

- ★ READ THIS INSTRUCTION MANUAL PRIOR TO USING THIS PRODUCT.
- ★ DO NOT DISCARD CAREFULLY THIS INSTRUCTION MANUAL UNTIL ALL THE TUBES IN THIS BOX ARE USED UP.

### 1. PERFORMANCE:

Measuring Range	: 0.4 - 5 ppm
Sampling Volume	: over 5 mL
Sampling Time	: Approx. 3 minutes
Colour Change	: Pale pink → Purple
Detectable Limit	: 0.1 ppm
Operating Temperature	: 5 - 40 °C (41-104°F) (No correction is necessary.)
Operating pH	: 2 - 10 (No correction is necessary.)
(Sample solution)	

- ※ The original colour (Pale pink) of reagent in the tube may be white depending on manufacturing lot, but accuracy is not affected.

#### ⚠ CAUTION

1. THE DETECTOR TUBE CONTAINS CHEMICAL REAGENTS.
2. DO NOT TOUCH THESE REAGENTS DIRECTLY ONCE TUBES WERE 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 °C/32-77°F), AND USE BEFORE EXPIRATION DATE PRINTED ON THE TOP OF THE BOX.
3. PRIOR TO USE, READ **ITEM 7. USER RESPONSIBILITY** CAREFULLY.
4. READ THE CONCENTRATION IMMEDIATELY AFTER DRAWING THE SAMPLE.

### 2. SAMPLING AND MEASUREMENT:

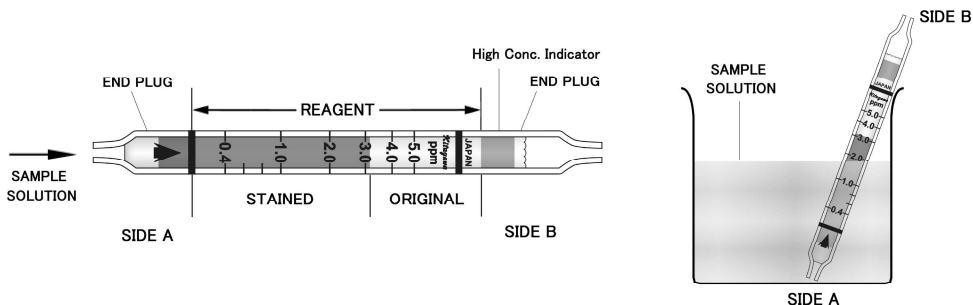


Fig.1

- ① Break both ends of the detector tube with attached ampule cutter.

**⚠ 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 sample solution to draw it up by capillary action as shown in Fig.1. (Arrow mark shall point to the surface of the sample solution.)
- ③ When the sample rises up to the end plug (SIDE B), remove the tube from the sample solution.
- ④ Read the scale at the maximum point of the stained layer.
- ⑤ When the concentration of sample solution is over the 5 ppm (full scale), dilute the sample solution accurately (by some ratio) with distilled or purified water and measure the sample solution and multiply reading value by the dilution ratio.

**SPECIAL NOTE:**

- I. The scale is calibrated at 20 °C (68°F), about pH 7. Readings obtained in other circumstances should be corrected. **(REFER TO ITEM 3. CORRECTION FOR OPERATING CONDITIONS).**
- II. When the capillary action does not occur, shake the detector tube several times in the sample solution.
- III. This tube is for measuring Free residual Chlorine, not for Combined residual Chlorine.
- IV. The high concentration of Free residual Chlorine returns the colour of the stained reagent to white by the bleach action. It is discernible from the colour of the high concentration indicator (pink reagent) changes to white. In that case, dilute the sample solution with pure water and measure again. Then, multiply the reading value by the dilution ratio.
- V. This tube is unsuitable for measuring sea water or sample solution which includes sea water because of interference from Chloride ion.
- VI. When the maximum point of the stained layer is unclear or oblique, read the scale at the centre between the longest and shortest points.

**3. CORRECTION FOR OPERATING CONDITIONS (Sample solution):**

Temperature; No correction is necessary.

pH; No correction is necessary.

**4. INTERFERENCE:**

Chlorine ion does not affect by itself but coexistence of more than 200 ppm gives lower readings. Calcium ion or Copper ion does not affect on the readings. Iron ion produces a similar stain and coexistence of more than 20 ppm gives higher readings.

**5. CHEMICAL REACTION IN THE DETECTOR TUBE:**

3,3'-Dimethylnaphthidine + Free residual chlorine → Nitroso compounds

**6. DISPOSAL OF TUBES:**

**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 the equipment is operated in strict accordance with this instructions and that detector tubes are not used which 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.**

※ Product specifications are subject to change without any prior notice.

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