KITAGAWA
KOMYO RIKAGAKU KOGYO

INSTRUCTION MANUAL
FREE-RESIDUAL CHLORINE DETECTOR TUBE

No.234SA

★ DO NOT DISCARD THIS INSTRUCTION MANUAL UNTIL ALL THE TUBES IN THIS BOX ARE USED UP.

1. PERFORMANCE:

Measuring Range and Sampling Time	:	0.4 - 5 ppm Approx 3 minutes
Colour Change	:	White → Purple
Detectable Limit	:	0.1 ppm
Operating temperature	:	0 - 40 ℃ (32-104°F)

⚠CAUTION
1. DETECTOR TUBE CONTAINS TOXIC REAGENTS.
2. DO NOT TOUCH THESE REAGENTS DIRECTLY ONCE TUBES ARE BROKEN.
3. KEEP THE TUBES OUT OF THE REACH OF CHILDREN.

NOTICE
1. DO NOT USE THIS TUBE OUTSIDE THE STATED OPERATING TEMPERATURE RANGE.
2. STORE TUBES IN A COOL AND DARK PLACE (0-25 ℃/32-77°F), AND USE BEFORE EXPIRATION DATE PRINTED ON TOP OF THE BOX.
3. PRIOR TO USE, READ CAREFULLY **ITEM 7. USER RESPONSIBILITY.**
4. READ THE CONCENTRATION IMMEDIATELY AFTER MEASUREMENT.

2. SAMPLING AND MEASUREMENT:

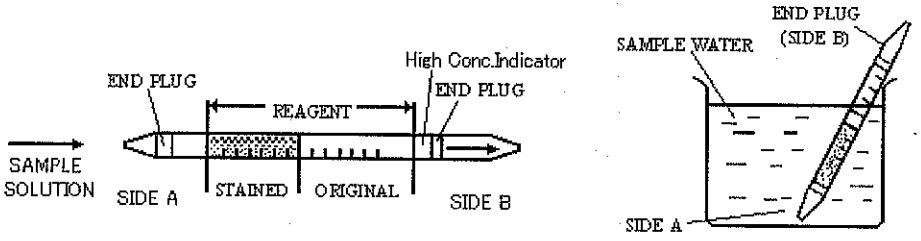

Fig.1

① Break both ends of the detector tube.

⚠CAUTION SAFETY GLASSES AND GLOVES SHOULD BE WORN TO PREVENT INJURY FROM SPLINTERING GLASS.

② Immerse the end of the tube with side A into the prepared sample solution. Capillary action will occur immediately and the sample will rise through the reagent. The arrow mark (→) shows the flow of solution. Free-residual Chlorine in the sample will make a white stain from the side A.
③ When the sample rises up to the top end plug (side B), remove the tube from the sample solution.
④ Read the scale at the maximum point of the stained layer.
⑤ In case that concentration of sample solution is supposed to be above 5 ppm (over the full scale), dilute the sample solution accurately with distilled water. Then, measure the sample solution in accordance with the above procedure and multiply the reading value by the dilution ratio.

SPECIAL NOTE:
I. When the capillary action does not occur, shake the detector tube several times in the sample solution.
II. This tube is for measuring Free-residual Chlorine, not for Combined-residual Chlorine.
III. If the high concentration indicator (pink reagent) changes to white, the concentration of Free-residual Chlorine becomes too high. At this high concentration, dilute the sample solution with pure water and carry out the aforesaid procedure "2. SAMPLING AND MEASUREMENT". Then, multiply the reading value by the dilution ratio.
IV. This tube is not suitable for measuring sea water or sample solution which includes sea water. Because, it will be affected by Chloride ion.
V. When the top of the stained layer is made obliquely, read the concentration layer. The total stain length should be read, even if the stained layer gets multi-colour discolourations.

3. CORRECTION FOR AMBIENT CONDITIONS:
Temperature; No temperature correction is necessary.

4. INTERFERENCE:
The discolouration will not be affected by Chlorine ion only but the coexistence of more than 200 ppm with Free-residual Chlorine will give lower reading. Calcium ion or Copper ion will not affect the accuracy of reading values. Iron ion will produce a similar stain and the coexistence of more than 20 ppm with Free-residual Chlorine will give higher reading. PH value within 2-10 will not affect the accuracy of reading values.

5. CHEMICAL REACTION IN THE DETECTOR TUBE:
3,3-Dimethylnaphthidin + Free-residual chlorine → Nitroso compounds

6. DISPOSAL OF TUBE:
USED TUBES SHOULD BE DISPOSED CAREFULLY ACCORDING TO RELEVANT REGULATIONS, IF ANY.

7. USER RESPONSIBILITY:
It is the sole responsibility of the user of this equipment to ensure that detector tubes are not used which are either beyond their expiration date or have a colour change different to that stated in the Performance specifications.
The Manufacturer and Manufacturer's Distributors shall not be otherwise liable for any incorrect measurement or any damages, whether damages result from negligence or otherwise.

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