



Aluminium PP

M50

0.01 - 0.25 mg/L Al

AL

Eriochrom Cyanine R

## 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 100, MD 110, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	530 nm	0.01 - 0.25 mg/L Al
SpectroDirect, XD 7000, XD 7500	ø 24 mm	535 nm	0.01 - 0.25 mg/L Al

## Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
VARIO Aluminium Reagent, Set F20	1 pc.	535000

## Application List

- Drinking Water Treatment
- Waste Water Treatment
- Raw Water Treatment
- Boiler Water
- Cooling Water

## Preparation

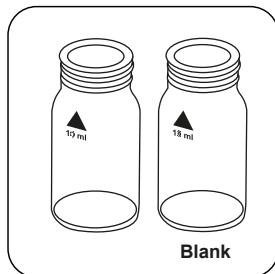
1. To get accurate results the sample temperature must be between 20 °C and 25 °C.
2. To avoid errors caused by contamination, rinse the vial and the accessories with Hydrochloric acid (approx. 20%) before the analysis. Then rinse them with deionised water.



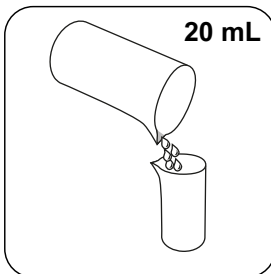


## Determination of Aluminium with Vario Powder Pack

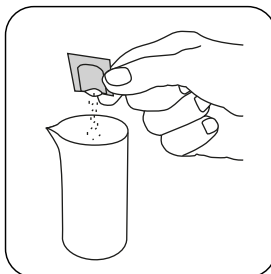
Select the method on the device.



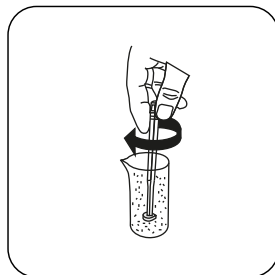
Prepare two clean 24 mm vials. Mark one as a blank.



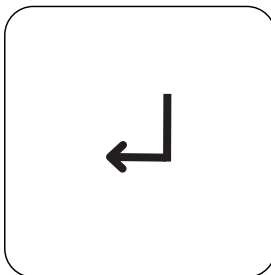
Put **20 mL sample** in 100 mL measuring beaker



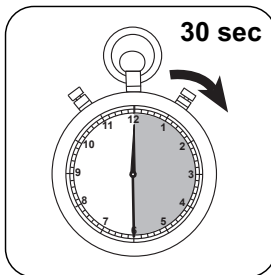
Add Vario **ALUMINIUM ECR F20 powder pack**.



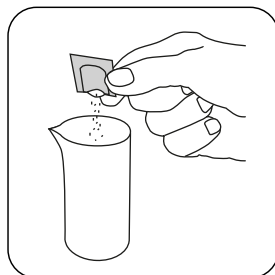
Dissolve the powder by mixing.



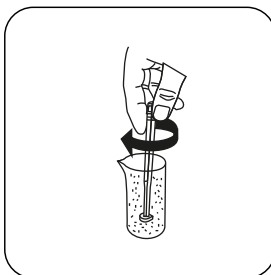
Press the **ENTER** button.



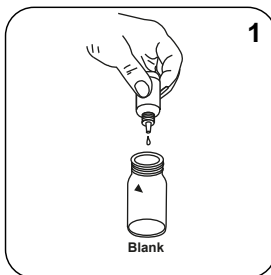
Wait for **30 second(s) reaction time**.



Add Vario **HEXAMINE F20 powder pack**.



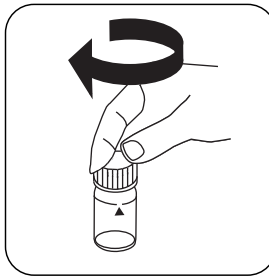
Dissolve the powder by mixing.



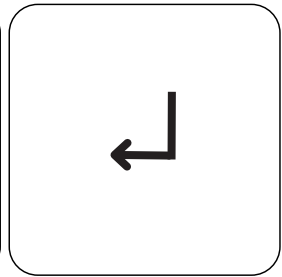
Place **1 drops Vario ALUMINIUM ECR Masking Reagent** in the blank.



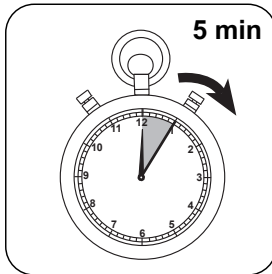
Place **10 mL pre-treated sample** in each vial.



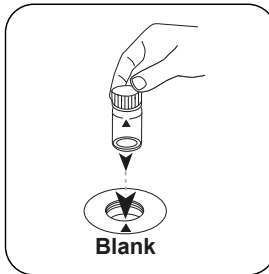
Close vial(s).



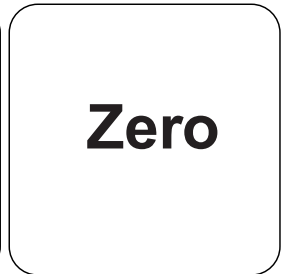
Press the **ENTER** button.



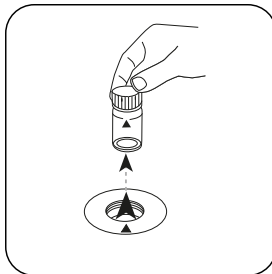
Wait for **5 minute(s) reaction time**.



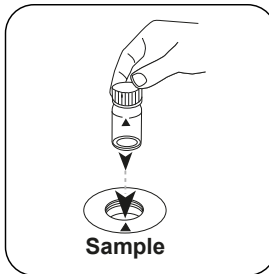
Place **blank** in the sample chamber. Pay attention to the positioning.



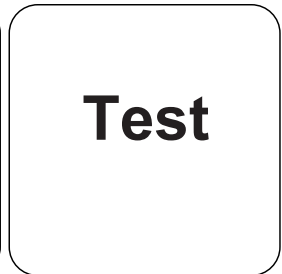
Press the **ZERO** button.



Remove the vial from the sample chamber.



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



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

The result in mg/L Aluminium 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	Al	1
mg/l	Al <sub>2</sub> O <sub>3</sub>	1.8894

## Chemical Method

Eriochrom Cyanine R

## Appendix

### Calibration function for 3rd-party photometers

$$\text{Conc.} = a + b \cdot \text{Abs} + c \cdot \text{Abs}^2 + d \cdot \text{Abs}^3 + e \cdot \text{Abs}^4 + f \cdot \text{Abs}^5$$

	∅ 24 mm	□ 10 mm
a	$5.35254 \cdot 10^{-3}$	$5.35254 \cdot 10^{-3}$
b	$1.95468 \cdot 10^{-1}$	$4.20256 \cdot 10^{-1}$
c		
d		
e		
f		

## Interferences

### Removeable Interferences

- A low test result may be given in the presence of Fluorides and Polyphosphates. The effect of this is generally insignificant unless the water has fluoride added artificially. In this case, the following table should be used to determine the actual concentration of aluminium.

Fluoride [mg/L F]	Displayed value: Aluminium [mg/L]					
	0.05	0.10	0.15	0.20	0.25	0.30
0.2	0.05	0.11	0.16	0.21	0.27	0.32
0.4	0.06	0.11	0.17	0.23	0.28	0.34
0.6	0.06	0.12	0.18	0.24	0.30	0.37
0.8	0.06	0.13	0.20	0.26	0.32	0.40
1.0	0.07	0.13	0.21	0.28	0.36	0.45
1.5	0.09	0.20	0.29	0.37	0.48	---

### Bibliography

Richter, F. Fresenius, Zeitschrift f. anal. Chemie (1943) 126: 426

### According to

APHA Method 3500-Al B