

LCK381

60–735 mg/L Total Organic Carbon (TOC),
75–750 mg/L Total Carbon TC,
15–150 mg/L Total Inorganic Carbon TIC

Scope and application: For wastewater, surface water and soils.



Test preparation

Test storage

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

pH/Temperature

The pH of the water sample must be between pH 4–10.

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

Before starting

Important

Be sure to set the required temperature to 100 °C (212 °F). At 148 °C (298.4 °F) the cuvette combinations may break apart.

The digestion conditions are such that oxygen is formed, and this causes a rise in pressure in the cuvette combinations. If the cuvette combinations are subjected to strong mechanical stress after the digestion reaction, for example if they suffer a blow or a fall, they may shatter. In this case glass splinters may cause injury.

Contamination by ambient air

Never leave cuvette open, because carbon dioxide in the ambient air can cause high bias. Cuvettes must only be opened when necessary (e.g. to add sample) and must be closed or further processed **immediately** afterwards.

How to use the powder dispenser

Screw powder dispenser on to digestion reagent A. Invert so that powder dispenser is under the reagent and shake. This causes the dispensing chamber to be filled. Position the centring recess of the powder dispenser above the **TC** cuvette and add 1 dose. Close digestion reagent A immediately with original cap.

Labelling the digestion cuvettes

If several samples are analysed simultaneously, label them so that the **TC** and **TIC** cuvette combinations of the same sample can be recognized.

Thermostat (LT200 only)

Heat the thermostat to **100 °C (212 °F)** (check the temperature – higher temperatures lead to dangerous excess pressure). When this temperature has been reached, insert the cuvette combinations and start the reaction time (**2 hours**) again. Insert cuvette combinations only in the small shafts in the thermostat. Do not insert them in the large shaft with reducing sleeves.

Do **not** screw the cuvette combinations apart when the analysis has been completed, but press them back into the blister pack in combination with the indicator cuvette upwards.

Review safety information and expiration date on the package.

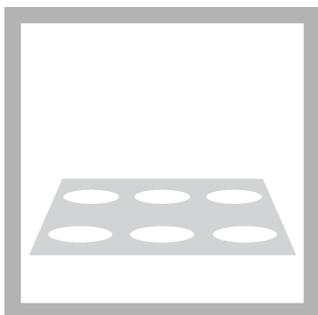
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

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.

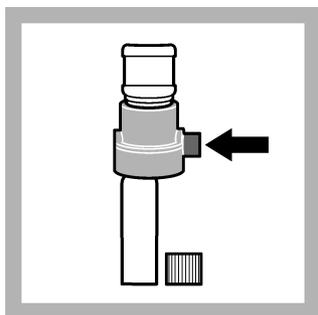
Items to collect

Description	Quantity
LCW912 Powder Dispenser (please order separately)	1

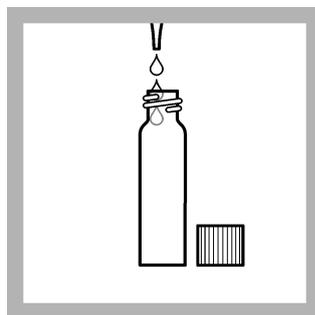
Procedure



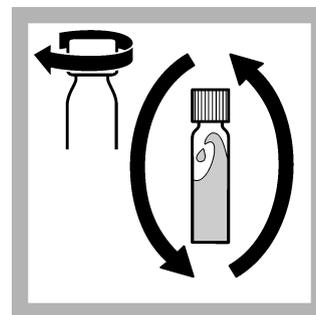
1. Preheat the thermostat to **100 °C (212 °F)**.



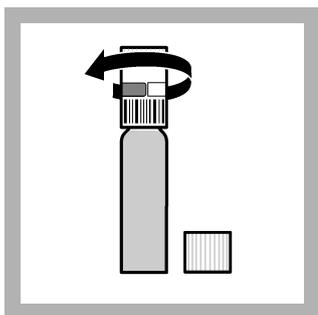
2. **TC only:** Transfer 1x digestion **reagent A** into the **TC** cuvette.



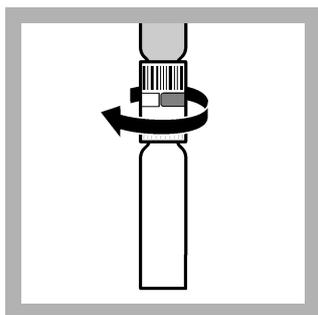
3. Pipet **0.2 mL** sample into the **TC** cuvette. Pipet **1.0 mL** sample into the **TIC** cuvette.



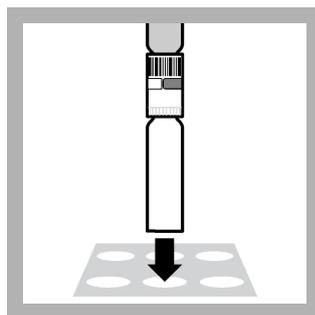
4. Close the **TC** cuvette and the **TIC** cuvette with original caps and invert a few times.



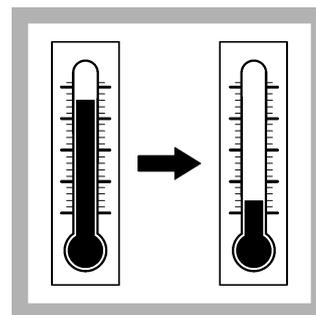
5. Open **2** blue indicator cuvettes and **immediately** screw on the membrane double cap **very tightly**. (The barcode label must be on the lower half).



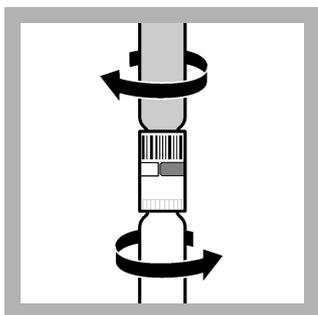
6. **Immediately** screw the prepared indicator cuvettes **tightly** on the **TC** cuvette and on the **TIC** cuvette. Hold the cuvette combinations vertically. **Do not invert**.



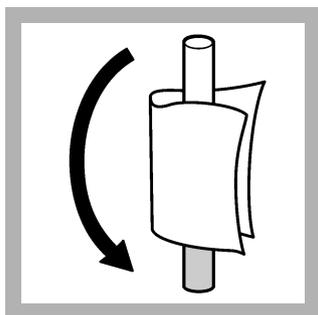
7. Heat both cuvette combinations simultaneously in the preheated thermostat (blue indicator cuvettes upwards): **2 hours at 100 °C (212 °F)**



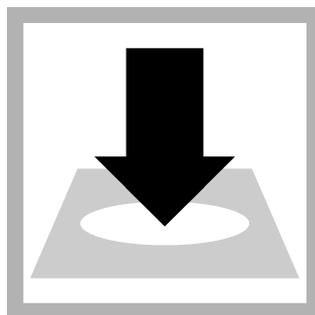
8. Then allow to **cool** to room temperature.



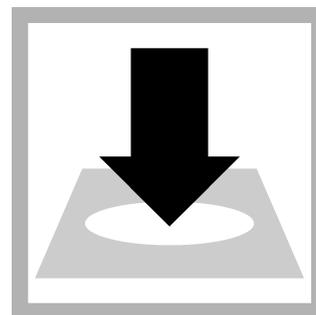
9. Tighten the cuvette combinations again before inverting them.



10. Invert cuvette combinations, thoroughly clean the outside of the indicator cuvettes and evaluate.



11. Insert the **TC** cuvette combination into the cell holder (blue indicator cuvette downwards). DR1900: Go to LCK/TNTplus methods. Select the test, push **READ 1**.



12. Insert the **TIC** cuvette combination into the cell holder (blue indicator cuvette downwards). DR1900: push **READ 2**.

Interferences

If the **TC** and/or the **TIC** results are higher than the upper limit of the measuring range, the calculated **TOC** result which is displayed may be within the measuring range.

In this case and generally the measurement results must be subjected to plausibility checks (dilute and/or spike the sample).

Use only carbon-free double-distilled water to dilute the sample.

The ions listed in the tables 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). Use only carbon-free water to dilute the sample.

TIC-determination:

Interference level	Interfering substance
800 mg/L	HCOO ⁻
500 mg/L	CH ₃ COO ⁻
60 mg/L	SO ₃ ²⁻
20 mg/L	S ²⁻
6 mg/L	NO ₂ -N

Higher concentrations of these ions cause high-bias results.

TC-determination:

Interference level	Interfering substance
5000 mg/L	Cl ⁻
2000 mg/L	Ca ²⁺ , Mg ²⁺
1000 mg/L	NH ₄ -N

Higher concentrations of these ions cause low-bias results.

Summary of method

Total carbon (**TC**) and total inorganic carbon (**TIC**) are converted to carbon dioxide (CO₂) by, respectively, oxidation and acidification. The CO₂ passes from the digestion cuvette through a membrane and into the indicator cuvette. The change of color of the indicator is photometrically evaluated. **TOC** (total organic carbon) is determined as the difference between the **TC** and **TIC** values.



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