LCK380 TOC Total organic carbon

DOC312.53.94390

2–65 mg/L Total Organic Carbon (TOC),
12–75 mg/L Total Carbon TC,
10–73 mg/L Total Inorganic Carbon TIC

LCK380

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 ºC (212 °F). At (148 ºC (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 (LT200 only) to **100 ºC (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.

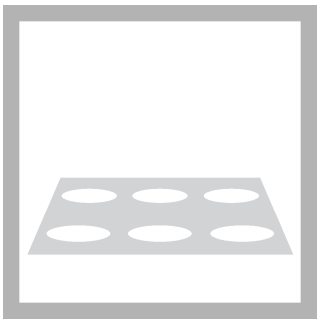
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

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.

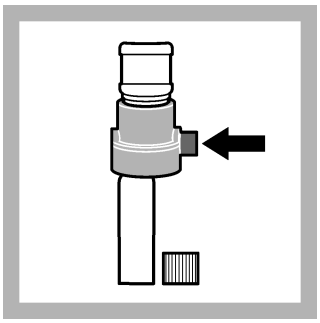
Items to collect

Description	Quantity
LCW912 Powder Dispenser (please order separately)	1

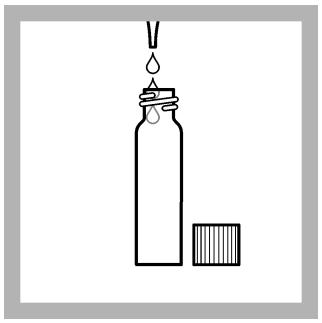
Procedure—TC/TIC-determination



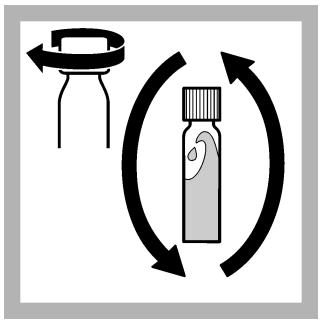
1. Preheat the thermostat to **100 °C** (212 °F).



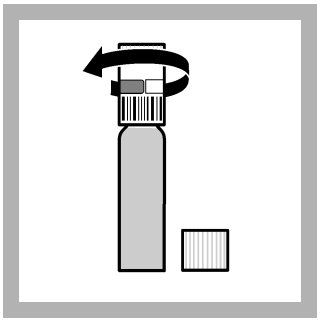
2. TC only: Transfer 1x digestion **reagent A** into the **TC** cuvette.



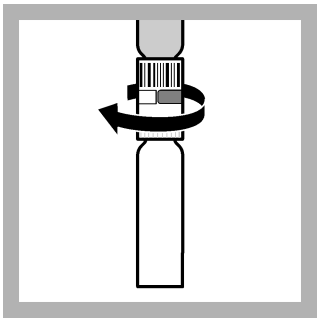
3. Pipet **2.0 mL** sample into the **TC** cuvette and into the **TIC** cuvette.



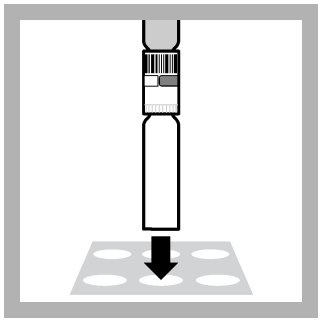
4. Close the **TC** cuvette and the **TIC** cuvette with original caps and invert a few times.



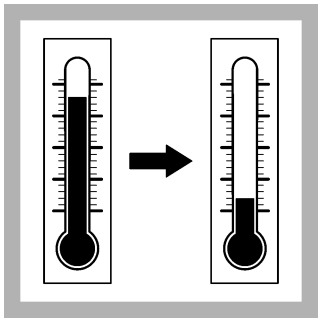
5. Open **2** blue indicator cuvettes and **immediately** screw on the membrane double cap **very tightly**. (The barcode label must be on the lower half).



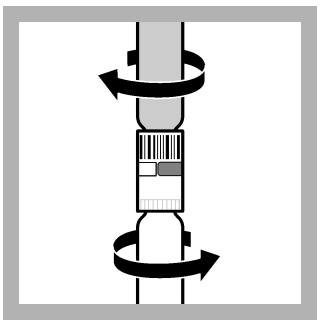
6. Immediately screw the prepared indicator cuvettes **tightly** on to the **TC** cuvette and on to the **TIC** cuvette. Hold cuvette combinations vertically. **Do not invert**.



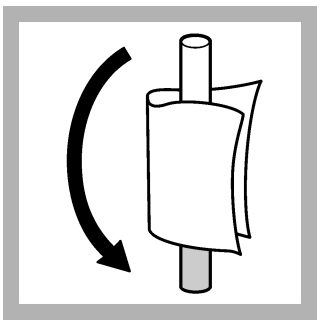
7. Heat both cuvette combinations simultaneously in the preheated thermostat (blue indicator cuvette upwards): **2 hours** at **100 °C** (212 °F)



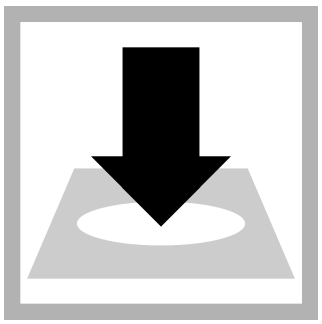
8. Then allow to **cool** to room temperature.



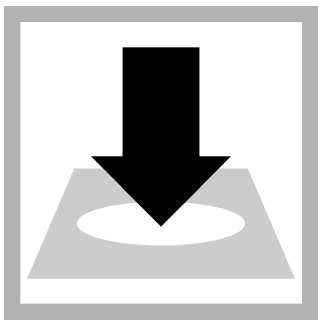
9. Tighten the cuvette combinations again before inverting them.



10. Invert cuvette combinations, thoroughly clean the outside of the indicator cuvette 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: Go to LCK/TNTplus methods. Select the test, 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
400 mg/L	$HCOO^-$
250 mg/L	CH_3COO^-
30 mg/L	SO_3^{2-}
10 mg/L	S^{2-}
3 mg/L	NO_2-N

Higher concentrations of these ions cause high-bias results.

TC-determination:

Interference level	Interfering substance
500 mg/L	Cl^-
200 mg/L	Ca^{2+}, Mg^{2+}
100 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 (CO_2) by, respectively, oxidation and acidification. The CO_2 passes from the digestion cuvette through a membrane and into the indicator cuvette. The change of colour 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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