

Total Chromium trace (Cr-T-Trace) or Chromium VI trace (Cr-VI-Trace):
0.005–0.25 mg/L

LCS313

Scope and application: For waste water and process analysis.



Test preparation

Test storage

Storage temperature: 2–8 °C (35–46 °F)

pH/Temperature

The pH of the water sample must be between pH 3–9.

The temperature of the water sample and reagents must be between 15–35 °C (59–95 °F).

Before starting

Undissolved chromium is not determined with the determination of chromium(VI).

When total chromium is determined, in some rare cases samples are turbid after the digestion stage. Such samples must be pretreated with the sample preparation set LYW513.

The concentration of chromium (III) is obtained mathematically from the difference between chromium (total) and chromium (VI).

Analytical Quality Assurance

addista is an analytical quality assurance system with which you can check the accuracy and precision of your analysis results at any time. Regular checks ensure that your measurement system is functioning properly and is being correctly operated, and reveal sample-specific interferences.

For trace analysis the standard solution has been diluted by a factor of **25**.

After dilution the following nominal values are obtained:

Standard 0.02 mg/L chromium

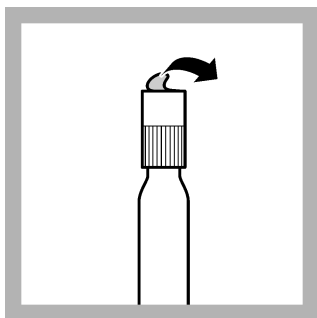
Range of confidence 0.018 – 0.022 mg/L chromium

Review safety information and expiration date on the package.

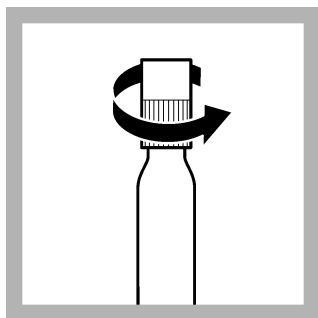
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

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.

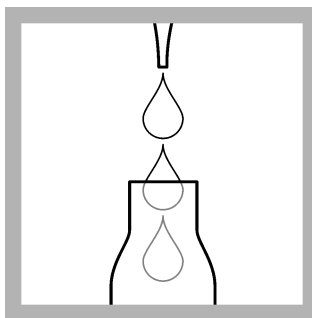
Procedure—Total Chromium



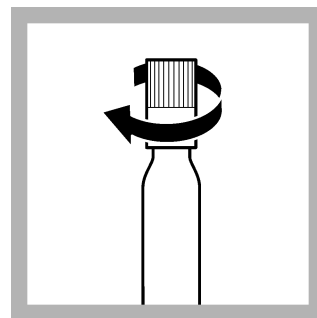
1. Sample preparation: From a cuvette carefully remove the foil from the screwed-on **DosiCap Zip**.



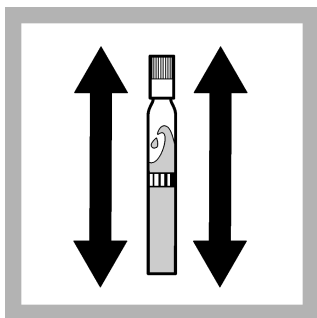
2. Unscrew the DosiCap Zip.



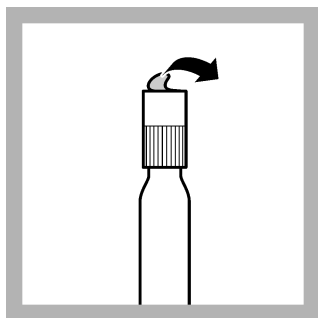
3. Carefully pipet 4.0 mL water sample.



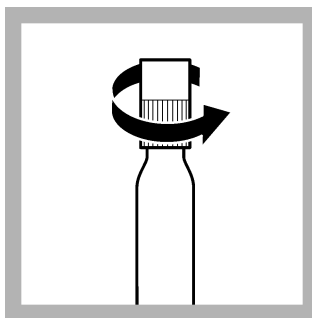
4. Screw the DosiCap Zip back on; fluting at the top.



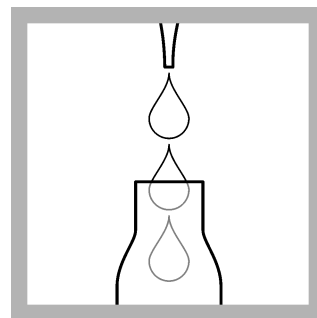
5. Shake firmly back and forth 2 or 3 times.



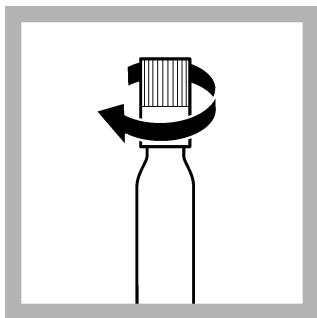
6. Blank-value cuvette preparation: From a **second** cuvette carefully remove the foil from the screwed-on **DosiCap Zip**.



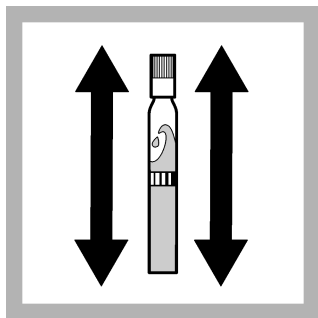
7. Unscrew the DosiCap Zip.



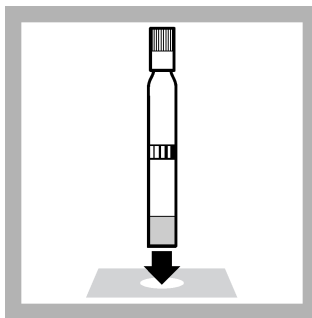
8. Carefully pipet 4.0 mL distilled water.



9. Screw the DosiCap Zip back on; fluting at the top.

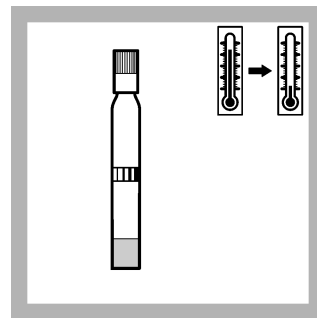


10. Shake firmly back and forth 2 or 3 times.

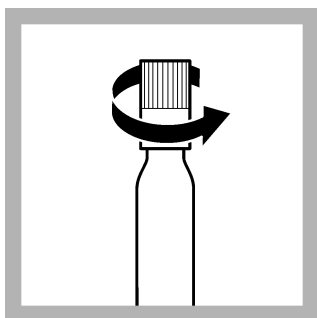


11. Heat the both cuvettes in the thermostat. HT200S: in the standard program HT for 15 minutes.

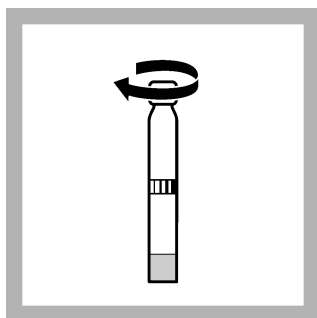
Thermostat: for 60 minutes at 100 °C (212° F).



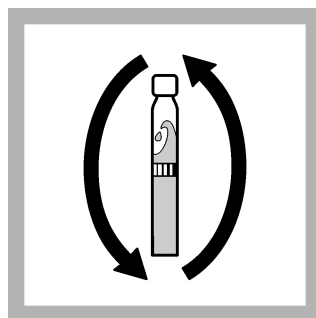
12. Do not invert the cuvette after digestion. Allow to cool to room temperature.



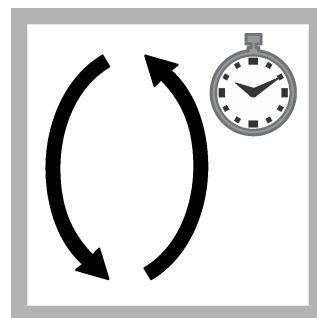
13. Unscrew the **DosiCap Zip** from **both** cuvettes.



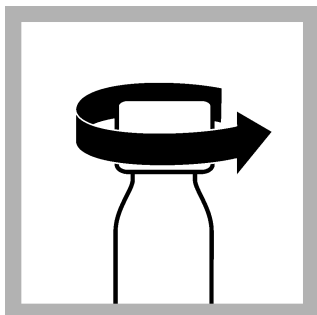
14. Screw an **orange** colored **DosiCap B** onto **each** cuvette.



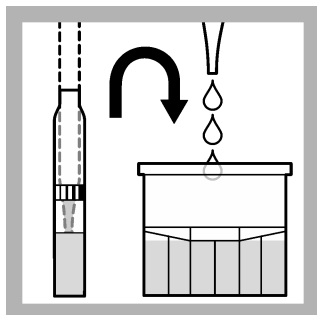
15. Invert both cuvettes a few times until the freeze-dried contents are **completely dissolved**.



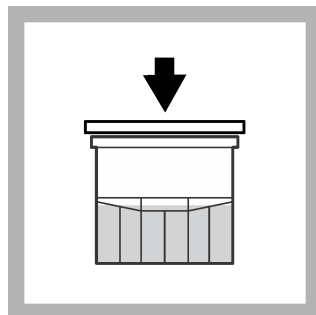
16. After **2 minutes**, invert the cuvettes a few times more.



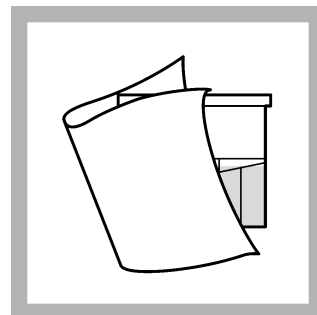
17. Open the cuvettes.



18. Transfer the contents of **each** cuvette to **50 mm semi-micro cuvettes**

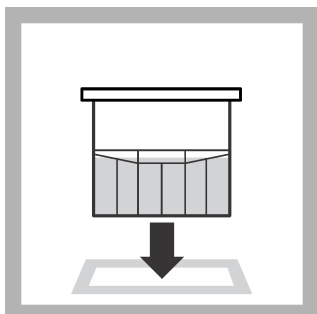


19. Close the cuvettes.

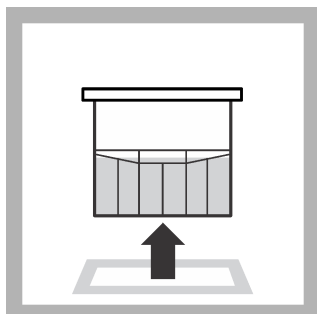


20. Thoroughly clean the outside of the cuvettes and evaluate.

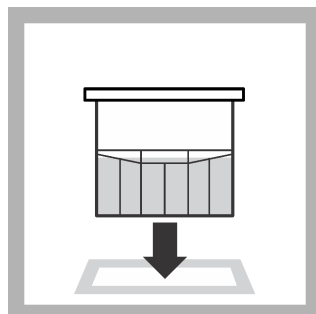
Take care that there are no air bubbles!



21. Insert the **blank-value cuvette** into the cell holder. Go to **Stored Programs**, select the test, push **ZERO**.

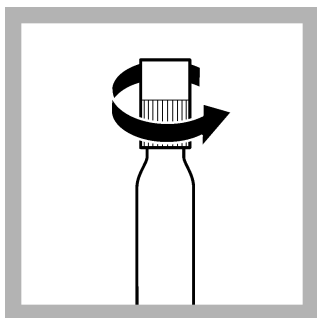


22. Remove the blank-value cuvette.

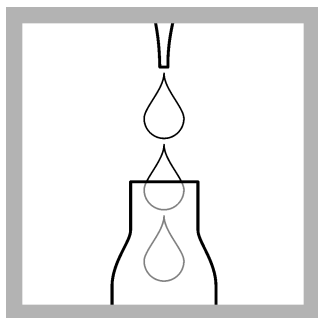


23. Insert the **sample cuvette** into the cell holder. Push **READ**.

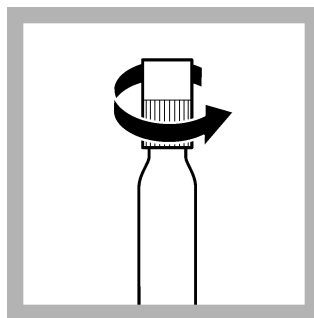
Procedure—II Chromium VI



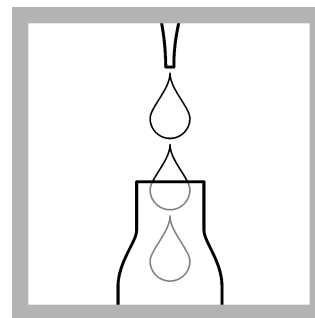
1. Unscrew the **DosiCap Zip** from the cuvette test.



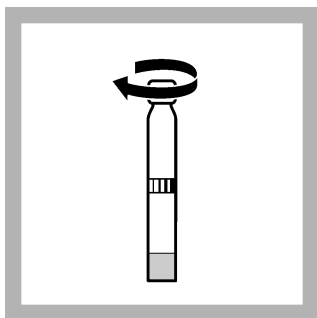
2. Carefully pipet **4.0 mL** water **sample**.



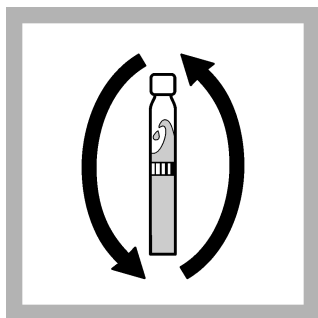
3. Unscrew the **DosiCap Zip** from another cuvette test.



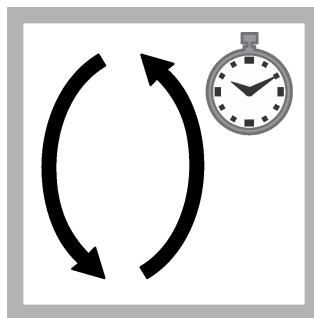
4. Carefully pipet **4.0 mL** **distilled water**.



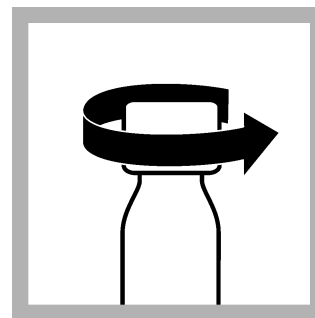
5. Screw an **orange** colored **DosiCap B** onto **each** cuvette.



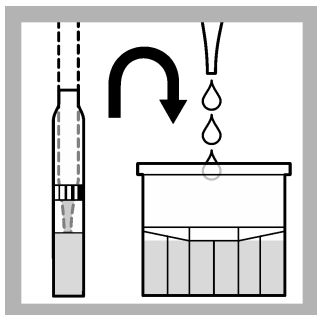
6. Invert the cuvettes a few times until the freeze-dried contents are **completely dissolved**.



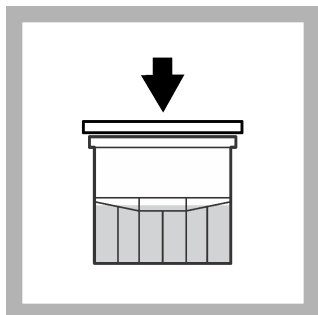
7. After **2 minutes**, invert the cuvettes a few times more.



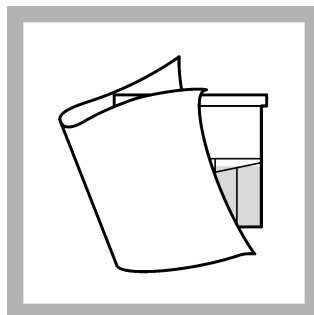
8. Open the cuvettes.



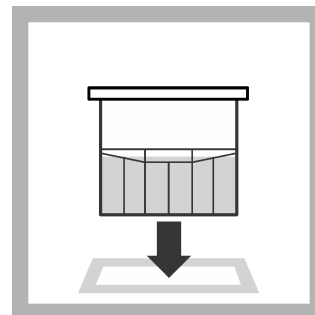
9. Transfer the contents of **each** cuvette to **50 mm semi-micro cuvettes**



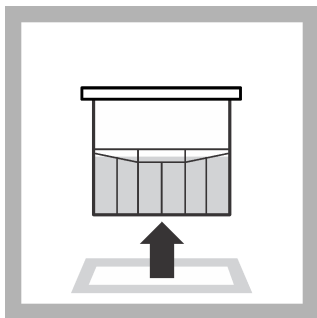
10. Close the cuvettes.



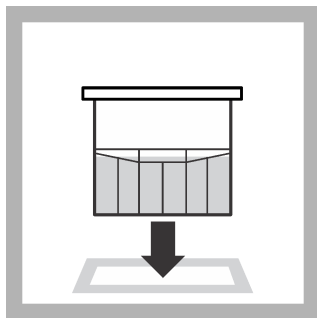
11. Thoroughly clean the outside of the cuvettes and evaluate. **Take care that there are no air bubbles!**



12. Insert the **blank-value cuvette** into the cell holder. Go to **Stored Programs**. select the test, push **ZERO**.



13. Remove the blank-value cuvette.



14. Insert the **sample cuvette** into the cell holder. 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.

Larger amounts of iron, copper, and reducing and oxidizing agents give low-bias results. Lead, mercury and tin give high-bias results.

Undissolved chromium is not determined.

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

Interference level	Interfering substance
2000 mg/L	SO ₄ ²⁻ , Na ⁺ , K ⁺ , NO ₃ ⁻
1000 mg/L	Cl ⁻
125 mg/L	Ca ²⁺
100 mg/L	Mg ²⁺ , NH ₄ ⁺
50 mg/L	Zn ²⁺ , Ni ²⁺ , Co ²⁺ , Cd ²⁺
25 mg/L	Ag ⁺ , Pb ²⁺
10 mg/L	Cu ²⁺ , Fe ³⁺
1 mg/L	Sn ²⁺

Summary of method

Chromium(VI) ions react with 1,5-diphenylcabazide to form 1,5-diphenylcarbazone, which forms a red complex with chromium(VI).



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