KITAGAWA
KOMYO RIKAGAKU KOGYO

INSTRUCTION MANUAL
METHYL METHACRYLATE DETECTOR TUBE
ALLYL ALCOHOL

No.184S

★ READ THIS INSTRUCTION MANUAL AND THE INSTRUCTIONS OF THE ASPIRATING PUMP 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	: 10 - 160 ppm
and Pump Stroke	: 1 pump stroke
Sampling Time	: 1.5 minutes
Colour Change	: Yellow → Pale blue
Detectable Limit	: 2 ppm
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

By using conversion chart shown at **ITEM 4.CONVERSION CHART AND TEMPERATURE TABLE**, Allyl alcohol can be detected.

Gases to be Detected	Measuring Range	Number of pump stroke	Sampling Time
Allyl alcohol	20 - 500	1(100mL)	1.5 minutes
Operating Temperature	: 0 - 40 ℃ (32-104°F) (Temperature correction is necessary.)		

⚠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. 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 THE TOP OF THE BOX.
5. PRIOR TO USE, READ **ITEM 10. USER RESPONSIBILITY** CAREFULLY.
6. READ THE CONCENTRATION IMMEDIATELY AFTER DRAWING THE SAMPLE.

2. SAMPLING AND MEASUREMENT:

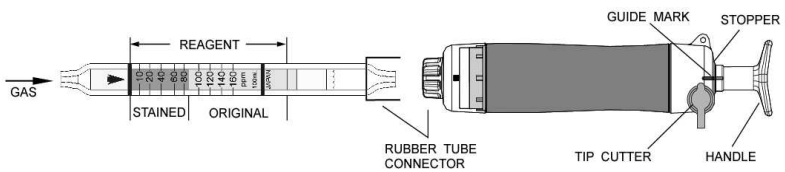


Fig.1

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 the 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 a full stroke until it locks and wait for 1.5 minutes or until the completion of sampling is confirmed with the flow indicator of the pump. (See descriptions about the flow indicator in the instruction manual of the pump.)
⑤ On 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 3. 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. CORRECTION FOR AMBIENT CONDITIONS:

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

② Humidity; No correction is necessary.

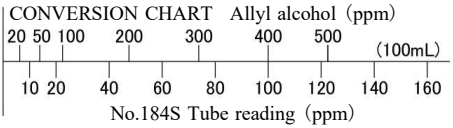
Temperature Correction Table					
Tube Readings (ppm)	Corrected Concentration (ppm)				
	0 ℃ (32°F)	10 ℃ (50°F)	20 ℃ (68°F)	30 ℃ (86°F)	40 ℃ (104°F)
160	190	175	160	150	140
140	165	155	140	130	125
120	140	130	120	110	105
100	120	110	100	95	90
80	95	90	80	75	70
60	70	65	60	55	50
40	47	44	40	37	35
20	24	22	20	19	17
10	12	11	10	9	9

③ Atmospheric Pressure;

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

4. CONVERSION CHART AND TEMPERATURE CORRECTION TABLE FOR ALLYL ALCOHOL

ALLYL ALCOHOL



Temperature Correction Table					
Tube Readings (ppm)	Corrected Concentration (ppm)				
	0 ℃ (32°F)	10 ℃ (50°F)	20 ℃ (68°F)	30 ℃ (86°F)	40 ℃ (104°F)
500	-	600	500	430	380
400	-	480	400	350	300
300	480	360	300	260	230
200	320	240	200	170	150
100	240	120	100	90	80
50	80	60	50	43	38
20	32	24	20	17	15

5. INTERFERENCE:

Alcohols or Ethers produce a similar stain and the coexistence of them give higher readings. Esters, Ketones, Aliphatic hydrocarbons (more than C_3), Aromatic hydrocarbons or Halogenated hydrocarbons change the colour of the whole reagent to pale brown and coexistence of them give higher readings.

6. CHEMICAL REACTION IN THE DETECTOR TUBE:

$H_2C=C(CH_3)CO_2CH_3 + Cr^{6+} + H_2SO_4 \rightarrow Cr^{3+}$

$H_2C=CHCH_2OH + Cr^{6+} + H_2SO_4 \rightarrow Cr^{3+}$

7. DISPOSAL OF TUBES:

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

8. HAZARDOUS AND DANGEROUS PROPERTIES OF :

Methyl methacrylate TLV-TWA ◆ : 50 ppm Explosion range in air: 1.7 - 12.5 %

Allyl alcohol TLV-TWA ◆ : 0.5 ppm Explosion range in air: 2.5 - 18.0 %

◆ Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 2012.

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 to a full stroke and wait for 1 minute.

④ Unlock the handle and allow it to return slowly into the pump by 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 procedures shown 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 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.

IME1840/2

Printed in Japan