

# GASTEC Instructions for No.284 Copper Detector Tube

## FOR SAFE OPERATION :

Carefully read this manual before use.

**⚠ CAUTION :** If you do not observe the following precautions, you may suffer injuries or damage the product.

1. When breaking the tube ends, keep away from eyes.
2. Do not touch the broken glass tubes, broken pieces and reagent with bare hand(s).

**△ NOTES :** For maintaining performance and reliability of the test results, observe the following.

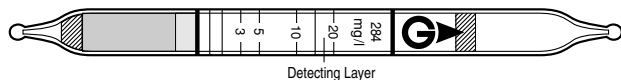
1. Use this tube within the temperature range of 0 - 35°C (32 - 95°F) in water.
2. Use this tube between pH values of 4.0 to 6.0.
3. This tube may be interfered with by the coexisting substances. Please refer to the table "INTERFERENCES" below.
4. The shelf life and storage condition of the tube are marked on the label of the tube box.
5. Place the higher end plug packing of the tubes above the water surface.
6. If tubes are kept more than 30 minutes in the water, the printed scale of the tube will peel off. Read the concentration immediately after the sampling is completed.

## APPLICATION OF THE TUBE :

Use this tube for the detecting Copper Ion in the waste water.

## SPECIFICATION :

(Because of Gastec's commitment to continued improvement, specifications are subject to change without notice.)



Measuring Range	(1) - 20 mg/L
Sampling Time	5 minutes
Detecting Limit	0.5 mg/L
Colour Change	White → Orange
Reaction Principle	Cu <sup>2+</sup> + Reduction Agent → Cu <sup>+</sup> Cu <sup>+</sup> + Bathocuproine → Complex Compound

**Coefficient of Variation : 15% (for 1 to 5 mg/L), 10% (for 5 to 20 mg/L)**

**\*\* Shelf Life : Please refer to the validity date printed on the tube box.**

**\*\* Store the tubes in a dark and cool place.**

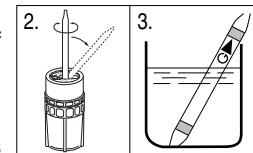
## EFFECT BY ENVIRONMENTAL CONDITON :

**Water Temperature :** No effect by the water temperature between 0 - 35°C (32-95°F).

**pH Value :** Use the tube in the pH value of 4.0 - 6.0.

## MEASUREMENT PROCEDURE :

1. Take sample water into an approximately 100 mL capacity of dry, clean beaker.
2. Break tips off a fresh detector tube by bending each tube end in the tube tip holder (optional).
3. Immerse the filled end of the tube into the sample water as illustrated. Capillary action occurs and the sample water instantly rises through the reagent. If the sample contains copper ion, the white reagent in the tube turns to orange colour.
4. When the sample water rises up to the upper end plug, remove the tube.
5. Read the concentration level at the interface where the stained reagent meets the unstained reagent.
6. If the stain exceeds the highest calibration mark (20 mg/L), dilute the sample with pure water and retest using a fresh tube. Obtain true concentration by multiplying the tube reading by the dilution ratio.



$$\text{True Concentration} = \frac{V1 + V2}{V1} \times \text{Tube Reading}$$

V1 : Volume of Sample water

V2 : Volume of dilution (pure water)

## △ NOTES :

More than 30 minutes laps after immersion of the tube will cause peeling off of the calibration marks. If tube does not start capillary action immediately after immersion into the water, we recommend the use of a rubber bulb to help start the action. Connect the squeezed rubber bulb at the upper end of glass tube. When the tube begins capillary action, remove the rubber bulb from the tube. Tube must be read immediately after the test. Do not immerse the tube into sample water past the upper end plug.

## INTERFERENCES :

Substance	Formula	Concentration	Interference	Interference substance only
Zinc	Zn <sup>2+</sup>	≥ 5 mg/L	+	No discolouration at 100mg/L
Aluminum	Al <sup>3+</sup>	≥ 50 mg/L	+	No discolouration at 100mg/L
Chromium (VI)	Cr <sup>6+</sup>	≤ 100 mg/L	No	Pale yellow at 100 mg/L or higher
Cobalt	Co <sup>2+</sup>	≤ 100 mg/L	No	No discolouration at 100mg/L
Cyanide Ion	CN <sup>-</sup>	≥ 0.2 mg/L	-	No discolouration at 100mg/L
Iron(III)	Fe <sup>3+</sup>	≤ 100 mg/L	No	No discolouration at 100mg/L
Nickel	Ni <sup>2+</sup>	≥ 70 mg/L	+	No discolouration at 100mg/L
Manganese	Mn <sup>2+</sup>	≥ 30 mg/L	+	No discolouration at 100mg/L

This table of interference substances primarily expresses the interference of each coexisting substance in the concentration range, that is equivalent to concentration of the target substance. Therefore, the test result may show positive results due to other substances not listed in the table. If more information is needed, please contact us or our distributors in your territory.

**INSTRUCTIONS ON DISPOSAL :**

The reagent of the tube does not use toxic substances. When disposing the tube regardless of whether it has been used or not, follow the rules and regulations of your local government.

**WARRANTY :**

If you have any questions regarding gas detection and the quality of the tubes, please feel free to contact your Gastec representatives.

Manufacturer : Gastec Corporation  
8-8-6 Fukayanaka, Ayase-City, Kanagawa 252-1195, Japan  
<https://www.gastec.co.jp/>  
Telephone +81-467-79-3910 Facsimile +81-467-79-3979

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