



Section	Original Colour
A	Pale purple
B	Reddish purple
C	White
D	White
E	Yellow

1. PERFORMANCE

- 1) Substances to be detected : Acetic acid, Amines, Ammonia, Carbon monoxide, Chlorine, Hydrogen chloride, Hydrogen sulphide, Nitrogen dioxide, Phosphine, Sulphur dioxide, * Acetylene and * Methyl mercaptan (* : Organic gas)
- 2) Tube per box : 10 tubes (10-time use)
- 3) Pump stroke : 1 (100mL)
- 4) Sampling time : 20 seconds
- 5) Shelf life : 1 year
- 6) Operating temperature : 0~40°C
- 7) Colour change : Refer to following " 3. DISCOLOURATION / QUALITATIVE CHART"
- 8) Non-discolouration confirmed substances : Carbon dioxide, Hydrogen cyanide, Nitric oxide and * Ethylene (* : Organic gas)

2. CHEMICAL REACTION

SECTION

CHEMICAL REACTION PRINCIPLES

- A** By reacting with Phosphoric acid, pH indicator is discoloured.
 $2\text{NH}_3 + \text{H}_3\text{PO}_4 \rightarrow (\text{NH}_4)_2\text{HPO}_4$
- B** By reacting with an Alkaline, pH indicator is discoloured.
 $\text{SO}_2 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SO}_3 + \text{H}_2\text{O}$
- C** By reacting with *o*-Tolidine, Nitro-*o*-Tolidine (Dyestuff) is liberated.
- D** By reacting with Lead Acetate (II), Lead sulphide is produced.
 $\text{H}_2\text{S} + \text{Pb}(\text{CH}_3\text{COO})_2 \rightarrow \text{PbS} + 2\text{CH}_3\text{COOH}$
- E** Potassium disulphide palladate (II) is reduced and Palladium is liberated.
 $\text{CO} + \text{K}_2\text{Pd}(\text{SO}_3)_2 \rightarrow \text{K}_2(\text{SO}_3)_2\text{PdCO}$
 $\text{K}_2(\text{SO}_3)_2\text{PdCO} \rightarrow \text{CO}_2 + \text{SO}_2 + \text{K}_2\text{SO}_3$

3. DISCOLOURATION / QUALITATIVE CHART

CHART 1. INORGANIC GAS QUALITATIVE DETECTION CHART

Selection (Original Colour)					* 1) Substances (* 2)
A (Pale purple)	B (Reddish purple)	C (White)	D (White)	E (Yellow)	
Yellow	—	—	—	—	1) Ammonia (5) 2) Amines (5)
—	Yellow	—	—	—	3) SO ₂ (10) 4) Acetic Acid (15)
	Pink	—	—	—	5) Hydrogen chloride (20)
	White	Yellowish orange	—	—	6) Chlorine (5)
	—	Yellow	—	—	7) Nitrogen dioxide (5)
—	—	—	Brown	—	8) H ₂ S (10)
		—	—	Pale blackish brown	9) CO (10)
		—	—	Dark black	10) Phosphine (2)
		—	—	Pale Yellowish green	11) Acetylene (10)
—	—	—	—	Dark yellow	12) Methyl mercaptan (10)

NOTES : —

(1) — : Undiscoloured

(2) (*1) : Item No. for quick reference to details in CHART

(3) (*2) : Detectable gas concentration limit of the substance (Unit : ppm)

The discolouration length is approx.0.5 to 1.0 mm.

(4) Substance No.4) , 11) and 12) are organic substances.

CHART 2. CHART FOR GAS-CONCENTRATION LEVEL AND DISCOLOURATION

INORGANIC SUBSTANCES	GAS CONCENTRATION (PPM)	SECTION				
		A (Pale purple) Yellow (I) Yellow (III)	B (Reddish purple) Yellow (I) Yellow (III)	C (White) Yellow (I) Yellow (III)	D (White) Yellow (I) Yellow (III)	E (Yellow) Yellow (I) Yellow (III)
1) Ammonia	50 5	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
2) Amines	50 5	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
3) Sulphur dioxide (SO ₂)	50 10	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
4) Acetic Acid	30 15	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
5) Hydrogen chloride	50 20	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
6) Chlorine	20 5	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
7) Nitrogen dioxide	20 5	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
8) Hydrogen sulphide (H ₂ S)	100 10	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
9) Carbon monoxide (CO)	50 10	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
10) Phosphine	30 2	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
11) Acetylene	50 10	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)
12) Methyl mercaptan	100 10	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)	Yellow (I) Yellow (III)

NOTES : —

1) — : Undiscoloured

2) Discolouration level : I ; The whole layer is discoloured. II : A half layer is discoloured. III ; Approx. 0.5-1.0mm of the layer is discoloured.

3) Substance No.4), 11) and 12) are organic substances.

NON-DISCOLOURATION CONFIRMED SUBSTANCES

1) Hydrogen cyanide (HCN) 2) Carbon dioxide (CO₂) 3) Ethylene (Organic substance) 4) Nitric oxide (NO)