

Lead 10

M232

0.1 - 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	□ 10 mm	520 nm	0.1 - 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 Pb²⁺ 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).



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

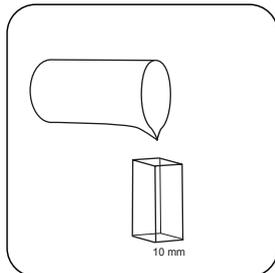
- 10 mm vial: 0.1 mg/L - 5 mg/L, solution: 0.01
- 20 mm vial: 0.05 mg/L - 2.5 mg/L, solution: 0.001
- 50 mm vial: 0.02 mg/L - 1 mg/L, solution: 0.001



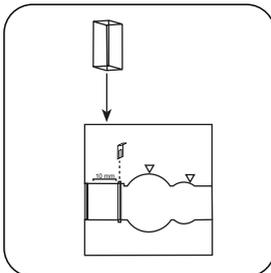
Determination of Lead

Select the method on the device.

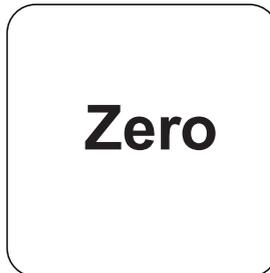
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



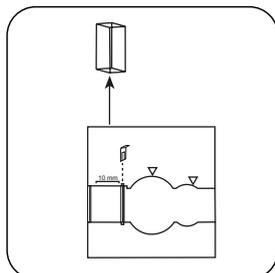
Fill 10 mm vial with sample.



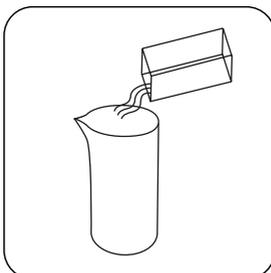
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



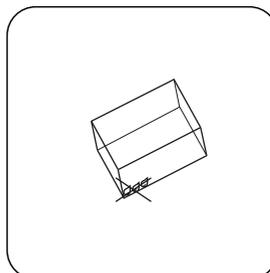
Press the **ZERO** button.



Remove **vial** from the sample chamber.



Empty vial.

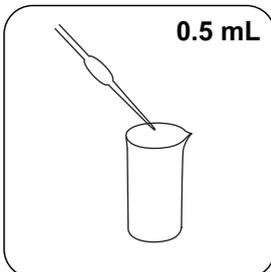


Dry the vial thoroughly.

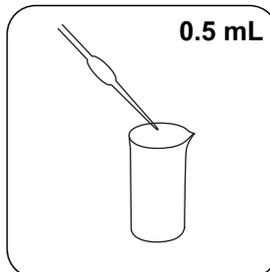
For devices that require **no ZERO measurement** , start here.



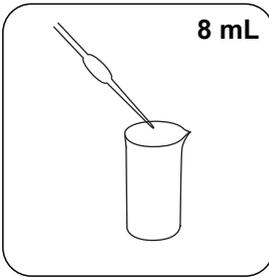
Note! Reagent Pb-1 contains Potassium cyanide! Adhere strictly to the specified dosage sequence!



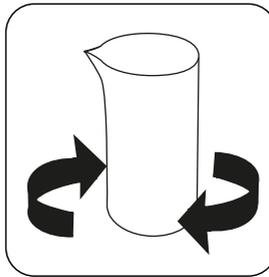
Place **0.5 mL Reagent Pb-1** in a suitable sample vessel.



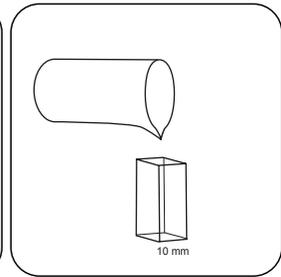
Add **0.5 mL Reagent Pb-2**.



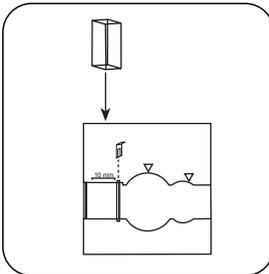
Add **8 mL sample**.



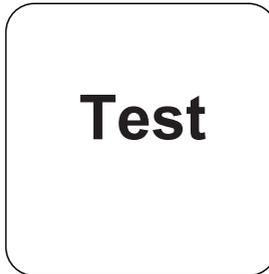
Invert several times to mix the contents.



Fill **10 mm vial with sample**.

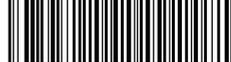


Place **sample vial** in the sample chamber. • Pay attention to the positioning.



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

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

□ 10 mm

a	$6.12438 \cdot 10^{-2}$
b	$6.16893 \cdot 10^{-0}$
c	
d	
e	
f	

Interferences

Interference	from / [mg/L]
Ag	50
Al	500
Ca	250
Cd ²⁺	25
Cr ³⁺	25
Cr ₂ O 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 ₂ SO ₄	0.375
Total Hardness	30° dH

Bibliography

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

⁹⁾ Spectroquant® is a Merck KGaA Trademark