KITAGAWA
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INSTRUCTION MANUAL
METHYL ALCOHOL DETECTOR TUBE
(1,4-DIOXANE WITH CONVERSION CHART)

No.119U

★ 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	: Methyl alcohol	1,4-Dioxane(*)
Measuring Range	: 20-1,000ppm(**)	20-500ppm
Sampling Time	: 1.5 minutes	1.5 minutes
Sampling Stroke	: 1 pump stroke	1 pump stroke

(*)1,4-Dioxane can be measured with conversion chart undermentioned.
(**)Graduations on the detector tube are based on 1 pump stroke of Methyl Alcohol.

Colour Change	: Yellow → Pale blue
Detectable Limit	: 5ppm (Methyl alcohol/1,4-Dioxane)
Operating temperature	: 0-40℃ (32-104°F) (Temperature correction is necessary.)
Aspirating Pump	: Model AP-20, AP-20S, 400B, AP-1, AP-1S or 400A

■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. USE ONLY WITH PUMP MODELS AP-20, AP-20S, 400B, AP-1, AP-1S OR 400A. OTHERWISE, CONSIDERABLE ERROR IN INDICATION MAY OCCUR.
2. BEFORE TESTING, CHECK THE ASPIRATING PUMP FOR LEAKS (**REFER TO ITEM 9. INSPECTION OF ASPIRATING PUMP**). ANY PUMPS SHOWING SIGNS OF LEAKAGE SHOULD BE CORRECTED BEFORE USE.
3. DO NOT USE THIS TUBE OUTSIDE THE STATED OPERATING TEMPERATURE RANGE.
4. STORE TUBES IN A COOL AND DARK PLACE (0-25℃/32-77°F), AND USE BEFORE EXPIRATION DATE PRINTED ON TOP OF THE BOX.
5. PRIOR TO USE, READ CAREFULLY **ITEM 10. USER RESPONSIBILITY**.
6. READ THE CONCENTRATION IMMEDIATELY AFTER MEASUREMENT.

2. SAMPLING AND MEASUREMENT:

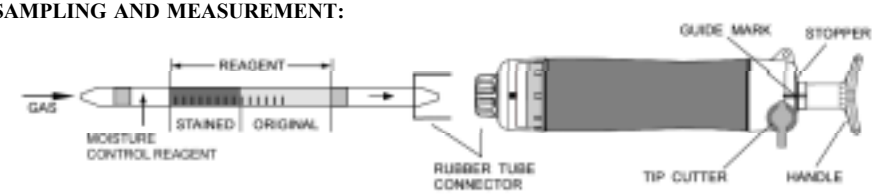


Fig.1

① Break both ends of the detector tube.

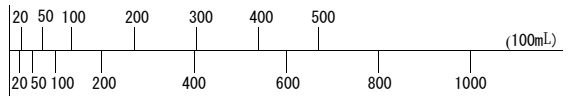
■CAUTION SAFETY GLASSES AND GLOVES SHOULD BE WORN TO PREVENT INJURY FROM SPLINTERING GLASS.

② 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 locked position and wait for 1.5 minutes or until the completion of sampling is confirmed with flow indicator of the pump. (See descriptions of the flow indicator in the instruction manual of the pump.)
⑤ On the completion of sampling, read the scale at the maximum point of the stained layer.

SPECIAL NOTE: Ⅰ. The scale is calibrated at 20℃ (68°F), 50 %R.H. and 1013hPa. Readings obtained in other circumstances should be corrected (**REFER TO ITEM 4. CORRECTION FOR AMBIENT CONDITIONS**).
Ⅱ. When the maximum point of the stained layer is unclear or obliquely, read the scale at the centre between the longest and shortest points.

3. CONVERSION CHART:

1,4-Dioxane



4. CORRECTION FOR AMBIENT CONDITIONS:

① Temperature; Correct the tube reading by following temperature correction table.

Temperature Correction Table for Methyl Alcohol

Tube Reading (ppm)	Corrected Concentration (ppm) 0℃ (32°F)	10℃ (50°F)	20℃ – 40℃ (68°F – 104°F)
1000	1200	1100	1000
800	960	880	800
600	720	660	600
400	480	440	400
200	240	220	200
100	120	110	100
50	60	55	50
20	24	22	20

Temperature Correction Table for 1,4-Dioxane

Tube Reading (ppm)	Corrected Concentration (ppm) 0℃ (32°F)	10℃ (50°F)	20℃ (68°F)	30℃ (86°F)	40℃ (104°F)
500	700	600	500	470	440
400	480	440	400	370	350
300	370	330	300	280	260
200	250	220	200	190	170
100	130	110	100	90	85
50	65	60	50	45	40
20	25	23	20	18	15

② Humidity; No correction is necessary.
③ Atmospheric Pressure;

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

5. INTERFERENCE:

Alcohols produce a similar stain and gives higher readings. Esters, Ketones or Aromatic hydrocarbons produce a pale brown stain and give higher readings.

6. CHEMICAL REACTION IN THE DETECTOR TUBE:

$$CH_3OH + Cr^{6+} + H_2SO_4 \rightarrow Cr^{3+}$$

7. DISPOSAL OF TUBE:

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

8. HAZARDOUS AND DANGEROUS PROPERTIES OF METHYL ALCOHOL AND 1,4-DIOXANE:

TLV-TWA ◆: Methyl alcohol; 200ppm 1,4-Dioxane; 20ppm
Explosive range in air: Methyl alcohol; 5.5-44% 1,4-Dioxane; 2.0-22%
◆ Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 2004.

9. INSPECTION OF ASPIRATING PUMP:

Checking for leaks;
① Insert a 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 1 minute.
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 instruction manual of the pump to correct the leakage.

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-20, AP-20S, 400B, AP-1, AP-1S or 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 Distributors shall not be otherwise liable for any incorrect measurement or any damages, whether damages result from negligence or otherwise.

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