



## Aluminium VARIO PP

50

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,<br>MD 610, MD 640, MultiDirect,<br>PM 620, PM 630 | ø 24 mm | 530 nm    | 0.01 - 0.25 mg/l Al |
| SpectroDirect, XD 7000,<br>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 Set          | 535000      |

### Application List

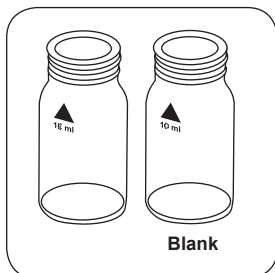
- Drinking Water Treatment
- Waste Water Treatment
- Raw Water Treatment
- Boiler Water
- Cooling Water
- Pool Water Treatment

### Preparation

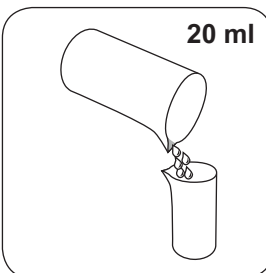
1. To get accurate results the sample temperature must be between 20°C and 25°C.
2. To avoid errors caused by contamination, rinse the vial and the accessories with Hydrochloric acid (approx. 20%) before the analysis. Then rinse them with deionised water.

## Implementation of the provision Aluminium with Vario Powder Pack

Select the method on the device



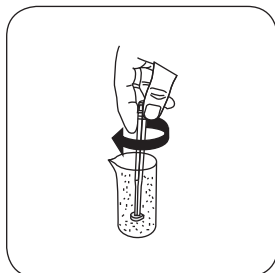
Prepare two clean 24 mm vials. Mark one as a blank.



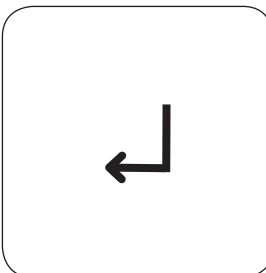
Put **20 ml sample** in 100 ml measuring beaker



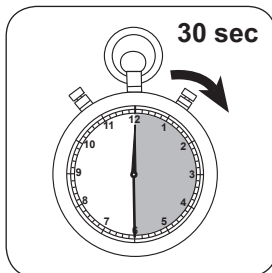
Add **Vario ALUMINIUM ECR F20 powder pack**.



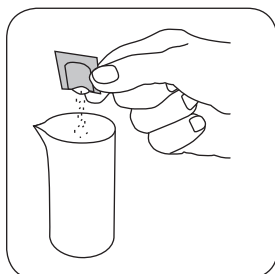
Dissolve the powder by mixing.



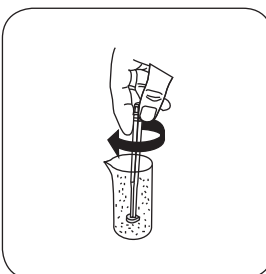
Press the **ENTER** button.



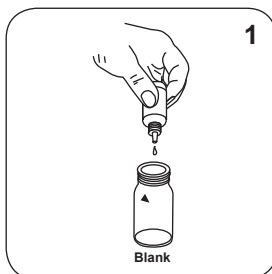
Wait for **30 second(s) reaction time**.



Add **Vario HEXAMINE F20 powder pack**.



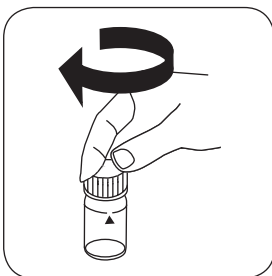
Dissolve the powder by mixing.



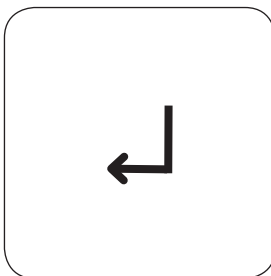
Place **1 drops Vario ALUMINIUM ECR Masking Reagent** in the blank.



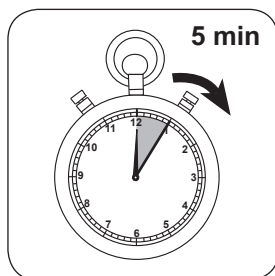
Place **10 ml pre-treated sample** in each vial.



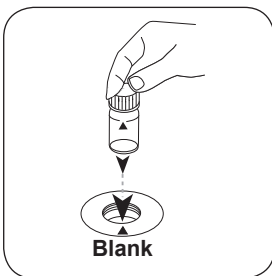
Close vial(s).



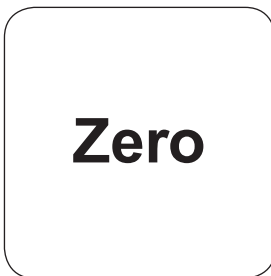
Press the **ENTER** button.



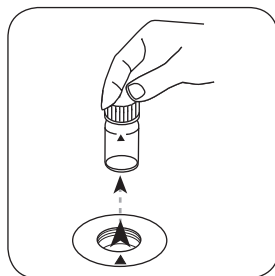
Wait for **5 minute(s) reaction time**.



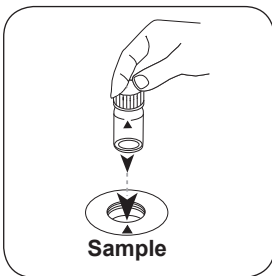
Place **blank** in the sample chamber. • Pay attention to the positioning.



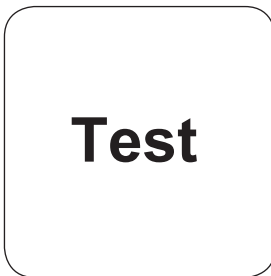
Press the **ZERO** button.



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

### 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 | Displayed value: Aluminium [mg/l] |      |      |      |      |      |
|----------|-----------------------------------|------|------|------|------|------|
| [mg/l F] | 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

<sup>a)</sup> determination of free, combined and total | <sup>b)</sup> Reactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C) | <sup>c)</sup> MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75) | <sup>d)</sup> Spectroquant® is a Merck KGaA Trademark | <sup>e)</sup> alternative reagent, used instead of DPD No.1/No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity | <sup>f)</sup> additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine | <sup>g)</sup> Reagent recovers most insoluble iron oxides without digestion | <sup>h)</sup> additionally required for samples with hardness values above 300 mg/l CaCO<sub>3</sub> | <sup>i)</sup> high range by dilution | <sup>j)</sup> including stirring rod, 10 cm