**Hardness Ca and Mg MR TT****M198****10 - 360 mg/L CaCO<sub>3</sub>****Calmagite****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	$\lambda$	Measuring Range
MD 600, MD 610, MD 640, XD 7000, XD 7500	ø 16 mm	530 nm	10 - 360 mg/L CaCO <sub>3</sub>

**Material**

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Hardness Ca Mg MR TT	1 Set	2423960
Ca Mg Hardness Sol 2, 15 mL	15 mL	471200
Ca Mg Hardness Sol 3 - 5 mL	5 mL	471230
Ca Mg Hardness Sol 4 - 5 mL	5 mL	471220

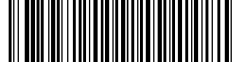
**Application List**

- Drinking Water Treatment
- Raw Water Treatment
- Waste Water Treatment

**Notes**

1. On the XD7x00 the method is implemented under method number M2512.

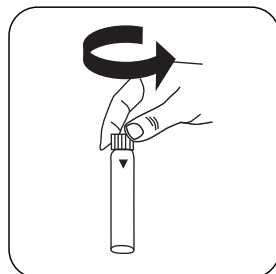




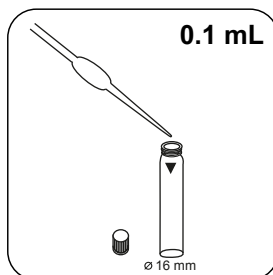
## Determination of Hardness Calcium and Magnesium MR TT with liquid reagent

Select the method on the device.

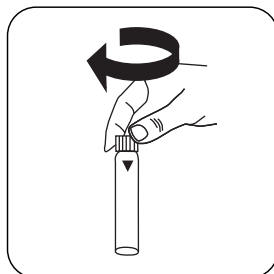
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



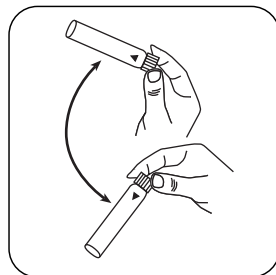
Open a digestion vial.



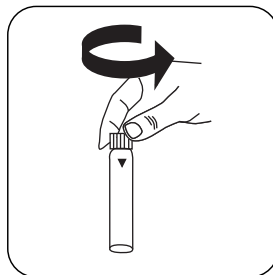
Add **0.1 mL** sample.



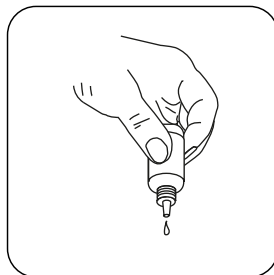
Close vial(s).



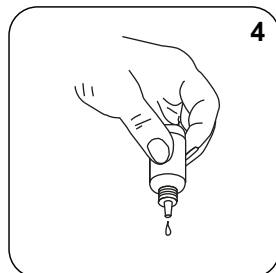
Invert several times to mix the contents (10x).



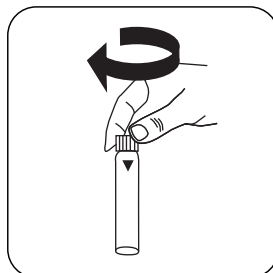
Open the sample vial.



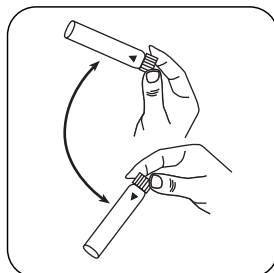
Hold cuvettes vertically and add equal drops by pressing slowly.



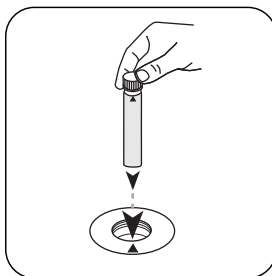
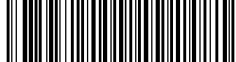
Add **4 drops Ca Mg Hardness SOL 2** (blue bottle).



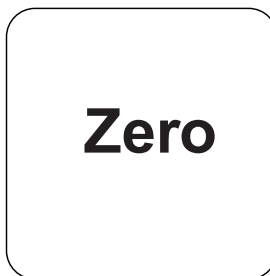
Close vial(s).



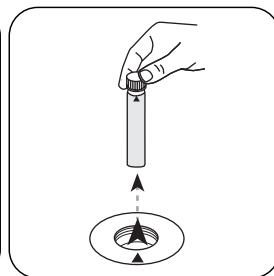
Invert several times to mix the contents (10x).



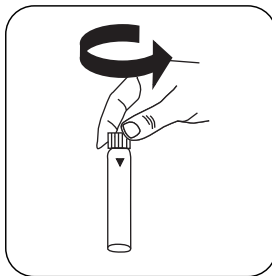
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



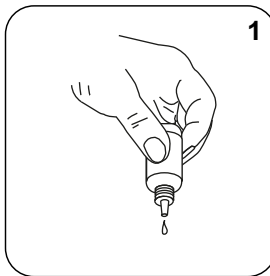
Press the **ZERO** button.



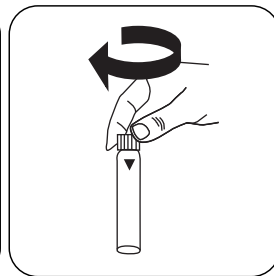
Remove **vial** from the sample chamber.



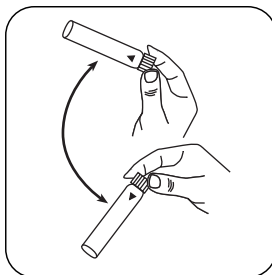
Open the sample vial.



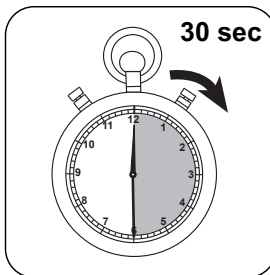
Add **1 drops Ca Mg Hardness SOL 3 (green bottle)**.



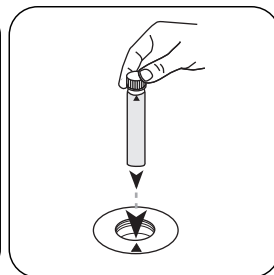
Close vial(s).



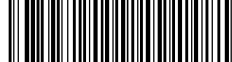
Invert several times to mix the contents (10x).



Wait for **30 second(s) reaction time**.

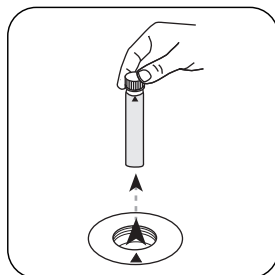


Place **sample vial** in the sample chamber. • Pay attention to the positioning.

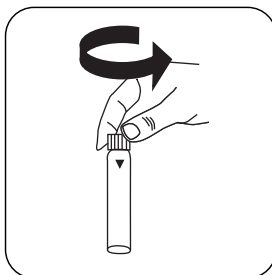


# Test

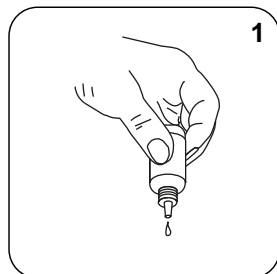
Press the **TEST** (XD: **START**) button.



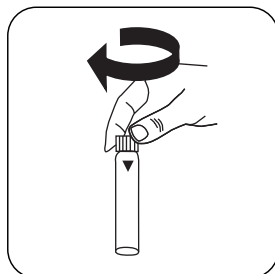
Remove **vial** from the sample chamber.



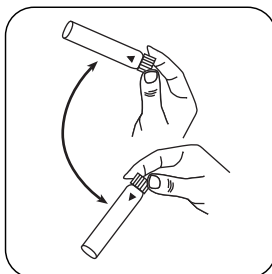
Open the sample vial.



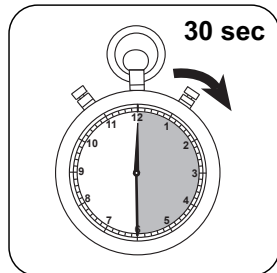
Add **1 drops Ca Mg Hardness SOL 4 (white bottle)**.



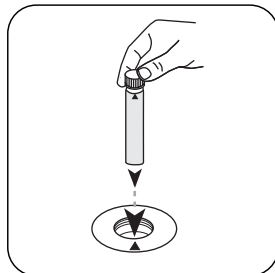
Close vial(s).



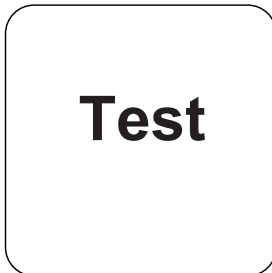
Invert several times to mix the contents (10x).



Wait for **30 second(s) reaction time**.



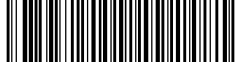
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



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

# Test

The result in **mg/L** [Ca]-CaCO<sub>3</sub> and [Mg]-CaCO<sub>3</sub> 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 <sub>3</sub>	1
mg/L	Ca	0.4004
mg/L	MgCO <sub>3</sub>	0.8424
mg/L	Mg	0.2428
	°dH	0.0560

## Chemical Method

Calmagite

## Interferences

### Removeable Interferences

The Ca determination is disturbed by high Mg contents. For accurate Ca measurements, a dilution should be carried out.

Interference	from / [mg/L]
Al <sup>3+</sup>	100
Cr <sup>3+</sup>	12.5
Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup>	12.5
Cu <sup>2+</sup>	50
Fe <sup>3+</sup>	150
Mn <sup>2+</sup>	50
Mo <sup>6+</sup>	110
Ni <sup>2+</sup>	3
PO <sub>4</sub> <sup>3-</sup>	750
Zn <sup>2+</sup>	10
EDTA	25