

## CW2060 Colorimeter for Copper

### ● Operation



Switch the unit on using the ON/OFF switch

**Cu**

The display shows the following:

Fill a clean vial with the water sample up to the 10 ml mark, close using the vial lid, and place in the sample chamber with the ∇ vial marking aligned with the Δ housing marking.



Press the ZERO/TEST key.

METHOD

The method symbol flashes for approx. 3 seconds.

**0.0.0**

The display shows the following:

After zero calibration is completed, remove the vial from the sample chamber.

The characteristic coloration starts to appear after the addition of the reagent tablet(s).

Close the vial again and place in the sample chamber with the ∇ and Δ symbols aligned.



Press the ZERO/TEST key.

METHOD

The method symbol flashes for approx. 3 seconds.

**RESULT**

The result appears in the display.

Repeating the analysis:  
press the ZERO/TEST key once again.

New zero calibration:

press the MODE key until the desired method symbol appears in the display again.

### ● User messages

**EOI**

Light absorption too great. Reason - e.g. soiled lens.

**+Err**

Measuring range exceeded or excessive turbidity.

**-Err**

Result outside bottom measuring range limit.

**LO BAT**

Replace 9 V battery immediately; no further analysis possible.

### ● Technical data

Optics:	LED:λ = 528 nm (filter)
Battery:	9 V block battery (life = approx. 600 tests)
Auto-OFF:	auto unit switch-off approx. 5 minutes after a key was last pressed
Ambient conditions:	5-40°C 30-90% rel. humidity (non-condensing)
CE:	DIN EN 55 022, 61 000-4-2, 61 000-4-8, 50 082-2, 50 081-1, DIN V ENV 50 140, 50 204

### ● Copper

#### (a) free copper

**0.0.0**

Perform zero calibration (see "Operation").  
Add one COPPER No. 1 tablet straight from the foil to the 10 ml water sample, and crush using a clean stirring rod. Allow to dissolve completely, close the vial, and position with ∇ and Δ alignment.



Press the ZERO/TEST key.

**Cu**

The method symbol flashes for approx. 3 seconds.

**RESULT**

The result is shown in the display in mg/l free copper.

#### (b) total copper

Add one COPPER No. 2 direct from the foil to the already coloured sample immediately after measurement, and crush using a clean stirring rod. Allow to dissolve completely, close the vial, and position with ∇ and Δ alignment.



Press the ZERO/TEST key.

**Cu**

The method symbol flashes for approx. 3 seconds.

**RESULT**

The result is shown in the display in mg/l total copper.

#### (c) combined copper

combined copper = total copper - free copper

Tolerance : 0,05-1,00 mg/l: ± 0,05 mg/l

1,00-5,00 mg/l: ± 0,10 mg/l

### ● Method notes

Observe application options, analysis regulations and matrix effects of methods. Reagent tablets are designed for use in chemical analysis only and should be kept well out of the reach of children.

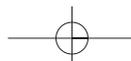
If necessary, request safety data sheets.

Ensure proper disposal of reagent solutions.

### ● Troubleshooting: Guidelines for photometric measurements

1. Thoroughly clean vials, lid and stirring rod after each analysis in order to prevent carry-over errors. Even minute reagent residues lead to incorrect measurements. Use the supplied brush for cleaning.
2. Ensure that the outer walls of the vials are dry and clean before performing the analysis. Fingerprints or water droplets on the light entry surfaces of the vials lead to incorrect measurements.
3. "Zero calibration" and "Test" must be performed using the same vial, as different vials can possess slightly different tolerances.
4. For "Zero calibration" and "Test", ensure that the vial is always positioned in the sample chamber in such a way that the graduation with the white triangle points toward the marking on the housing.
5. Always perform "Zero calibration" and "Test" with closed vial lid.
6. Bubbles on the inside walls of the vial lead to incorrect measurements. To prevent this, close the vial using the vial lid and remove the bubbles by swirling the vial before performing the test.
7. You must prevent water from penetrating into the sample chamber. The entry of water into the housing of the photometer can destroy electronic components and lead to corrosion damage.
8. Soiling of the lens (LED and photosensor) in the sample chamber leads to incorrect measurements. Check - and if necessary clean - the light entry surfaces of the sample chamber at regular intervals. Clean using a moist cloth and cotton buds.
9. Always add the reagent tablets to the water sample straight from the foil without touching them with your fingers.
10. Major temperature differentials between the photometer and the environment can lead to incorrect measurements - e.g. due to the formation of condensation water in the area of the lens or on the vial.
11. To avoid errors caused by stray-light do not use the instrument in bright sunlight.

- Replacement Reagents  
Copper No 1 tablet pk 100  
Ref: TT/51.35.50  
Copper No 2 tablet pk 100  
Ref: TT/51.35.60



● Calibration mode

**Mode** Press MODE key and hold depressed.

 Switch unit on using ON/OFF key. Release MODE key after approx. 1 second.

**CAL** The following messages appear in the display in alternating mode:  
**Cu**

**Zero Test** Perform zero calibration as described. Press the ZERO/TEST key.

**METHOD** The method symbol flashes for approx. 3 seconds.

**0.0.0** The following messages appear in the display in alternating mode:  
**CAL**

**Zero Test** Place the standard to be used in the sample chamber with  $\nabla$  and  $\Delta$  alignment. Press the ZERO/TEST key.

**METHOD** The method symbol flashes for approx. 3 seconds.

**RESULT** The result is shown in alternating mode with CAL.  
**CAL**

If the result corresponds to the value of the standard used (within the allowed tolerance), exit calibration mode by pressing the ON/OFF key.

**Mode** Pressing the MODE key once increases the displayed result by 1 digit.

**Zero Test** Pressing the ZERO/TEST key once decreases the displayed result by 1 digit.

**CAL** Continue pressing the keys until the displayed result corresponds to the value of the standard used.  
**RESULT + x**

 If you press the ON/OFF key, the new correction factor is calculated and stored on the user calibration level.

**:** **:** Confirmation of calibration (3 seconds).

● Note

**CAL** Factory calibration active.

**cAL** Calibration has been effected by the user.

● Recommended calibration values

Copper: between 0,5 and 1,5 mg/l

- User calibration : cAL
- Factory calibration : CAL

The unit can be reset to delivery condition (factory calibration) as follows:

**Mode** **Zero Test** Press MODE and ZERO/TEST together and hold depressed.

 Switch the unit on using the ON/OFF key. Release MODE and ZERO/TEST keys after approx. 1 second.

The following messages appear in the display in alternating mode:

**SEL** The unit is in delivery condition.  
**CAL** (SEL stands for Select)

or:

**SEL** The unit operates with a calibration performed by the user. (If the user calibration is to be retained, switch the unit off using the ON/OFF key.)  
**cAL**

**Mode** Factory calibration is activated by pressing the MODE key. The following messages appear in alternating mode in the display:

**SEL**  
**CAL**

 Switch the unit off using the ON/OFF key.

● User notes

- E 10** Calibration factor "out of range"
- E 70** Factory calibration not OK / deleted
- E 71** User calibration not OK / deleted



# Camlab Water CW2060 Copper Colorimeter

Reference CW/20.72.00



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