Hardness Calcium (B) T M191

20 - 500 mg/L $CaCO_3$ CAH

Murexide

Instrument specific information

The test can be performed on the following devices. In addition, the required cuvette and the absorption range of the photometer are indicated.

Instrument Type	Cuvette	λ	Measuring Range
MD 100, MD 110, MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 600, PM 620, PM 630, XD 7000, XD 7500	ø 24 mm	560 nm	20 - 500 mg/L $CaCO_3$

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Set Calcio H No. 1/No. 2 100 Pc.#	100 each	517761BT
Set Calcio H No. 1/No. 2 250 Pc.#	250 each	517762BT

Application List

- Cooling Water
- Boiler Water
- Pool Water Control
- Drinking Water Treatment
- Raw Water Treatment

Preparation

1. Strong alkaline or acidic water samples should be adjusted between pH 4 and pH 10 before the analysis (use 1 mol/l Sulphuric acid or 1 mol/l Sodium hydroxide).

Notes

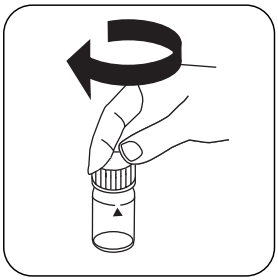
1. To optimise the readings, an optional batch-specific blind value method can be performed (see photometer description).
2. For accurate results, exactly 10 ml of water sample must be used for the test.
3. This method was developed from a volumetric procedure. Due to undefined boundary conditions, deviations from the standardised method may be greater.
4. The method works in the high measuring range with greater tolerances than in the low measuring range. When diluting samples, always measure in the first third of the range.

Determination of Hardness Calcium 2 with Tablet

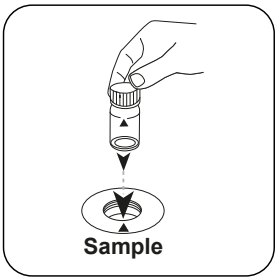
Select the method on the device.

For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500

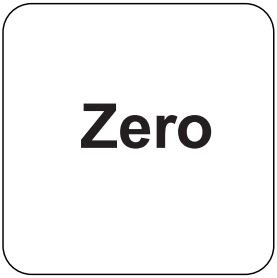
Fill 24 mm vial with **10 mL sample**.



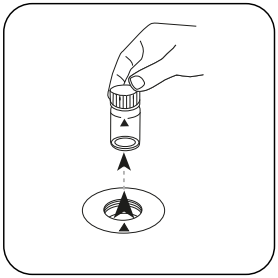
Close vial(s).



Place **sample vial** in the sample chamber. Pay attention to the positioning.

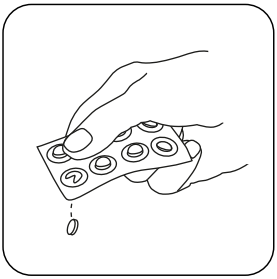


Press the **ZERO** button.

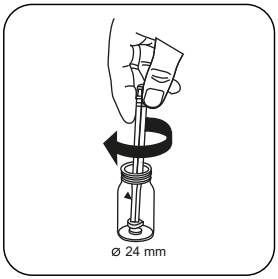


Remove the vial from the sample chamber.

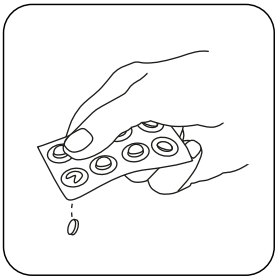
For devices that require **no ZERO measurement** , **start here**.



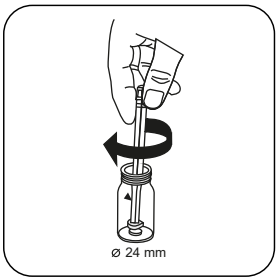
Add **CALCIO H No.1 tablet** .



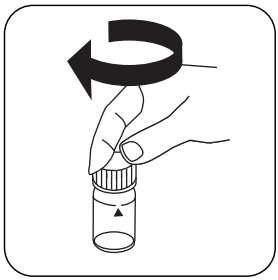
Crush tablet(s) by rotating slightly and dissolve.



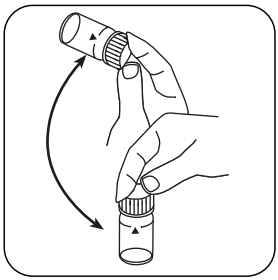
Add **CALCIO H No.2 tablet** .



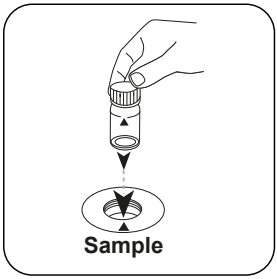
Crush tablet(s) by rotating slightly.



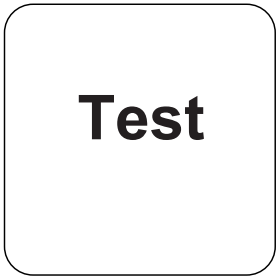
Close vial(s).



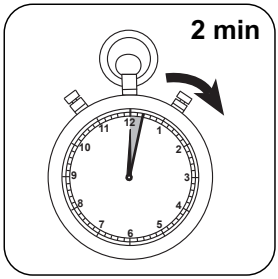
Dissolve tablet(s) by inverting.



Place **sample vial** in the sample chamber. Pay attention to the positioning.



Press the **TEST** (XD: **START**)button.



Wait for **2 minute(s) reaction time**.

Once the reaction period is finished, the measurement takes place automatically.

The result in Calcium Hardness appears on the display.

Analyses

The following table identifies the output values can be converted into other citation forms.

Unit	Cite form	Scale Factor
mg/l	$CaCO_3$	1
	°dH	0.056
	°eH	0.07
	°fH	0.1
	°aH	1

Chemical Method

Murexide

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$1.40008 \cdot 10^{+4}$	$1.40008 \cdot 10^{+4}$
b	$-6.16015 \cdot 10^{+4}$	$-1.32443 \cdot 10^{+5}$
c	$1.0917 \cdot 10^{+5}$	$5.04637 \cdot 10^{+5}$
d	$-9.63601 \cdot 10^{+4}$	$-9.57662 \cdot 10^{+5}$
e	$4.21873 \cdot 10^{+4}$	$9.01438 \cdot 10^{+5}$
f	$-7.31973 \cdot 10^{+3}$	$-3.3627 \cdot 10^{+5}$

Interferences

Persistant Interferences

1. Silver, mercury, cadmium, cobalt and copper interfere with the test result.

Interference	from / [mg/L]
Mg^{2+}	200 ($CaCO_3$)
Fe	10
Zn^{2+}	5

Bibliography

Photometrische Analyse, Lange/ Vjedelek, Verlag Chemie 1980

including stirring rod, 10 cm