# Zinc

DOC316.53.01549

## Zincon Method

**Method 10313**

**0.10 to 6.00 mg/L as Zn**

**Chemkey® Reagents**

**Scope and application:** For drinking water.

## Test preparation

### Before starting

| |
|---|
| Make sure that the sample is colorless and the turbidity value is less than 20 NTU. |
| Use a new Chemkey for each measurement. |
| Do not touch the Chemkey with hands. |
| Do not move the Chemkey after it is installed in the meter. |
| The display shows a progress bar with the time that remains until the measurement is completed. Different parameters have different reaction times. |
| The meter automatically identifies the type of Chemkey(s) that is installed. |
| Refer to the meter documentation for additional information. |
| The Chemkeys are articles and have no MSDS/SDS. |
| Dispose of reacted solutions according to local, state and federal regulations. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information. |

### Items to collect

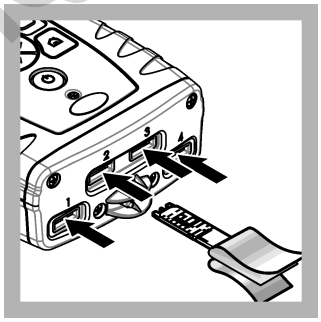
| Description | Quantity |
|---|---|
| Zinc Chemkey Reagents | 1 |

Refer to Consumables and replacement items on page 3 for order information.

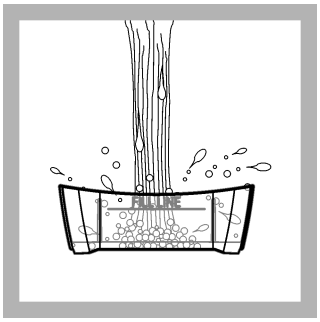
### Test procedure



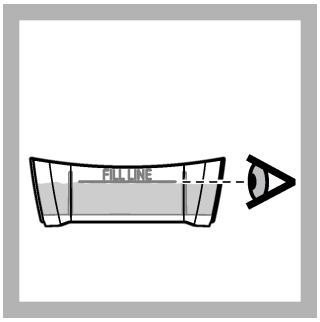
**1.** Peel back the packaging to show the end of the Chemkey. Do not touch the Chemkey with hands.



**2.** Put the Chemkey quickly in one movement into any slot. Carefully remove the packaging from the Chemkey.

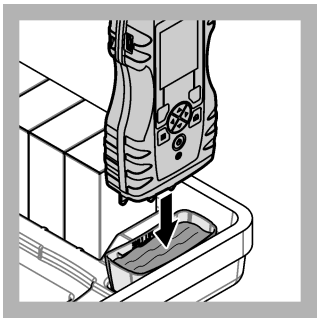



**3.** Rinse the sample cup with the sample.

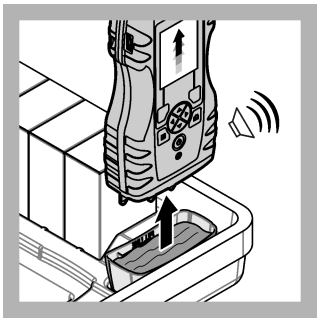



**4.** Fill the sample cup to the fill-line with sample.

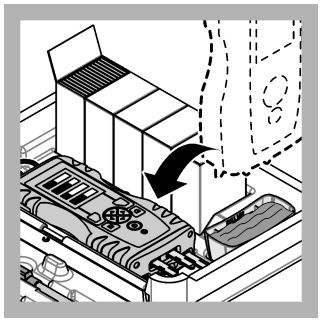
DOMINIQUE DUTSCHER SAS



**5.** Put the meter into the sample cup.



**6.** Wait for the sound alert and/or the meter removal animation (within 1 to 2 seconds), then immediately remove the meter from the sample cup.



**7.** Put the meter back into the case. Wait for the measurement to complete.

## Interferences

The substances that are shown in Table 1 interfere in the zinc determination.

**Table 1 Interfering substances**

| Interfering substance | Interference level |
|---|---|
| Iron ($Fe^{2+}$) | Positive interference of 0.10 mg/L Zn with approximately 0.30 mg/L of dissolved Fe. |
| Copper ($Cu^{2+}$) | Positive interference of 0.10 mg/L Zn with approximately 1.3 mg/L of dissolved Cu.<br>Positive interference of 0.16 mg/L Zn with approximately 2.0 mg/L of dissolved Cu. |

The substances that are shown in Table 2 do not interfere in the zinc determination at or below the given concentration.

**Table 2 Non-interfering substances**

| Substance | Maximum level tested | Substance | Maximum level tested |
|---|---|---|---|
| Alkalinity (as $CaCO_3$) | 1000 mg/L | Manganese ($Mn^{2+}$) | 0.2 mg/L |
| Aluminum ($Al^{3+}$) | 0.5 mg/L | Monochloramine (as $Cl_2$) | 5.0 mg/L |
| Calcium (as $CaCO_3$) | 1000 mg/L | Nitrate ($NO_3^-$–N) | 50 mg/L |
| Chloride ($Cl^-$) | 1200 mg/L | Phosphate (as $PO_4^{3-}$) | 4.0 mg/L |
| Fluoride ($F^-$) | 4.0 mg/L | Sodium (as $Na^+$) | 500 mg/L |
| Free Chlorine (as $Cl_2$) | 5.0 mg/L | Sulfate ($SO_4^{2-}$) | 1000 mg/L |
| Magnesium (as $CaCO_3$) | 250 mg/L | | |

## Accuracy check

### Standard solution method

Use the standard solution method to validate the test procedure, the reagents and the instrument.

Items to collect:

- 100-mg/L zinc standard solution
- 1-L volumetric flask, Class A
- 10-mL volumetric pipet, Class A and pipet filler safety bulb
- Deionized water

DOMINIQUE DUTSCHER SAS

1. Prepare a 1.00-mg/L zinc standard solution as follows:
   a. Use a pipet to add 10.00 mL of 100-mg/L zinc standard solution into the volumetric flask.
   b. Dilute to the mark with deionized water. Mix well. Prepare this solution daily.
2. Use the test procedure to measure the concentration of the prepared standard solution.
3. Compare the expected result to the actual result.

   ***Note:*** *The factory calibration can be adjusted slightly with the standard adjust option so that the instrument shows the expected value of the standard solution. The adjusted calibration is then used for all test results. This adjustment can increase the test accuracy when there are small variations in the reagents or instruments.*

## Method performance

The method performance data that follows was derived from laboratory tests during ideal test conditions. Users can get different results under different test conditions.

| Standard | Precision (95% confidence interval) | Sensitivity<br>Concentration change per 0.010 Abs change |
|---|---|---|
| 1.00 mg/L Zn | 0.96 to 1.04 mg/L Zn | 0.06 mg/L Zn |

## Summary of method

The zinc reacts with the 2-carboxy-2'-hydroxy-5'-sulfoformazyl benzene (zincon) indicator to form a blue-colored species. Other metals in the sample are complexed with chelators. The intensity of the blue color is in proportion to the quantity of zinc in the sample.

## Consumables and replacement items

| Description | Quantity/Test | Unit | Item no. |
|---|---|---|---|
| Zinc Chemkey® Reagents | 1 | 25/pkg | 9879000 |
| Sample cup | 1 | each | 9418100 |

### Recommended standards

| Description | Unit | Item no. |
|---|---|---|
| Water, deionized | 4 L | 27256 |
| Zinc Standard Solution, 100 mg/L | 100 mL | 237842 |

DOMINIQUE DUTSCHER SAS

DOMINIQUE DUTSCHER SAS

**FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:**
In the U.S.A. – **Call toll-free 800-227-4224**
Outside the U.S.A. – **Contact the HACH office or distributor serving you.**
On the Worldwide Web – **www.hach.com**; E-mail – **techhelp@hach.com**

**HACH** COMPANY
WORLD HEADQUARTERS
Telephone: (970) 669-3050
FAX: (970) 669-2932

© Hach Company/Hach Lange GmbH, 2022, 2023. All rights reserved.

10/2023, Edition 2