

GASTEC Instructions for No.211M Sulfide Ion Detector Tube

FOR SAFE OPERATION :

Read this instruction manual carefully prior to use.

⚠ CAUTION : If not observed, injuries to the operator or damage to the product may result.

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

△ NOTES : For maintaining performance and reliability of the test result

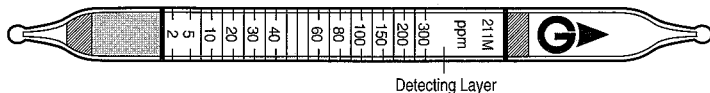
1. Use this tube under the temperature range of 0 - 40°C (32 - 104°F) in water.
2. Use this tube between pH values of 4.0 to 12.
3. This tube may be interfered by the coexisting substances. Refer to the "INTERFERENCES".
4. Shelf life and storage condition of the tube is marked on the label of the box of tube.
5. Place the lower end plug packing of the tubes below the water surface.
6. If tubes are kept more than 30 minutes in the water, the printed scale of the tube will be peeled off. Read the concentration immediately after the sampling is completed.

APPLICATION OF THE TUBE :

Use of this tube for the detection of Sulfide Ion in the Waste or other Waters.

SPECIFICATION :

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



Measuring Range	2 - 300 ppm
Sampling Time	2 minutes
Detecting Limit	0.5 ppm
Color Change	White → Brown
Reaction Formula	$S^{2-} + Pb(CH_3COO)_2 \rightarrow PbS$

**** Shelf Life :** Please refer to the Validity Date printed on the box of tube.

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

EFFECT BY ATMOSPHERIC CONDITION :

Temperature : No effect by the water temperature between 0 - 40°C (32 - 104°F).

pH Value : Use the tube in the pH value of 4.0 - 12.0.

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 breaker (tube tip stock No. 721 optional extra.)
3. Immerse the filled end of the tube into the sample water as illustrated below. Capillary action occurs and the sample water instantly rises through the reagent. If the sample contains sulfide ion, the white

reagent in the tube turns to brown color.

4. When the sample water rises up to the upper end plug, remove the tube from beaker.
5. Read concentration at the interface of the stained-to unstained reagent.
6. If the stain exceeds the highest calibration mark (1000 ppm), dilute the sample with pure water and retest using a fresh tube. Obtain true concentration by multiplying the tube reading by the dilution ratio.

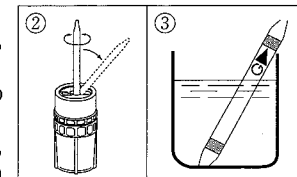


Fig.1 Tip Breaker

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

V1: Volume of Sample water

V2: Volume of diluent (pure water)

△ NOTES :

More than 30 minutes lapse after immersion of the tube will cause peeling off of the calibration marks. If tube did 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
Sulfite	SO_3^{2-}	≥ 200 ppm	Minus error
Chloride ion	Cl^-	≥ 15000 ppm	Plus error
Chromate ion	CrO_4^{2-}	≥ 50 ppm	Minus error
Carbonate ion	CO_3^{2-}	≥ 500 ppm	Plus error
Thiosulfate ion	$S_2O_3^{2-}$	≥ 100 ppm	Plus error

DISPOSAL INSTRUCTION :

Reagent of the tubes use a small amount of lead. On disposing the tube regardless of used or unused, follow the rules and regulations of the local government.

WARRANTY :

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