

## Method Z463 – Magnesium Mg marine water

## Specification

Description:	Test for determining the content of magnesium in marine water
Range:	500 - 1600 mg/l
Resolution:	18 mg/l
Wavelength:	610 nm
Extra feature:	<b>exat:tr</b> method guided by the innovative photometric system for easy and convenient titration, see <a href="#">1.5 Titration method</a> .

## NOTE:

Firstly, take a measurement according to the method Z462, Calcium Ca marine water (product no 8462).

For the correct determination of the magnesium content in the method Z463, it is necessary to enter the previously measured calcium content in accordance with the method Z462. In case of seawater the calcium content of **400 mg/l** can be taken as a typical level of this element, and it will not affect the accuracy of measurement. Exaqua allows you to transfer the calcium content from the recently performed compatible calcium method to the currently performed magnesium method. However, it should be remembered that the recorded result is deleted from the photometer internal memory after any 4 consecutive measurements are performed. Thus, no more than 4 other measurements should be made between the calcium measurement and the corresponding magnesium measurement.

## Reagent set

Product Code	Description	List of components
<b>8463</b>	Set of reagents for method Z463, Magnesium Mg marine water (reagents for approx. 40 tests)* * for the average content of Ca 425 mg/l and Mg 1550 mg/l	<ul style="list-style-type: none"><li>✓ Reagent Mg-1</li><li>✓ Reagent Mg-2 (2 pcs.)</li><li>✓ 1 ml syringe with tip</li><li>✓ vial</li></ul>

## Performing the measurement

1. Select the **Z463 Magnesium Mg marine** method (**Methods** → **Select method** → **Z463 Magnesium Mg marine**). How to select the method, see [8.1 Choosing method](#).

## NOTE:

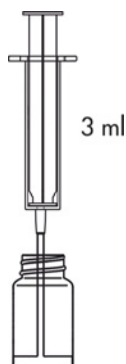
It is recommended to use the **GUIDE** system by pressing the context button **GUIDE** on the photometer. It will provide you with step-by step basic instruction how to perform measurement and a timer with beeper to count down reaction time. To enable this function press the button **GUIDE**.

- Rinse the vial and the syringe three times with the tested water.

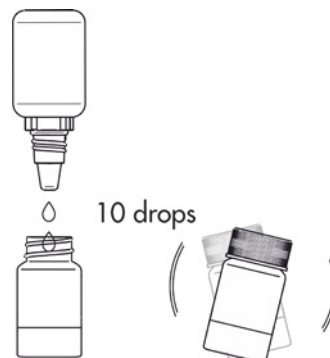
Take exactly 3 ml of the tested water with the syringe and pour into the vial.

**NOTE:**

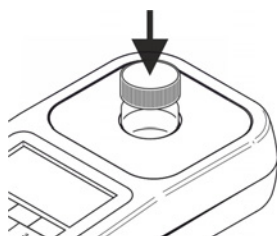
Make sure no air bubbles are present in the syringe. Trapped air bubbles can affect accuracy of the measurement.



- Add 10 drops of **Reagent Mg-1** and shake to mix.



- 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.



26 08 20	12:35
Mg	Z463 Magnesium Mg
	tag 1
<b>Measuring ...</b>	
ZERO	MEAS GUIDE

26 08 20	12:35
Mg	Z463 Magnesium Mg
	tag 1
<b>-0.0- mg/l</b>	
ZERO	MEAS GUIDE

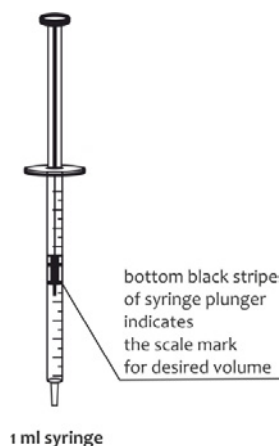
**NOTE:**

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.

- 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 Mg-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.

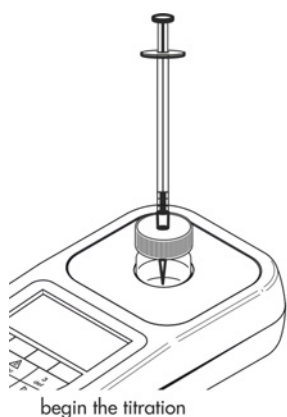


- Place the syringe with the **Reagent Mg-2** in the hole cap. Press the **MEAS** key and begin the titration by carefully adding **Reagent Mg-2** in small portions. If the entire volume of the syringe is emptied and there is no end of titration, take another portion (1 ml) of **Reagent Mg-2** and continue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

**NOTE:**

To obtain accurate results of titration shake carefully the instrument with the vial after each portion of **Reagent Mg-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.



**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.

26 08 20		12:36	
Mg	Z463 Magnesium Mg		
	tag1		
187	STOP	0.83 ml	
ZERO	END	-	+



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

- Read the volume of added **Reagent Mg-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.
- If the calcium content has been previously measured (according to method **Z462**) its value will be displayed on the screen. You can accept it by pressing the **OK** key or enter the default value (400 mg/l) by pressing the **DEF** key.

Linked value		12:36	
Enter value			
Ca 432.1 mg/l			
Result from Z462			
DEF	LAST		OK

If the calcium content has **NOT** been previously measured (according to method **Z462**) the default/typical for marine water value (400 mg/l) will be displayed on the screen. To accept it, press the **OK** key.

Linked value		12:36	
Enter value			
Ca 400.0 mg/l			
Default value			
DEF			OK

Apart from accepting default or previously measured calcium content it is also possible to enter your own result for calcium by using the keyboard keys (0-9). To accept it, press the **OK** key.

- The result – the concentration of magnesium ions – is displayed in **mg/l (ppm)**.

26 08 20		12:36	
Mg	Z463 Magnesium Mg		
	tag1		
187	STOP	0.83 ml	
ZERO	END	-	+

26 08 20		12:36	
Mg	Z463 Magnesium Mg		
	tag 1		
1274.7 mg/l			
ZERO	MEAS	GUIDE	REC

## Potential interferences

the high content of bi- or multivalent metals  
- mainly manganese (Mn) and iron (Fe)

may cause falsely high readings