Lead M232

0.01 - 5 mg/L Pb

4-(2-Pyridylazo-)-resorcine

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	□ 50 mm	520 nm	0.01 - 5 mg/L Pb

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Lead Spectroquant 1.09717.0001 reagent test [d)]	50 pc.	420753

Application List

- Waste Water Treatment
- Galvanization

Preparation

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 home-page of www.merckmillipore.com).
2. With the test process described, only Pb^{2+} ions are determined. To determine colloidal, undissolved and complex-bound lead, digestion is first required.

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. Reagents and samples must be metered using a suitable volumetric pipette (class A).
5. To increase the accuracy, it is recommended to perform a reagent blank with deionised water.
6. The data given in the method validation apply when using a 50 mm cuvette.

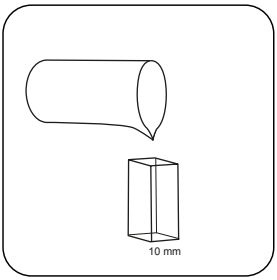
Variations in the length of the vial can extend the measuring range:

- 50 mm vial: 0.01 mg/L - 1 mg/L, solution: 0.01
- 20 mm vial: 0.05 mg/L - 2.5 mg/L, solution: 0.001
- 10 mm vial: 0.1 mg/L - 5 mg/L, solution: 0.001

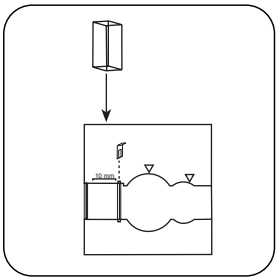
Determination of Lead

Select the method on the device.

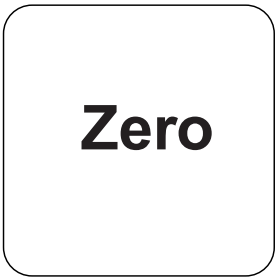
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



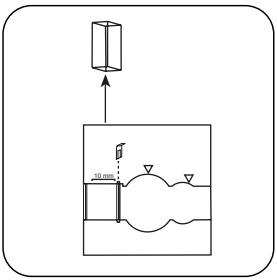
Fill 10, 20 or 50 mm vial with **sample**.



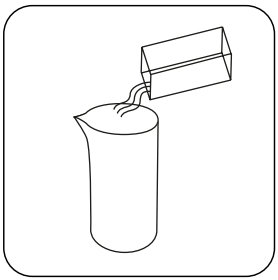
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



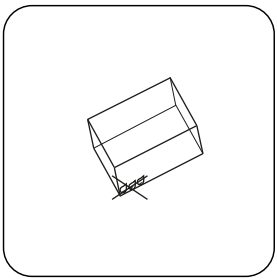
Press the **ZERO** button.



Remove **vial** from the sample chamber.



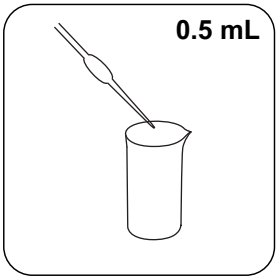
Empty vial.



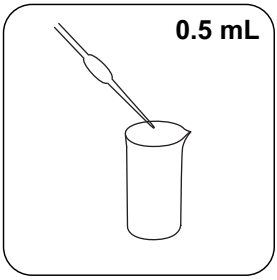
Dry the vial thoroughly.

For devices that require **no ZERO measurement** , **start here**.

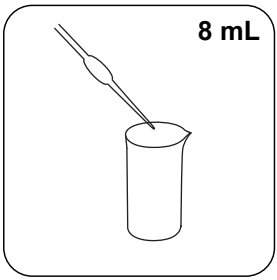
Note! Reagent Pb-1 contains Potassium cyanide! Adhere strictly to the specified dosage sequence!



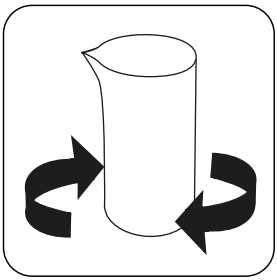
Place **0.5 mL Reagenz Pb-1** in a suitable sample vessel.



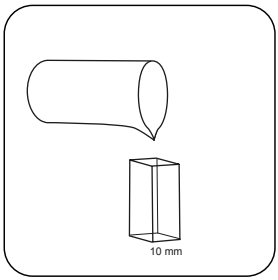
Add **0.5 mL Reagenz Pb-2**.



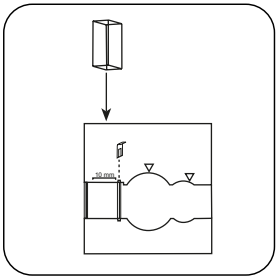
Add **8 mL sample**.



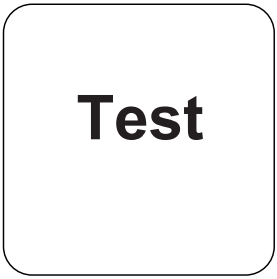
Invert several times to mix the contents.



Fill 10, 20 or 50 mm vial with **sample**.



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



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

The result in mg/L Lead appears on the display.

Chemical Method

4-(2-Pyridylazo-)-resorcine

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5
Wavelength: 520 nm

	□ **50 mm**
a	0.0000 • 10^0
b	1.3518 • 10^0
c	
d	
e	
f	

Interferences

Interference	**from / [mg/L]**
Ag	50
Al	500
Ca	250
Cd^{2+}	25
Cr^{3+}	25
$Cr_2O_7^{2-}$	10
Cu^{2+}	100
Fe^{3+}	2
Hg^{2+}	50
Mg	250
Mn^{2+}	0,1
NH_4^+	1000
Ni^{2+}	100
NO_2^-	1000
PO_4^{3-}	50
Zn	25

Interference	from / [mg/L]
EDTA	0,25
Surfactants	500
Na-Ac	0,5
NaCl	0,5
$NaNO_3$	0.125
Na_2SO_4	0.375
Total Hardness	30° dH

Method Validation

Limit of Detection	0.006 mg/L
Limit of Quantification	0.017 mg/L
End of Measuring Range	1.0 mg/L
Sensitivity	1.3742 mg/L / Abs
Confidence Intervall	0.044mg/L
Standard Deviation	0.018 mg/L
Variation Coefficient	3.62 %

Bibliography

Shvoeva, O.P., Dedkova, V.P. & Savvin, S.B. Journal of Analytical Chemistry (2001) 56: 1080

[d] Spectroquant® is a Merck KGaA Trademark