**Iron 50 T****M219****0.01 - 0.5 mg/L Fe****Ferrozine / Thioglycolate**

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 | 562 nm | 0.01 - 0.5 mg/L Fe |

Material

Required material (partly optional):

| Reagents | Packaging Unit | Part Number |
|---|----------------|-------------|
| Iron II LR (Fe^{2+}) | Tablet / 100 | 515420BT |
| Iron II LR (Fe^{2+}) | Tablet / 250 | 515421BT |
| Iron LR (Fe^{2+} und Fe^{3+}) | Tablet / 100 | 515370BT |
| Iron LR (Fe^{2+} und Fe^{3+}) | Tablet / 250 | 515371BT |

Application List

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

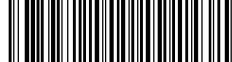
Preparation

1. Water that has been treated with organic compounds such as corrosion inhibitors, must be oxidised where necessary to break down the iron complex. 1 ml of concentrated Sulphuric acid ($\geq 95\%$) and 1 ml concentrated Nitric acid ($\geq 65\%$) is therefore added to 100 ml water sample and boiled down to approximately half the volume. After cooling down, the digestion procedure is continued.

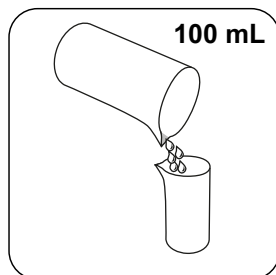


Notes

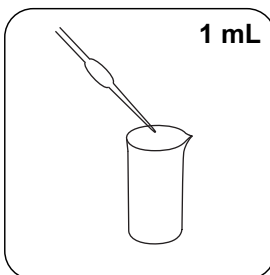
1. For the determination of Fe^{2+} , the IRON (II) LR Tablet, as described, is used instead of the IRON LR Tablet.



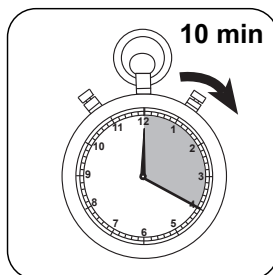
Digestion



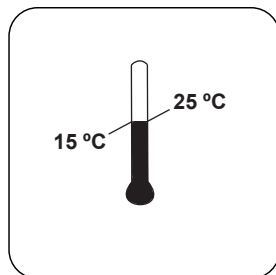
Fill a suitable sample vessel with **100 mL sample**.



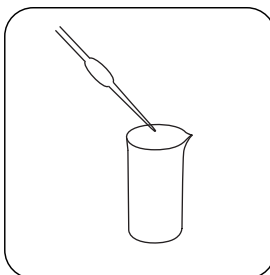
Add **1 mL concentrated sulfuric acid ($\geq 95\%$)**.



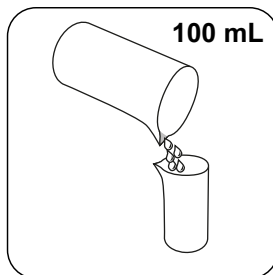
The sample is to be **heated for 10 minutes**, or for as long as it takes for everything to be completely dissolved.



Allow the sample to cool to room temperature.

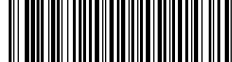


Adjust **pH-value** of the sample with **ammonia solution (10-25 %)** to 3-5.



Fill the sample with **deionised water to 100 mL**.

This sample is used for the analysis of total solved and dissolved Iron.

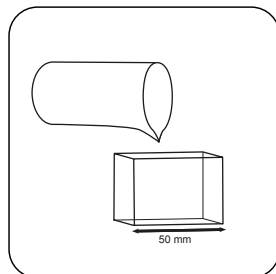


Determination of Iron (II,III), dissolved with Tablet

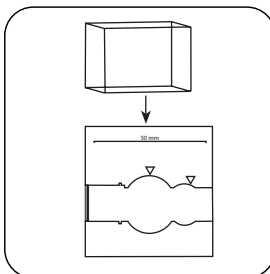
Select the method on the device.

For testing of **dissolved and undissolved Iron**, carry out the described **digestion**.

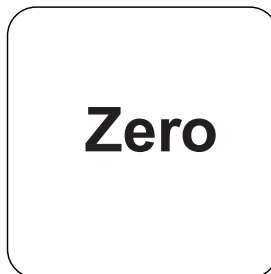
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



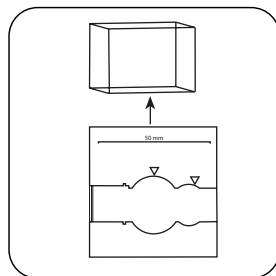
Fill 50 mm vial with sample.



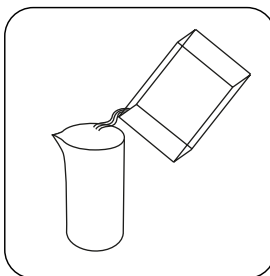
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



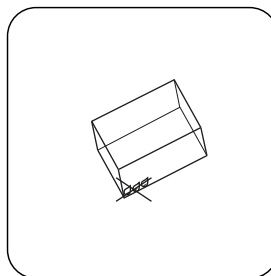
Press the **ZERO** button.



Remove **vial** from the sample chamber.

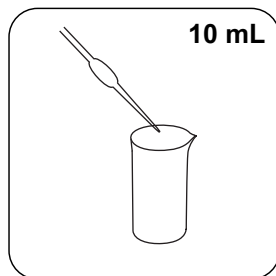


Empty vial.

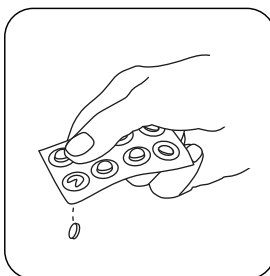


Dry the vial thoroughly.

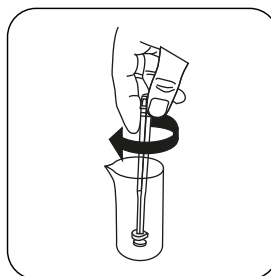
For devices that require **no ZERO measurement**, start here.



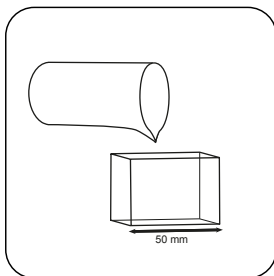
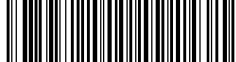
Fill a suitable sample vessel with **10 mL sample**



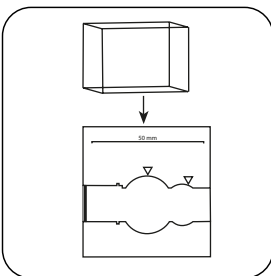
Add **IRON LR tablet**.



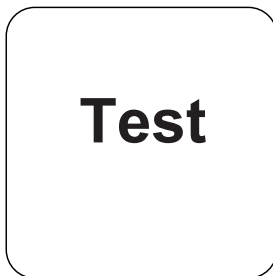
Crush tablet(s) by rotating slightly and dissolve.



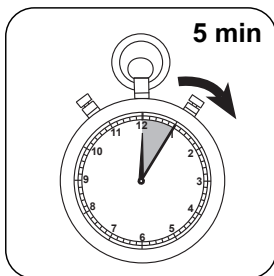
Fill 50 mm vial with sample.



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

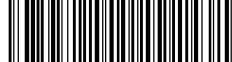


Press the **TEST** (XD: **START**) button.



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

Once the reaction period is finished, the measurement takes place automatically. The result in mg/L Iron appears on the display.



Chemical Method

Ferrozine / Thioglycolate

Appendix

Calibration function for 3rd-party photometers

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

| | □ 50 mm |
|---|--------------------------|
| a | $-6.71105 \cdot 10^{-3}$ |
| b | $4.0101 \cdot 10^{-1}$ |
| c | |
| d | |
| e | |
| f | |

Interferences

Removeable Interferences

1. The presence of copper increases the test result by 10%. At a concentration of 10 mg/L copper in the sample, the measurement result is increased by 1 mg/L iron.
The interference can be eliminated by the addition of thiourea

Bibliography

Photometrische Analyse, Lange/ Vjedelek, Verlag Chemie 1980, p. 102