Cadmium M. TT 87
0.025 - 0.75 mg/l Cd
Cadion

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	λ	Measuring Range
SpectroDirect, XD 7000, XD 7500	ø 16 mm	525 nm	0.025 - 0.75 mg/l Cd

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Cadmium Spectroquant 1.14834.0001 tube test [d)]	25 pc.	420750

Application List

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

Preperation

1. Before performing the test, you must read through the original instructions and safety advice that is delivered with the test kit (MSDS are available on the homepage of www.merckmillipore.com).
2. With the test process described, only Cd^{2+} ions are determined. To determine colloidal, undissolved and complex-bound cadmium, digestion is first required.
3. The pH value of the sample must be between 3 and 11.

Notes

1. This method is adapted from MERCK.
2. Spectroquant® is a registered trademark of the company MERCK KGaA.
3. Appropriate safety precautions and good laboratory technique should be used during the whole procedure.
4. Sample and reagent volumes must be metered using a suitable volumetric pipette

(class A).

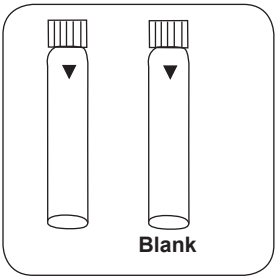
5. Because the reaction depends on temperature, the sample temperature must be between 10 and 40°C.
6. The reagents are to be stored in closed containers at a temperature of +15 °C – +25 °C.

Implementation of the provision Cadmium with MERCK Spectroquant® Cell Test, No. 1.14834.0001

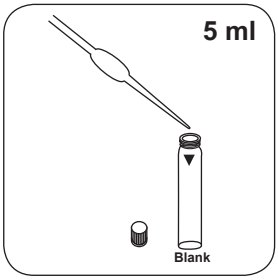
Select the method on the device

For this method, no ZERO measurements are to be carried out with the following devices: XD 7500, XD 7500

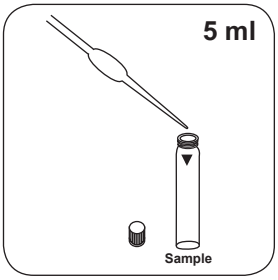
Skip steps with Blank.



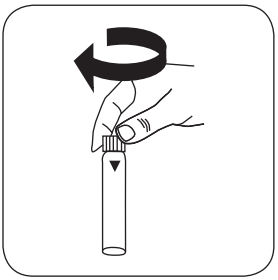
Prepare two **reaction vials**. Mark one as a blank.



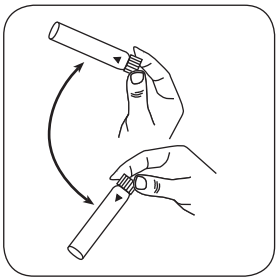
Put **5 ml deionised water** in the blank.



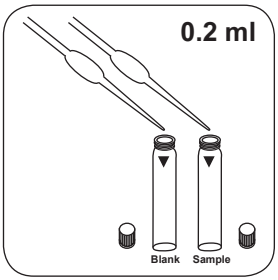
Put **5 ml sample** in the sample vial.



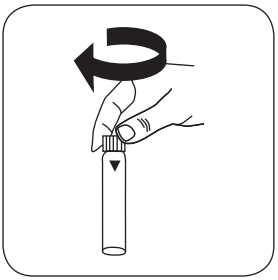
Close vial(s).



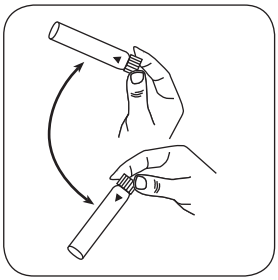
Invert several times to mix the contents.



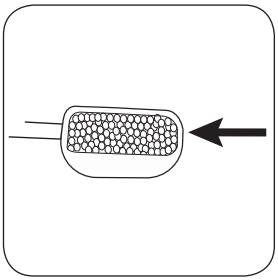
Add **0.2 ml Reagenz Cd-1K solution** to each vial.



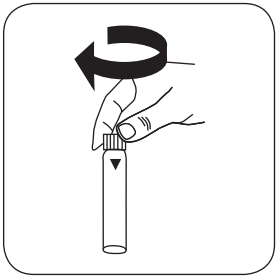
Close vial(s).



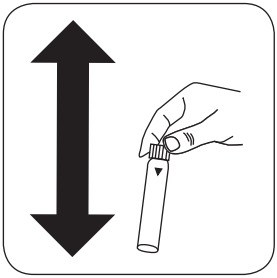
Invert several times to mix the contents.



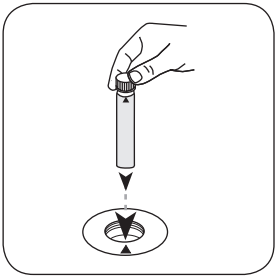
Add exactly **one level microspoon Reagent Cd-2K**.



Close vial(s).



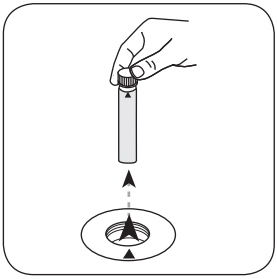
Dissolve the contents by shaking.



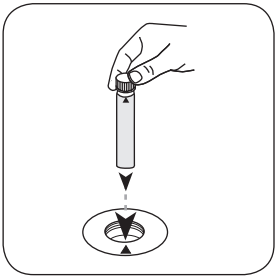
Place **blank** in the sample chamber. • Pay attention to the positioning.

Zero

Press the **ZERO** button.



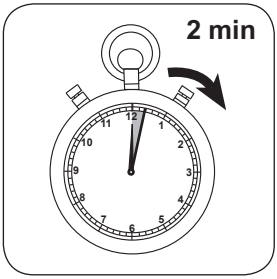
Remove **vial** from the sample chamber.



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

Test

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



Wait for **2 minute(s) reaction time**.

Once the reaction period is finished, the measurement takes place automatically.

The result in mg/l Cadmium appears on the display.

Chemical Method

Cadion

Appendix

Interferences

Interference	from / [mg/l]
Al	25
Ca^{2+}	1000
$Cr_2O_7^{2-}$	100
Cu^{2+}	10
Fe^{3+}	1
Mg^{2+}	1000
Mn^{2+}	10
NH_4^+	100
Ni^{2+}	0,5
Pb^{2+}	100
PO_4^{3-}	100
Zn^{2+}	0,5
NaCl	0,005
$NaNO_3$	0,05
Na_2SO_4	0,005

Method Validation

End of Measuring Range	0.75 mg/l
Sensitivity	0.006 mg/l
Confidence Range	0.02 %
Standard Deviation	0.0069 µg
Variation Coefficient	1.30 %

Bibliography

H. Watanabe, H. Ohmori (1979), Dual-wavelength spectrophotometric determination of cadmium with cadion, Talanta, 26 (10), 959-961

[a] determination of free, combined and total | [b] Reactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C) | [c] MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75) | [d] Spectroquant® is a Merck KGaA Trademark | [e] 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 | [f] additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine | [g] Reagent recovers most inso-

luble iron oxides without digestion | [h)] additionally required for samples with hardness values above 300 mg/l $CaCO_3$ | [i)] high range by dilution | [#] including stirring rod, 10 cm