

Formaldehyde 10 M. L

M175

1.00 - 5.00 mg/L HCHO

H<sub>2</sub>SO<sub>4</sub> / Chromotropic acid

## 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 | $\lambda$ | Measuring Range       |
|---------------------------------|---------|-----------|-----------------------|
| SpectroDirect, XD 7000, XD 7500 | □ 10 mm | 585 nm    | 1.00 - 5.00 mg/L HCHO |

## Material

Required material (partly optional):

| Reagents   | Packaging Unit | Part Number |
|--|----------------|-------------|
| Formaldehyde Spectroquant 1.14678.0001 tube test <sup>d)</sup> | 25 pc.         | 420751      |

## Application List


- Waste Water Treatment

## 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 homepage of [www.merckmillipore.com](http://www.merckmillipore.com)).

## 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 volume should always be metered by using a 3ml volumetric pipette (class A).
5. Because the reaction depends on temperature, the sample temperature must be between 20 °C and 25 °C.



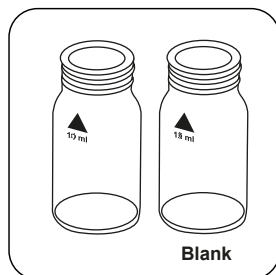
Variations in the length of the vial can extend the measuring range:

- 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: 0.01
- 50 mm vial: 0.02 mg/L - 1.0 mg/L, solution: 0.001

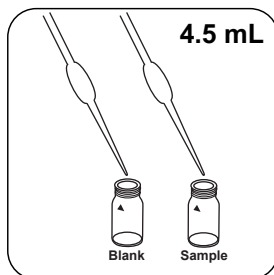


## Determination of Formaldehyde with MERCK Spectroquant® Test, No. 1.14678.0001

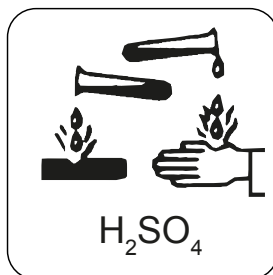
Select the method on the device.



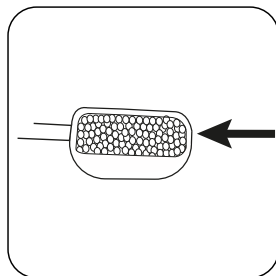
Prepare two clean 24 mm vials. Mark one as a blank.



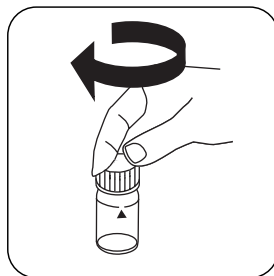
Add **4.5 mL HCHO-1 solution** to each vial.



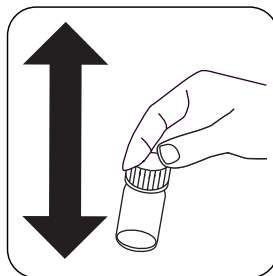
**Note: Reagent contains concentrated Sulphuric acid!**



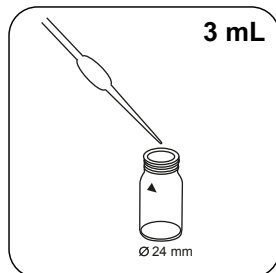
Add exactly **one level microspoon HCHO-2**.



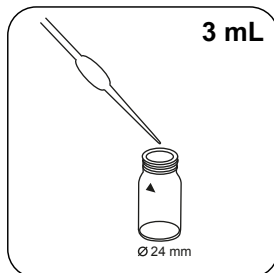
Close vial(s).



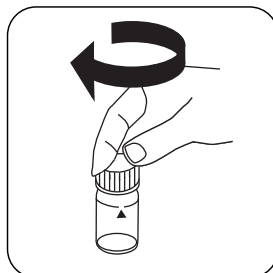
Dissolve the contents by shaking.



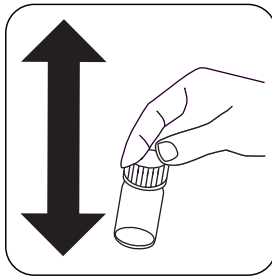
Put **3 mL deionised water** in the blank.



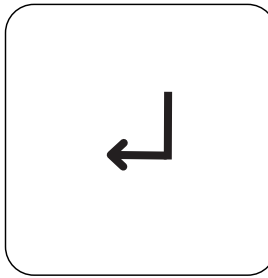
Put **3 mL sample** in the sample vial.



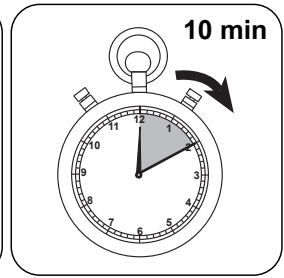
Close vial(s).



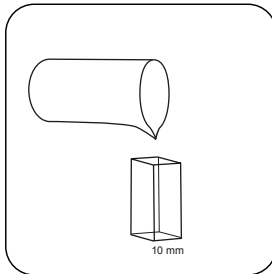
Mix the contents by shaking.



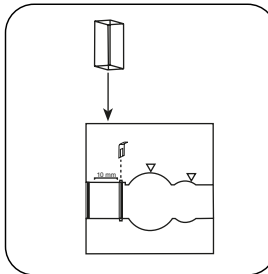
Press the **ENTER** button.



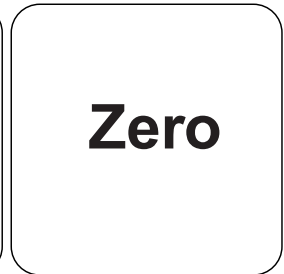
Wait for **10 minute(s) reaction time**.



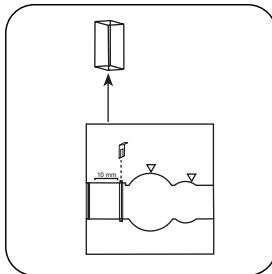
Fill **10 mm vial** with **zero sample**.



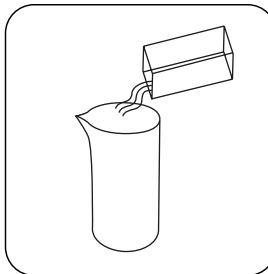
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



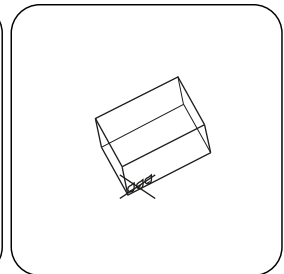
Press the **ZERO** button.



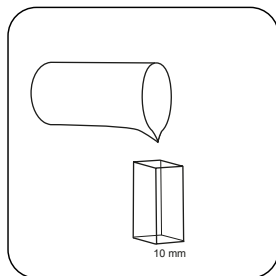
Remove **vial** from the sample chamber.



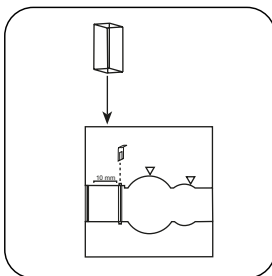
Empty vial.



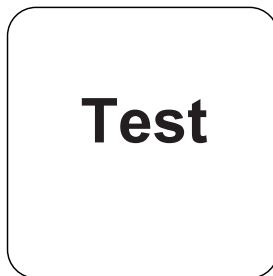
Dry the vial thoroughly.



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 Formaldehyde appears on the display.

## Chemical Method

H<sub>2</sub>SO<sub>4</sub> / Chromotropic acid

## Appendix

### Calibration function for 3rd-party photometers

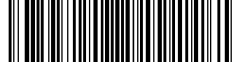
Conc. = a + b•Abs + c•Abs<sup>2</sup> + d•Abs<sup>3</sup> + e•Abs<sup>4</sup> + f•Abs<sup>5</sup>

□ 10 mm

|   |                            |
|---|----------------------------|
| a | 5.21412 • 10 <sup>-2</sup> |
| b | 3.77025 • 10 <sup>+0</sup> |
| c |                            |
| d |                            |
| e |                            |
| f |                            |

### Interferences

| Interference                                 | from / [mg/L] |
|--|---------------|
| Al   | 1000          |
| Ca <sup>2+</sup>                             | 1000          |
| Cd <sup>2+</sup>                             | 100           |
| CN <sup>-</sup>                              | 100           |
| CO <sub>3</sub> <sup>2-</sup>                | 100           |
| Cr <sup>3+</sup>                             | 1000          |
| Cr <sub>2</sub> O <sub>7</sub> <sup>2-</sup> | 1000          |
| Cu <sup>2+</sup>                             | 100           |
| F <sup>-</sup>                               | 100           |
| Fe <sup>3+</sup>                             | 10            |
| Hg <sup>2+</sup>                             | 1000          |
| Mg <sup>2+</sup>                             | 1000          |
| Mn <sup>2+</sup>                             | 1000          |
| NH <sub>4</sub> <sup>+</sup>                 | 1000          |
| Ni <sup>2+</sup>                             | 100           |
| NO <sub>2</sub> <sup>-</sup>                 | 1             |



| <b>Interference</b>              | <b>from / [mg/L]</b> |
|----------------------------------|----------------------|
| NO <sub>3</sub> <sup>-</sup>     | 10                   |
| Pb <sup>2+</sup>                 | 100                  |
| PO <sub>4</sub> <sup>3-</sup>    | 100                  |
| S <sup>2-</sup>                  | 10                   |
| SCN <sup>-</sup>                 | 100                  |
| SiO <sub>4</sub> <sup>4-</sup>   | 100                  |
| SO <sub>3</sub> <sup>2-</sup>    | 100                  |
| Zn <sup>2+</sup>                 | 1000                 |
| EDTA                             | 1000                 |
| H <sub>2</sub> N-NH <sub>2</sub> | 100                  |
| Surfactants                      | 100                  |
| H <sub>2</sub> O <sub>2</sub>    | 10                   |
| NaAc                             | 0.05                 |
| NaCl                             | 0.25                 |
| NaNO <sub>3</sub>                | 0.005                |
| Na <sub>2</sub> SO <sub>4</sub>  | 0.5                  |

### **Bibliography**

Georgiou P.E., Ho C.K., Can. J. Chem. 67, 871 (1989)

<sup>4)</sup> Spectroquant® is a Merck KGaA Trademark