

CW2000 Colorimeter for Calcium Hardness

● Operation



Switch the unit on using the ON/OFF switch.

CA.H

The display shows the following:

Use the adapter for the 16 mm vial.
Fill a clean vial with 10 ml of the water sample using the syringe, screw the cap on and place in the adapter/sample chamber with the I-mark on the vial aligned with the ▽-mark on the instrument.



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

0.0.0

The display shows the following:

After zero calibration is completed, remove the vial from the adapter/sample chamber.
Add the appropriate reagent tablet; a colour will develop in the sample.
Screw the cap back on and place the vial in the adapter/sample chamber with the I and ▽ marks aligned.



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

RESULT

The result appears in the display.

Repeating the analysis:

Press the ZERO/TEST key again.

New zero calibration:

Press the MODE key until the desired method symbol appears in the display again.

● User messages

E0l

Light absorption too great. Reasons: zero calibration not carried out or, possibly, dirty optics.

+Err

Measuring range exceeded or excessive turbidity.

-Err

Result below the lowest limit of the measuring range.

LO BAT

Replace 9 V battery, no further analysis possible.

● Technical data

Light source:	LED: $\lambda = 528$ nm (filter)
Battery:	9 V-block battery (Life 600 tests).
Auto-OFF:	Automatic switch off 5 minutes after last keypress
Ambient conditions:	5-40°C rel. humidity (non-condensing).
CE:	DIN EN 55 022, 61 000-4-2, 61 000-4-8, 50 082-2, 50 081-1, DIN V ENV 50 140, 50 204

● Calcium-Hardness 50 - 500 mg/l CaCO₃

Use the adapter for 16 mm vial.
Fill a clean 16 mm vial with 8 ml distilled water (Calcium-ion free). Add a CALCHECK-tablet and mix well to dissolve the tablet using a clean stirring rod. Screw the cap on and replace the vial in the adapter/sample chamber making sure that | and Δ marks are aligned.



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

0.0.0

The display shows the following:

Remove the vial from the adapter/sample chamber. Add 2 ml of the water sample. Screw the cap on and replace the vial back into the sample chamber making sure the | and Δ marks are aligned.

Wait for a colour reaction time of two minutes!



Press the ZERO/TEST key.



The method symbol flashes for approx. 3 seconds.

RESULT

The result is shown in the display in mg/l CaCO₃.

Tolerance: ± 5 % Full Scale

● Method notes

Observe application options, analysis regulations and matrix effects of methods. Reagent tablets are designed for use in chemical analysis only and should be kept well out of the reach of children.

If necessary, request safety data sheets.

Ensure proper disposal of reagent solutions.

● Troubleshooting: Guidelines for photometric measurements

1. Vials, stoppers and stirring rods should be cleaned thoroughly **after each analysis** to prevent errors being carried over. Even minor reagent residues can cause errors in the test results. Use the brush provided for cleaning.
2. The outside of the vial must be clean and dry before starting the analysis. Fingerprints or droplets of water on the sides of the vial can result in errors.
3. Zero calibration and test must be carried out with the same vial as there may be slight differences in optical performance between vials.
4. The vials must be positioned in the sample chamber for zero calibration and test with the graduations facing toward the housing mark.
5. Zero calibration and test must be carried out with the sample chamber lid closed.
6. Bubbles on the inside of the vial may also lead to errors. In this case, fit the vial with a clean stopper and remove bubbles by swirling the contents before starting test.
7. Avoid spillage of water in the sample chamber. If water should leak into the photometer housing, it can damage electronic components and cause corrosion.
8. Contamination of the windows over the light source and photo sensor in the sample chamber can result in errors. If this is suspected check the condition of the windows.
9. When using reagent tablets, use only tablets in black printed foil.
10. The reagent tablets should be added to the water sample without being handled.
11. Large temperature differentials between the photometer and the operating environment can lead to incorrect measurement due to, for example, the formation of condensate in the area of the lens or on the vial.
12. To avoid errors caused by stray-light do not use the instrument in bright sunlight.

● **Kalibriermodus (für mitgelieferte Standards mit definierten Werten)**



Taste MODE drücken und **gedrückt halten**.



Gerät mit Taste ON/OFF einschalten,
nach ca. 1 Sekunde Taste MODE loslassen.

CAL

In der Anzeige erscheint abwechselnd:

F

Nullabgleich wie beschrieben durchführen. Anstelle der
Wasserprobe 5 ml VE-Wasser in einer sauberen
Küvette verwenden.



Die Taste ZERO/TEST drücken.



Das Methodensymbol blinkt für ca. 3 Sekunden.

0.0.0

In der Anzeige erscheint:

Küvette mit dem 0.00 mg/l F-Standard (siehe: mitgeliefer-
te Trübungsstandards) Δ positionieren.



Taste ZERO/TEST drücken.



Das Methodensymbol blinkt für ca. 3 Sekunden.

FO

FO erscheint im Display.

Küvette mit dem 1.00 mg/l F-Standard (siehe: mitgeliefer-
te Trübungsstandards) Δ positionieren.



Taste ZERO/TEST drücken.



Das Methodensymbol blinkt für ca. 3 Sekunden.

F1

Im Display erscheint:
(Bestätigung der Kalibrierung (Justierung))



Durch Drücken der Taste ON/OFF wird das Gerät ausge-
schaltet. Der neue Kurvenverlauf ist abgespeichert.