

- ★ THIS DETECTOR TUBE IS DESIGNED AS THE USE WITH EXCLUSIVELY USE MODEL ASP-1200 AIR SAMPLING PUMP OR MODEL S-20 SERIES AIR SAMPLERS.
- ★ READ THIS INSTRUCTION MANUAL AND THE INSTRUCTIONS OF THE SAMPLING 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:

Gas to be measured	: p-Dichlorobenzene	1,4-Dichloro-2-butene (*)
Measuring Range	: 0.01-0.4 ppm (**)	0.05-0.6 ppm
Sampling Volume	: 3 L	
Sampling Time	: 200 mL/min × 15min	
(*)1,4-Dichloro-2-butene can be measured with conversion chart undermentioned.		
(**)Graduations on the detector tube are based on p-Dichlorobenzene.		
Colour Change	: Orange → Reddish Purple	
Detectable Limit	: 0.002 ppm (p-Dichlorobenzene)	
Operating Temperature	: 10-35 °C (50-95°F) Temperature correction is necessary.	
Operating Humidity	: 0 - 90%R.H. (No correction is necessary.)	
Sampling Pump	: Air sampling pump (ASP-1200) or Air sampler (S-20 series)	

⚠ CAUTION

1. THE DETECTOR TUBE AND PRETREAT TUBE CONTAIN 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 THE AIR SAMPLER AT THE 200mL/min IN FLOW RATE WHEN THE 730 p-DICHLOROBENZENE DETECTOR TUBE IS CONNECTED.
2. AS THE SAMPLING AND MEASUREMENT PROCEEDED OF EACH SAMPLER IS DIFFERENT, READ THE INSTRUCTION MANUAL OF THE SAMPLER CAREFULLY BEFORE USE AND THEN MAKE A MEASUREMENT.
3. DO NOT USE THIS TUBE OUTSIDE THE STATED OPERATING TEMPERATURE RANGE.
4. 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.
5. PRIOR TO USE, READ CAREFULLY **ITEM 10. USER RESPONSIBILITY**.
6. READ THE CONCENTRATION IMMEDIATELY AFTER MEASUREMENT.

2. SAMPLING AND MEASUREMENT:

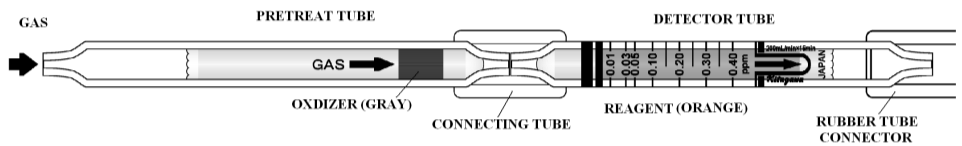


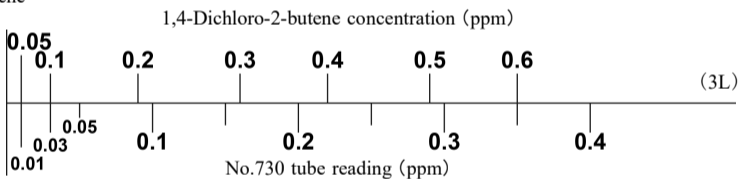
Fig.1

- ① Break both ends of the detector tube and the pretreat tube with attached ampoule cutter.
- ⚠ CAUTION SAFETY GLASSES AND GLOVES SHOULD BE WORN TO PREVENT INJURY FROM SPLINTERING GLASS.**
- ② Connect each end of the detector tube and pretreat tube with connecting tube as shown in Fig.1.
- ③ Connect the detector tube and the pretreat tube with the rubber tube connector of the Model ASP-1200 air sampling pump or the Model S-20 series air sampler as shown in Fig.1, and fix it into the detector tube holder. (If connecting direction of the detector tube and the pretreat tube is not correct, correct reading value cannot be obtained.)
- ④ Turn ON power of the air sampler.
- ⑤ In accordance with the instruction manual of each air sampler, preset the TIMER (Hours) at 15 minutes and adjust the sampling amount at 200mL/min.
- ⑥ After completion of sampling (15 minutes), remove the detector tube from the tube holder and read the scale at the maximum point of the stained layer.

- SPECIAL NOTE:**
- I. The scale is calibrated at 20 °C (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 oblique, read the scale at the centre between the longest and shortest points.

3. CONVERSION CHART:

1,4-Dichloro-2-butene



The conversion chart are based on the cis-1,4-Dichloro-2-butene.

4. CORRECTION FOR AMBIENT CONDITIONS:

- ① Temperature; The scale is calibrated based on the temperature of 20 °C (68°F). Readings obtained in other circumstances should be corrected with the following temperature correction table.

Temperature Correction Table for p-Dichlorobenzene

Temp.(°C)	0	1	2	3	4	5	6	7	8	9
10	2.13	1.95	1.78	1.63	1.50	1.38	1.28	1.19	1.11	1.05
20	1.00	0.95	0.92	0.88	0.84	0.81	0.78	0.75	0.73	0.72
30	0.70	0.69	0.68	0.68	0.67	0.66	—	—	—	—

Procedure of temperature correction: True concentration can be obtained by multiplying the readings of tubes by coefficient for temperature correction shown in the above. Therefore,

$$\text{True concentration (ppm)} = \text{Readings (ppm)} \times \text{Coefficient for temperature correction}$$

In case of temperature of 23 °C, the arrow pointed 0.88 which is found by proportional allotment of 20 °C and 3 °C in the table is the coefficient for temperature correction.

Procedure to get coefficient for temperature correction from the table.

Temp.(°C)	0	1	2	3	4	5
10	2.13	1.95	1.78	1.63	1.50	1.38
20	1.00	0.95	0.92	0.88	0.84	0.81
30	0.70	0.69	0.68	0.68	0.67	0.66

Temperature Correction Table for 1,4-Dichloro-2-butene

Temp.(°C)	0	1	2	3	4	5	6	7	8	9
10	1.32	1.29	1.25	1.22	1.18	1.15	1.12	1.10	1.06	1.03
20	1.00	0.98	0.96	0.93	0.91	0.89	0.87	0.85	0.84	0.82
30	0.81	0.79	0.78	0.77	0.76	0.75	—	—	—	—

- ② Humidity; No correction is necessary. (0 - 90%R.H.)
- ③ Atmospheric Pressure; True concentration = $\frac{\text{Temperature corrected concentration} \times 1013}{\text{Atmospheric pressure (in hPa)}}$

5. INTERFERENCE:

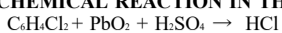
Trichloroethylene, Tetrachloroethylene, 1,2-Dichloroethylene, Vinyl chloride, 3,4-Dichloro-1-butene or Chloroprene produces similar stain and coexistence gives higher readings.

6. CONVERTING UNIT FROM "ppm" to " μ g/m³"

In case that conversion of concentration unit from "ppm" to " μ g/m³" is requested, the following equation is available.

$$\text{p-Dichlorobenzene : } \mu \text{ g/m}^3 = \text{ppm} \times 6115 \quad (\text{at } 20 \text{ }^\circ\text{C})$$

7. CHEMICAL REACTION IN THE DETECTOR TUBE:



8. DISPOSAL OF TUBES:

USED TUBES SHOULD BE DISPOSED CAREFULLY IN ACCORDANCE WITH RELEVANT REGULATIONS, IF ANY.

9. HAZARDOUS AND DANGEROUS PROPERTIES:

TLV-TWA ◆ : p-Dichlorobenzene ; 10 ppm 1,4-Dichloro-2-butene ; 0.005 ppm

Explosion range in air : p-Dichlorobenzene ; 1.7 - 16% 1,4-Dichloro-2-butene ; 2.5 - 14%

◆ Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 2020.

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 ASP-1200 air sampling pump or Model S-20 series air sampler, 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.

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