

Method Z021 – Total hardness GH

Specification

Description:	Test for determining the total hardness in fresh water
Range:	1 – 50 °d
Resolution:	0,5 °d
Wavelength:	610 nm
Extra feature:	exat:ir method guided by the innovative photometric system for easy and convenient titration, see 15 Titration method .

Reagent set

Product Code	Description	List of components
8021	Set of reagents for method Z021, Total hardness GH (reagents for approx. 40 tests)* * for the average value of total hardness 12,5 °d	<ul style="list-style-type: none"> ✓ Reagent GH-1 ✓ Reagent GH-2 ✓ 1 ml syringe with tip ✓ vial

Performing the measurement

1. Select the **Z021 Total hardness GH** method (**Methods** → **Select method** → **Z021 Total hardness GH**).
How to select the method, see [8.1 Choosing method](#).

NOTE:

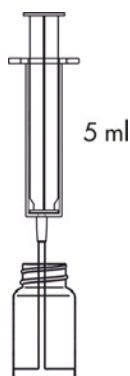
*It is recommended to use the **GUIDE** system. It will provide you with step-by step basic instruction how to perform measurement and an acoustic signal indicating the end of the titration. To enable this function press the button **GUIDE**.*

2. Rinse the vial and the syringe three times with the tested water.
3. Add 10 drops of **Reagent GH-1** and mix.

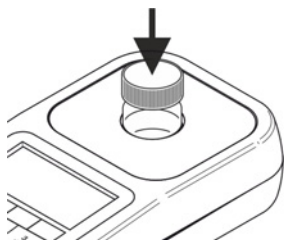
Take exactly 5 ml of the tested water with the syringe and pour into the vial.

NOTE:

Make sure no air bubbles are present in the syringe. Trapped air bubbles can affect accuracy of the measurement.



4. Insert the vial into the round vial holder and press the **ZERO** key. The display will show "-0.0-", which means the device is ready for measurement.



31 08 20		10:19	
GH	Z021 Total Hardnes tag 1		
Measuring ...			
ZERO	MEAS	GUIDE	

31 08 20		10:19	
GH	Z021 Total Hardnes tag 1		
-0.0- dH			
ZERO	MEAS	GUIDE	

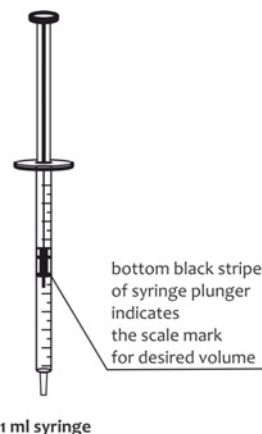
NOTE:

Before starting the measurement, it is highly recommended to make sure the test vial is clean and dry. Liquid residues remaining on the vial walls may adversely affect reliability of results.

5. Replace the cap with a hole on the vial. Attach the tip on the end of the 1 ml syringe and take 1 ml of the **Reagent GH-2**. The bottom black stripe of the syringe plunger should be on the scale mark for the desired volume, see 18.3.1 Proper use of syringe.

NOTE:

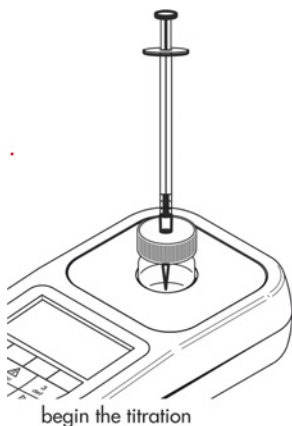
Make sure no air bubbles are present in the syringe or in the tip. Trapped air bubbles can affect accuracy of the measurement.



6. Place the syringe with the Reagent GH-2 in the hole cap. Press the **MEAS** key and begin the titration by carefully adding **Reagent GH-2** in small portions. If the entire volume of the syringe is emptied and there is no end of titration, take another portion (1 ml) of Reagent GH-2 and continue titration.

NOTE:

To obtain accurate results of titration, remember to shake carefully the instrument with the vial after each drop of Reagent GH-2 is added to mix well.



The end of the titration is indicated by an acoustic signal and the message **STOP** appears on the instrument.



31 08 20		10:25	
GH	Z021 Total hardness tag1		
150	STOP	1.04 ml	
ZERO	END	-	+



the STOP message and an acoustic signal indicate the end of the titration

NOTE:

Remember not to switch off the beeper message before taking a measurement, see 12.7 *Beeper*. It will disable the acoustic signal which indicates the end of the titration.

7. Read the volume of added **Reagent GH-2** in ml on the syringe scale and enter the value using the „+“ button or any other key on the keyboard apart from the  **Power key** and the  **minus key**. Press the **END** key. The result – **general hardness** – is displayed in **German degrees (° d)**.

31 08 20		10:25	
GH	Z021 Total hardness tag1		
150	STOP	1.04 ml	
ZERO	END	-	+

31 08 20		10:25	
GH	Z021 Total hardness tag 1		
26.0 dH			
ZERO	MEAS	GUIDE	REC

There are also available alternative units to display: CaCO₃ mg/l, mmol/l and mval/l. They can be accessed by pressing the **left / right**   cursors on the keyboard.