

# INSTRUCTION MANUAL

No.111SA

## Kitagawa ETHYL ACETATE DETECTOR TUBES

(METHYL ACETATE WITH CONVERSION CHART)

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

### 1. PERFORMANCE:

Gas to be measured:	Ethyl acetate	*)Methyl acetate
Measuring Range :	**0.1-5.0%	0.1-3.0%
Sampling Stroke :	1 pump stroke	1 pump stroke
Sampling Time :	1.5 minutes	1.5 minutes
*)Methyl acetate can be measured with conversion chart undermentioned.		
**)The graduations printed on the detector tube are based on 1 pump stroke of Ethyl acetate.		
Colour Change :	Orange → Brownish green	
Detectable Limit:	10ppm (Ethyl acetate, Methyl acetate)	
Operating temperature:	Ethyl acetate : 0-40°C (32-104°F) (Temperature correction is necessary.)	
	Methyl acetate: 0-40°C (32-104°F) (No temperature correction is necessary.)	
Aspirating Pump:	Model AP-1, 400A or AP-400	

#### -CAUTION

1. DETECTOR TUBE CONTAINS CORROSIVE REAGENTS (CHROMIUM OXIDE.).
2. DO NOT 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 OR AP-400 MAY CAUSE CONSIDERABLE ERROR IN INDICATION.
2. DO NOT 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. (REFER TO ITEM 9) ANY PUMPS SHOWING SIGNS OF LEAKAGE SHOULD BE CORRECTED BEFORE USE.
4. DO NOT 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 10 "USER RESPONSIBILITY".
7. READ THE CONCENTRATION IMMEDIATELY AFTER MEASUREMENT.

### 2. SAMPLING AND MEASUREMENT:

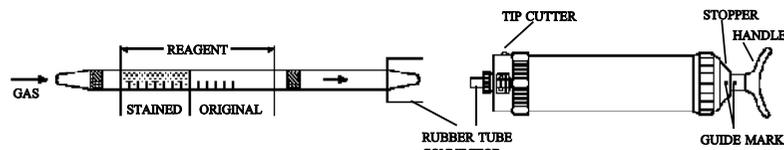


Fig.1

- 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 the pump handle at full stroke (100ml) until it locks and wait for 1.5 minutes as it is or until the sampling is confirmed as to be completed. (See descriptions of the flow indicator in the pump instruction manual.)

**NOTE:** If using Model AP-400, pull the pump handle at full stroke and lock it by 1/4 turn (90°), and then wait for 1.5 minutes as it is.

- ⑤ After the sampling is completed, read the scale at the top of the stained layer. True concentration of Ethyl acetate can be obtained after temperature correction.

- ⑥ In case of **Methyl acetate** measurement, convert the reading value by using the conversion chart undermentioned.

**SPECIAL NOTE:** I. The scale is calibrated at 20 °C (68°F) and 1013hPa. Readings obtained in other circumstances should be corrected with the following **ITEM 3**.

II. When the top of the stained layer is unclear or obliquely, read the scale at the centre between the longest and shortest points.

### 3. CORRECTION FOR AMBIENT CONDITIONS:

- ① Temperature; Correct the tube reading by following temperature correction table.
- ② Humidity; No corrections are necessary.

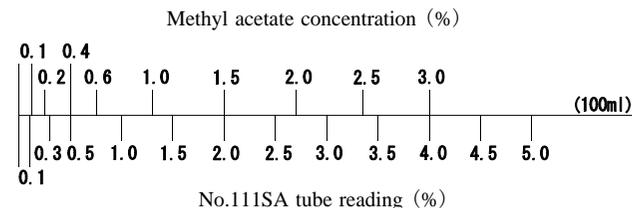
Tube Reading (%)	Corrected Concentration (%)				
	0 °C (32°F)	10 °C (50°F)	20 °C (68°F)	30 °C (86°F)	40 °C (104°F)
5.0	—	—	5.0	4.0	3.0
4.5	—	—	4.5	3.6	2.7
4.0	—	5.8	4.0	3.2	2.4
3.5	—	5.0	3.5	2.8	2.1
3.0	—	4.2	3.0	2.3	1.7
2.5	—	3.5	2.5	1.9	1.4
2.0	—	2.6	2.0	1.5	1.1
1.5	2.6	1.9	1.5	1.1	0.7
1.0	1.5	1.2	1.0	0.7	0.4
0.5	0.6	0.6	0.5	0.3	0.2
0.3	0.4	0.3	0.3	0.2	0.1
0.1	0.1	0.1	0.1	0.1	0.1

- ③ Atmospheric Pressure;

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

### 4. CONVERSION CHART:

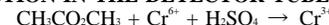
Methyl acetate



### 5. INTERFERENCES:

Coexistence of more than 3% of Acetylene or 0.2% of Propane changes the whole reagent to Brown. Coexistence of more than 50ppm of the other organic gases or vapours except Halogenated hydrocarbons produces similar stains and gives higher readings.

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



**7. DISPOSAL OF TUBE:**  
**USED TUBES SHOULD BE DISCARDED CAREFULLY ACCORDING TO RELEVANT REGULATIONS, IF ANY.**

**8. HAZARDOUS AND DANGEROUS PROPERTIES OF ETHYL ACETATE AND METHYL ACETATE:**

- T.L.V.◆: Ethyl acetate; 400ppm    Methyl acetate; 200ppm  
Explosive range in air: Ethyl acetate; 2.1-11.5%    Methyl acetate; 3.1-16%  
◆ Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 1999.

**9. 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 at full stroke (100ml) and wait for 3 minutes as it is. (If using Model AP-400, lock the handle by 1/4 turn (90°) after pulling it and wait for 3 minutes as it is.)
- 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.

**10. 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 or AP-400 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.**