



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

1. SPECIFICATIONS

- 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-Toluidine, Nitro-o-Toluidine (Dyestuff) is liberated.
- D By reacting with Lead Acetate (II), Lead sulphide is produced.

$$\text{H}_2\text{S} + \text{Pd}(\text{CH}_3\text{COO})_2 \rightarrow \text{PdS} + 2\text{CH}_3\text{COOH}$$
- 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)	B (Reddish purple)	C (White)	D (White)	E (Yellow)
1) Ammonia	50 5	Yellow (I) Yellow (III)	— —	— —	— —	— —
2) Amines	50 5	Yellow (I) Yellow (III)	— —	— —	— —	— —
3) Sulphur dioxide (SO ₂)	50 10	— —	Yellow (I) Yellow (III)	— —	— —	— —
4) Acetic Acid	30 15	— —	Yellow (II) Yellow (III)	— —	— —	— —
5) Hydrogen chloride	50 20	— —	Pink (II) Pink (III)	— —	— —	— —
6) Chlorine	20 5	— —	White (I) White & Pale purple (II)	Yellowish orange (I) —	— —	— —
7) Nitrogen dioxide	20 5	— —	— —	Yellow (I) Yellow (I)	— —	— —
8) Hydrogen sulphide (H ₂ S)	100 10	— —	— —	— —	Brown (II) Brown (II)	Brown (II) —
9) Carbon monoxide (CO)	50 10	— —	— —	— —	— —	Blackish brown (I) Pale blackish brown (I)
10) Phosphine	30 2	— —	— —	— —	— —	Black (II) Pale black (III)
11) Acetylene	50 10	— —	— —	— —	— —	Yellowish green (I) Pale yellowish green (I)
12) Methyl mercaptan	100 10	— —	— —	— —	— —	Pale yellow (I) Dark yellow (II)

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)