


**FORMALDEHYDE 710 DETECTOR TUBES**

- ★ THIS DETECTOR TUBE IS USED WITH THE EXCLUSIVE USE MODEL S-20(SERIES) AIR SAMPLER.
- ★ READ CAREFULLY THIS INSTRUCTION MANUAL AND THE INSTRUCTIONS OF THE SAMPLING 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 :	0.01 - 0.12 ppm 0.013- 0.15mg/m <sup>3</sup> (Printed scale)	0.04 - 0.48 ppm 0.05-0.61mg/m <sup>3</sup> (4 × Direct reading)	0.1 - 1.20 ppm 0.13-1.51mg/m <sup>3</sup> (10 × Direct reading)
Sampling Volume :	9 ℓ	3 ℓ	2 ℓ
Sampling Time :	300mℓ × 30min	300mℓ × 10min	200mℓ × 10min
Colour Change :	Yellowish Orange → Reddish Purple		
Detectable Limit:	0.002 ppm		
Operating temperature:	10 - 35°C (50-95° F) (Temperature corrections is necessary.)		
Operating humidity :	5 ~ 90 % RH		
Sampling Pump :	Model S-20 Series		

**CAUTION**

1. DETECTOR TUBE CONTAINS REAGENTS.
3. DON'T TOUCH THESE REAGENTS DIRECTLY ONCE TUBES ARE BROKEN.
4. KEEP THE TUBES OUT OF THE REACH OF CHILDREN

**NOTICE**

1. USE THE SAMPLING PUMPS WITH THE ABILITY OF 300 ml/min FLOW RATE POSSIBLE WHEN THE 710 DETECTOR TUBE CONNECTED.
2. DON'T USE THIS TUBE OUTSIDE THE STATED OPERATING TEMPERATURE RANGE.
3. STORE TUBES IN A COOL AND REFRIGERATED PLACE 0-10 °C/32-50°F), AND USE BEFORE EXPIRATION DATE PRINTED ON TOP OF THE BOX.
4. PRIOR TO USE, READ CAREFULLY ITEM 9 "USER RESPONSIBILITY".

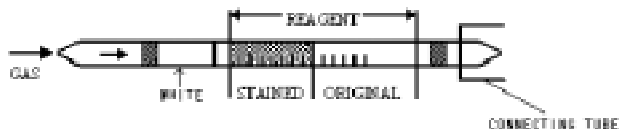
**2. SAMPLING AND MEASUREMENT:**

Fig.1

- ① Break both ends of detector tube with attached ampule cutter provided.

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

- ② Insert the detector tube into connecting tube of MODEL S-20 Air sampler, and fix it into the detector tube holder.
- ③ Turn ON power of Model S-20.
- ④ Preset TIMER at 30 minutes.
- ⑤ In accordance with Instruction manual of each air sampler, preset TIMER (Hours) at 30 minutes and adjust sampling amount at 300 ml/min.
- ⑥ After completion of sampling (30 minutes), remove detector tube and read the scale at the top of the stained layer.
- ⑦ In case of measuring at the temperature other than 20 °C (68°F) circumstance, obtain temperature correction coefficient from temperature correction table, and correct readings of detector tube.
- ⑧ If the discolouration is over the scale, repeat through ①~③ procedure once again.
- ⑨ After 10 minutes, turn the sampling pump off, and multiply the reading value corrected with the temperature correction table by 4.

**In the case of measurement for high concentration (0.10-1.20ppm)**

- ① Break both ends of detector tube and pre-treat tube with attached ampule cutter provided
- ② Insert the detector tube into connecting tube of MODEL S-20 Air sampler, and fix it into the detector tube holder.

- ③ Turn the sampling pump on the set the flow rate at 200 ml/min.
- ④ After 10 minutes, turn the sampling pump off, and multiply the reading value corrected with the temperature correction table by 10.

\* With regard to sampling and measuring procedure, it depends on each model of air sampler, therefore read instruction manual of each instrument carefully and make a measurement.

- SPECIAL NOTE:**
- I. When the maximum point of the stained layer is unclear, read the scale at the centre between the longest and shortest points.
  - II. It is desirable to read the concentration immediately after measurement because the stained layer gets longer gradually.

**3. CORRECTION FOR AMBIENT CONDITIONS:**

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

Table of the coefficient for temperature correction

Tem(°C)	0	1	2	3	4	5	6	7	8	9
10	1.40	1.36	1.32	1.28	1.24	1.20	1.16	1.12	1.08	1.04
20	1.00	0.97	0.94	0.91	0.88	0.85	0.82	0.79	0.76	0.73
30	0.70	0.67	0.64	0.61	0.58	0.55	—	—	—	—

Procedure of temperature correction :

Actual reading can be obtained by multiplying reading of tubes by coefficient for temperature correction shown in above table.

Actual Formaldehyde concentration (ppm) =

reading value (ppm) × Coefficient for temperature correction

Procedure to get coefficient for temperature correction from the table.

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.

Table of the coefficient for temperature correction

Tem(°C)	0	1	2	3	4	5
10	1.40	1.36	1.32	1.28	1.24	1.20
20	1.00	0.97	0.94	0.91	0.88	0.85
30	0.70	0.67	0.64	0.61	0.58	0.55

**4. INTERFERENCE:**

Single existence of Ammonia or amines does not give discolouration. But more than 0.5ppm of coexistence with Formaldehyde gives a fade to the discolouration layer on the inlet side. More than 0.5ppm of Nitrogen dioxide produces a similar stain and gives higher readings, and the top of discoloured layer becomes unclear.

**5. CHEMICAL REACTION IN THE DETECTOR TUBE:****6. DISPOSAL OF TUBE:**

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

**7. HAZARDOUS AND DANGEROUS PROPERTIES OF FORMALDEHYDE:**

T.L.V. ◆ : 0.3 ppm

Explosive range in air : 7.0-73 %

◆ Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 2000.

**8. 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.**