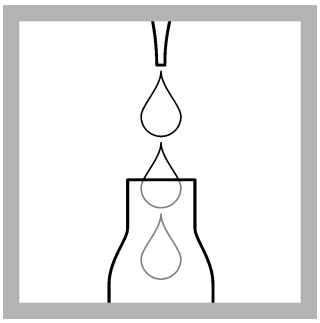
7. Allow to **cool** to room temperature.
NOTE: Check if the **cap is still tight** after cooling.



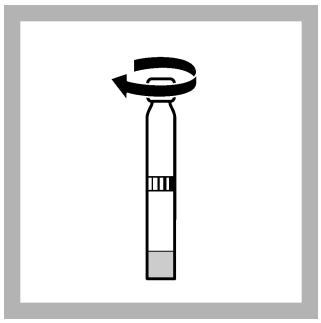
8. Shake **vigorously**.



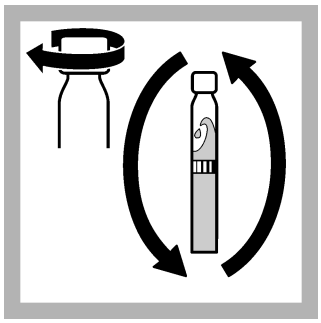
9. Unscrew the DosiCap Zip.



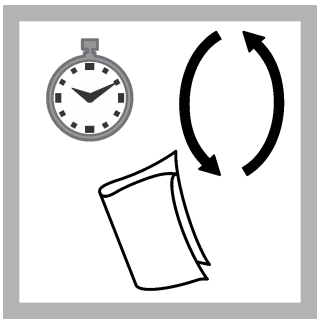
10. Pipet into the cooled cuvette: **0.2 mL Reagent B**. Close Reagent B **immediately** after use.



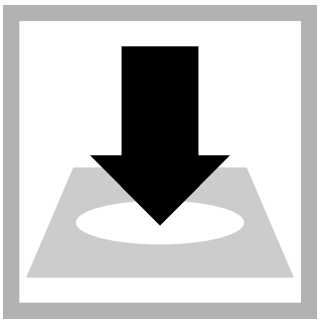
11. Screw a grey **DosiCap C** on the cuvette.



12. Close the cuvette and invert a few times until the freeze-dried contents are **completely dissolved**.

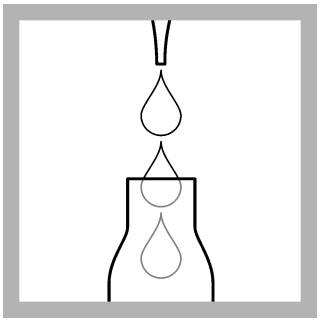


13. After **10 minutes**, invert a few more times, thoroughly clean the outside of the cuvette and evaluate.

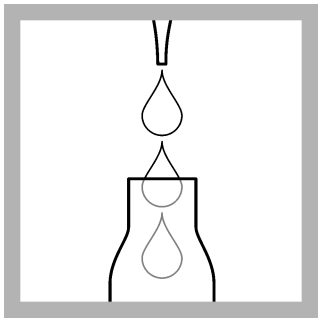


14. Insert the cuvette into the cell holder.
DR 1900: Go to LCK/TNTplus methods.
Select the test, push **READ**.

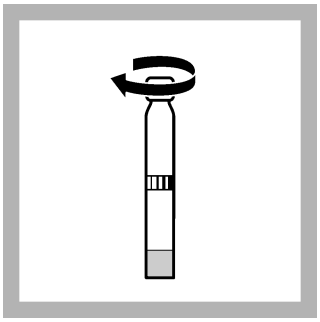
Procedure orthophosphate



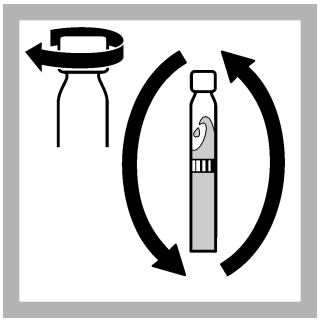
1. Carefully pipet **2.0 mL** of **sample**.



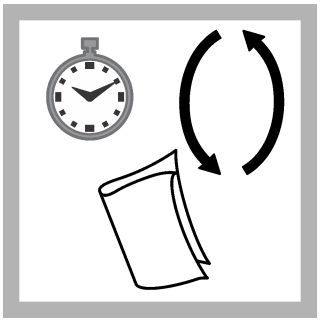
2. Pipet **0.2 mL Reagent B**. Close Reagent B **immediately** after use.



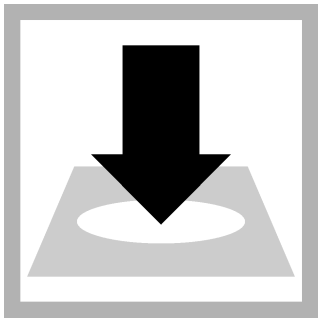
3. Screw a grey **DosiCap C** on the cuvette.



4. Close the cuvette and invert a few times until the freeze-dried contents are **completely dissolved**.



5. After **10 minutes**, invert a few more times, thoroughly clean the outside of the cuvette and evaluate.



6. Insert the cuvette into the cell holder.
DR 1900: Go to LCK/TNTplus methods.
Select the test, push **READ**.

Interferences

The ions listed in the table have been individually checked against the given concentrations and do not cause interference. The cumulative effects and the influence of other ions have not been determined.

The measurement results must be subjected to plausibility checks (dilute and/or spike the sample).

If phosphonic acids are present the time for hydrolysis in the thermostat must be increased to 2 hours at 100°C in order to prevent low-bias results (refer to the determination of total phosphorus procedure).

Interference level	Interfering substance
5000 mg/L	SO_4^{2-}
2000 mg/L	Cl^-
1000 mg/L	K^+, Na^+
500 mg/L	NO_3^-
250 mg/L	Ca^{2+}
100 mg/L	Mg^{2+}
50 mg/L	Co^{2+}, Fe^{2+}, Fe^{3+}, Zn^{2+}, Cu^{2+}, Ni^{2+}, I^-, NO_2^-, Cd^{2+}, NH_4^+, Mn^{2+}, Al^{3+}, CO_3^{2-}, SiO_2
5 mg/L	Sn^{4+}, Hg^{2+}
2.5 mg/L	Ag^+, Pb^{2+}

1 mg/L	Cr^{3+}
0.5 mg/L	Cr^{6+}

Summary of method

Phosphate ions react with molybdate and antimony ions in an acidic solution to form an antimonyl phosphomolybdate complex, which is reduced by ascorbic acid to phosphomolybdenum blue.

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12/2017, Edition 2