

# INSTRUCTION MANUAL

No.126SG

## Kitagawa CARBON DIOXIDE DETECTOR TUBES

- ★ READ CAREFULLY THIS INSTRUCTION MANUAL AND THE INSTRUCTIONS OF THE ASPIRATING PUMP PRIOR TO USING THIS PRODUCT.
- ★ DON'T DISCARD THIS INSTRUCTION MANUAL UNTIL ALL THE TUBES IN THIS BOX ARE USED UP.

### 1. PERFORMANCE:

Measuring Range	0.02-0.7 %	0.02-0.7 %
and Sampling Time:	(1 pump stroke, 1.5 minutes)	(1/2 pump stroke, 1 minute)
Graduations on the detector tube apply to 1 pump stroke.		
Colour Change:	Pink → Yellow	
Detectable Limit:	0.001 % (1 pump stroke)	
Operating temperature:	0-40 °C (32-104°F) (No temperature correction is necessary.)	
Aspirating Pump:	Model AP-1, 400A	

#### CAUTION

1. DETECTOR TUBE CONTAINS REAGENTS (SODIUM HYDROXIDE.)
2. DON'T TOUCH THESE REAGENTS DIRECTLY ONCE TUBES ARE BROKEN.
3. KEEP THE TUBES OUT OF THE REACH OF CHILDREN.

#### NOTICE

1. THE USE OF ASPIRATING PUMPS OTHER THAN MODELS AP-1, 400A MAY CAUSE CONSIDERABLE ERROR IN INDICATION.
2. DON'T USE FLOW CONTROL ORIFICE WITH THIS TUBE. (FOR MORE DETAIL, REFER TO THE INSTRUCTIONS OF THE ASPIRATING PUMP.)
3. BEFORE TESTING, CHECK THE ASPIRATING PUMP FOR LEAKS (REF. ITEM 8). ANY PUMPS SHOWING SIGNS OF LEAKAGE SHOULD BE CORRECTED BEFORE USE.
4. DON'T USE THIS TUBE OUTSIDE THE STATED OPERATING TEMPERATURE RANGE.
5. STORE TUBES IN A COOL AND DARK PLACE (0-25 °C/32-77°F), AND USE BEFORE EXPIRATION DATE PRINTED ON TOP OF THE BOX.
6. PRIOR TO USE, READ CAREFULLY ITEM 9 "USER RESPONSIBILITY".

### 2. SAMPLING AND MEASUREMENT:

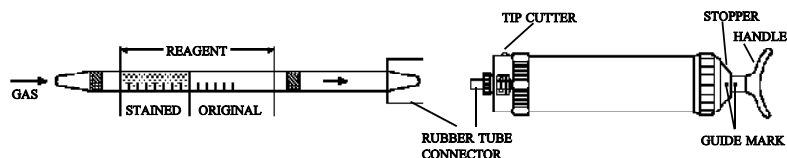


Fig.1

- ① Break both ends of detector tube.

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

- ② Insert the detector tube into aspirating pump securely as shown in Fig.1. (Arrow mark shall point to the pump.)
- ③ Align the guide marks on the shaft and stopper of the aspirating pump.
- ④ Pull pump handle to full stroke until it locks and wait for 1.5 minutes or until confirmation that sampling is completed (See descriptions of the flow indicator in the pump instructions).
- ⑤ On completion of sampling, read the scale at the top of the stained layer.
- ⑥ If the discolouration is over the scale, change the tube and pull 1/2 stroke.
  - 1) Insert the new tube to the pump inlet. Pull the handle 1/2 stroke (to 50 ml line), and it will be automatically locked. Leave it for 1 minute.
  - 2) Remove the detector tube from the pump and read the concentration.
  - 3) Then multiply the reading value by 2.

- SPECIAL NOTE:**
- I. The scale is calibrated at 20 °C (68°F) and 1013hPa. Readings obtained in other circumstances should be corrected (REF. ITEM 3).
  - II. When the top of the stained layer is unclear, read the scale at the centre between the longest and shortest points. The total stain length should be read, even if the stained layer gets multicolour discolouration.

### 3. CORRECTION FOR AMBIENT CONDITIONS:

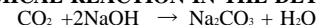
- ① Temperature; NO corrections are necessary.
- ② Humidity; No corrections are necessary.
- ③ Atmospheric Pressure;

$$\text{True concentration} = \frac{\text{Temperature corrected} \times \text{concentration}}{\text{Atmospheric pressure (in hPa)}} \times 1013$$

### 4. INTERFERENCES:

Hydrogen cyanide produces similar stains and coexistence of carbon dioxide gives higher readings. Under the threshold limit value of Hydrogen chloride, Chlorine, Hydrogen sulphide, Nitrogen dioxide, Sulphur dioxide, and Ammonia do not affect readings.

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



### 6. DISPOSAL OF TUBE:

**USED TUBES SHOULD BE DISCARDED CAREFULLY ACCORDING TO RELEVANT REGULATIONS, IF ANY.**

### 7. DANGEROUS PROPERTY OF CARBON DIOXIDE:

T.L.V.◆ : 5000ppm

◆ : Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 1999.

### 8. INSPECTION OF ASPIRATING PUMP:

Checking for leaks;

- ① Insert sealed, unbroken detector tube into the pump.
  - ② Align the guide marks on the shaft and stopper of the pump.
  - ③ Pull the handle to full stroke and wait for 3 minutes.
  - ④ Unlock the handle and allow it to return slowly into the pump with holding the cylinder and handle securely.
- CAUTION HANDLE WILL TEND TO SNAP BACK INTO THE PUMP QUICKLY.**
- ⑤ If the handle returns completely to the original position, the performance is satisfactory. Otherwise, refer to maintenance procedure in the pump instructions to correct the fault.

### 9. USER RESPONSIBILITY:

It is the sole responsibility of the user of this equipment to ensure that the equipment is operated, maintained, and repaired in strict accordance with these instructions and the instructions provided with each Model AP-1, 400A aspirating pump, and 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 Distributor shall not be otherwise liable for any incorrect measurement or any damages, whether damages result from negligence or otherwise.