

**Manganese T****240****0.2 - 4 mg/l Mn****Mn****Formaldehyde**

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
MD 100, MD 600, MD 610, MD 640, MultiDirect	ø 24 mm	530 nm	0.2 - 4 mg/l Mn
SpectroDirect, XD 7000, XD 7500	ø 24 mm	450 nm	0.2 - 4 mg/l Mn

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Manganese LR 1	Tablet / 100	516080BT
Manganese LR 1	Tablet / 250	516081BT
Manganese LR 2	Tablet / 100	516090BT
Manganese LR 2	Tablet / 250	516091BT
Set Manganese LR 1/LR 2 100 Pc.#	100 each	517621BT
Set Manganese LR 1/LR 2 250 Pc.#	250 each	517622BT

Application List

- Galvanization
- Drinking Water Treatment
- Raw Water Treatment

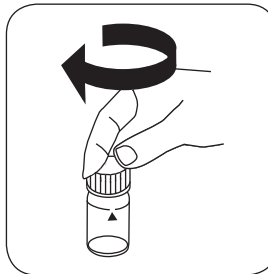
Implementation of the provision Manganese with Tablet

Select the method on the device

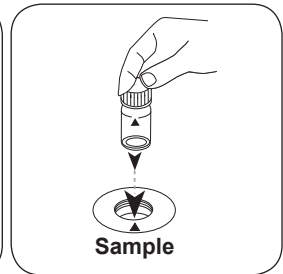
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500



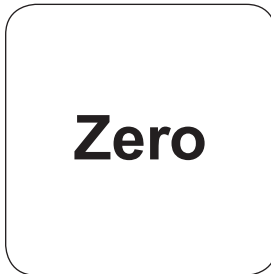
Fill 24 mm vial with **10 ml sample**.



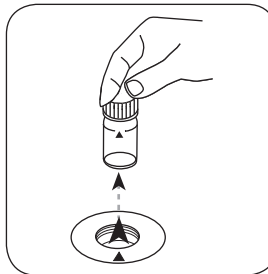
Close vial(s).



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

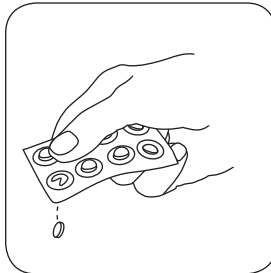


Press the **ZERO** button.

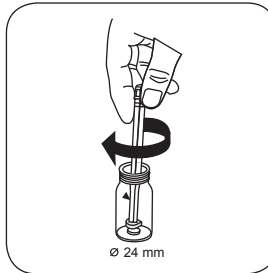


Remove the vial from the sample chamber.

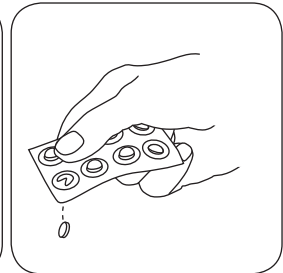
For devices that require **no ZERO measurement**, start here.



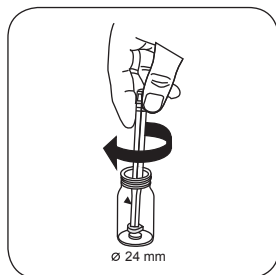
Add **MANGANESE LR 1 tablet**.



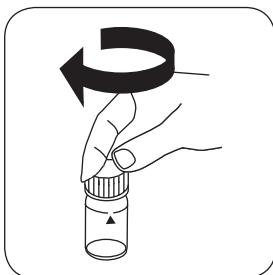
Crush tablet(s) by rotating slightly and dissolve.



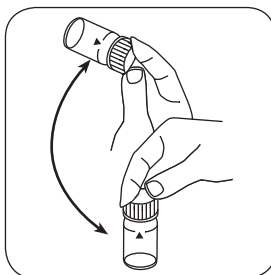
Add **MANGANESE LR 2 tablet**.



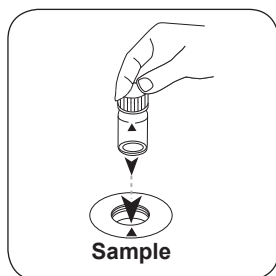
Crush tablet(s) by rotating slightly.



Close vial(s).



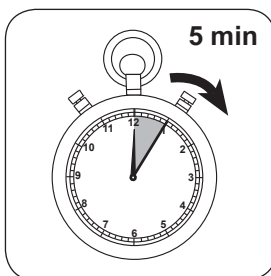
Dissolve tablet(s) by inverting.



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



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



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

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

The result in mg/l Manganese 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	Mn	1
mg/l	MnO ₄	2.17
mg/l	KMnO ₄	2.88

Chemical Method

Formaloxime

Appendix

Method Validation

Limit of Detection	0.135 mg/l
Limit of Determination	0.404 mg/l
End of Measuring Range	4 mg/l
Sensitivity	0.254 mg/l
Standard Deviation	0.011 µg

Bibliography

Gottlieb, A. & Hecht, F. Mikrochim Acta (1950) 35: 337

According to

DIN 38406-E2

^{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 insoluble iron oxides without digestion | ^{h)} additionally required for samples with hardness values above 300 mg/l CaCO₃ | ⁱ⁾ high range by dilution | ^{j)} including stirring rod, 10 cm