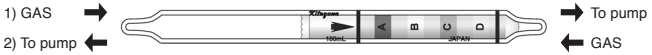
Tube No.
186B

ORGANIC GAS QUALITATIVE DETECTOR TUBE



Section	Original Colour
A	Orange
B	White
C	Yellow
D	Yellow

1. PERFORMANCE

1) Substances to be detected : Acetaldehyde, Actone, Acetylene, Aniline, Benzene, 1,3-Butadiene, Butane, 1-Butanol, Butyl acetate, Carbon disulphide, Cresol, Ethyl acetate, Ethyl amine, Ethyl benzene, Ethyl cellosolve, Ethylene, Ethylene oxide, Formaldehyde, Gasoline, Heptane, Hexane, Isopropyl alcohol, Kerosine, Methyl alcohol, Methyl ethyl ketone, Methyl isobutyl ketone, Methyl mercaptan, Pentane, Phenol, Propane, Styrene, Tetrachloroethylene, Tetrahydrofuran, Toluene, 1,1,1-Trichloroethane, Trichloroethylene, Vinyl chloride, Xylene, *Arsine, *Carbon monoxide and *Hydrogen sulphide (*: Inorganic gas)

2) Tube per box : 10 tubes (5-time use)

3) Pump stroke : 1 (100mL) + 1 (100mL)

4) Sampling time : 30 + 30 seconds

5) Shelf life : 2 years

6) Operating temperature : 0 ~ 40℃

7) Colour change : Refer to following "3. DISCOLOURATION / QUALITATIVE CHART"

8) Non-discolouration confirmed substances : Acetic acid, Carbon tetrachloride, Methane, Methyl bromide and Pyridine

2. CHEMICAL REACTION

SECTION	CHEMICAL REACTION PRINCIPLES
A	Chromium oxide is reduced. $CH_3(CH_2)_4CH_3 + Cr^6 + H_2SO_4 \rightarrow Cr^{3+}$
B	Molybdate is reduced and Molybdeum blue is produced. $H_2C = CH_2 + PdSO_4 + (NH_4)_2MoM_4 \rightarrow Mo_3O_8$
C	Iodine pentoxide is reduced. $C_2H_5CH_3 + I_2O_5 + H_2SO_4 \rightarrow I_2$
D	Phenol is oxidized and the polymer is produced. $C_6H_5OH + Ce^{4+} \rightarrow C_6H_5O \cdot \rightarrow (C_6H_5O)n$

3. DISCOLOURATION / QUALITATIVE CHART

CHART 1. ORGANIC GAS QUALITATIVE DETECTION CHART

"A" side sampling	"D" side sampling				*1) Substances —*2(X)— —*3(X/Y)—
Selection	Selection				
A (Orange)	A (Orange)	B (White)	C (Yellow)	D (Yellow)	
Dark brown	Dark brown	——	——	——	1) Propane (100) 2) Butane (10) 3) Pentane (10) 4) Hexane (10) 5) Trichloroethylene (10) 6) Tetrachloroethylene (100) 7) Vinyl chloride (10)
			White	——	8) Butadiene (100)
	Greenish brown	——	Pale blue	——	9) Gasoline (0.1mg/L)
	——	Pale brown	——	——	10) Benzene (10/100) 11) Toluene (30/200) 12) Xylene (60/1,000) 13) Ethyl benzene (60/400)
		——	Pale blue	——	14) Ethylene (10) 15) Acetylene (10,000/100)
			Yellowish orange	——	16) Styrene (100)
			——	——	17) Acetone (600) 18) Methyl ethyl ketone (100) 19) Ethyl acetate (600) 20) Butyl acetate (100) 21) Ethylene oxide (100) 22) Formaldehyde (600) 23) Kerosene (0.1mg/L)

"A" side sampling	"D" side sampling				*1) Substances —*2(X)— —*3(X/Y)—
Selection	Selection				
A (Orange)	A (Orange)	B (White)	C (Yellow)	D (Yellow)	
Greenish brown	Greenish brown	—	—	—	24) Heptane(10) 25) Carbon disulphide (100)
	—	—	Yellowish orange	—	26) Methyl mercaptan (100/20)
			—	—	27) Methyl alcohol(100) 28) 1-Butanol(100) 29) Acetaldehyde(100) 30) Methyl isobutyl Ketone (100) 31) Ethyl cellosolve(100) 32) Tetrahydrofuran(100) 33) 1,1,1-Trichloroethane (1,000)
Pale brown	—	—	Black	—	34) Hydrogen sulphide (100,10) 35) Arsine(100,20)
			—	—	36) Isopropyl alcohol(600)
—	—	—	Pale blue	—	37) Carbon monoxide(100)
			—	Pale brown	38) Phenol(10) 39) Cresol(20)
				Bluish green	40) Aniline(40)
				Pale blue	41) Ethyl amine(100)

NOTES：—

(1) —：Undiscoloured

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

(3) *2 (X)：Detectable gas concentration limit of the substance (Unit：ppm)
*3 (X/Y)："X" means detectable gas concentration limit (Unit：ppm) of "A" side sampling and "Y" means "D" side sampling's one.

(4) The discolouration length is approx.0.5 to 1.0 mm.

(5) Substance No.34), 35) and 37) are inorganic gases."

CHART 2. CHART FOR GAS-CONCENTRATION LEVEL AND DISCOLOURATION

ORGANIC SUBSTANCES	CONC. LEVEL	"A" side sampling	"D" side sampling			
		SECTION	SECTION			
		A (Orange)	A (Orange)	B (White)	C (Yellow)	D (Yellow)
1) Propane	H	Dark brown (I)	Dark brown (I)	—	—	—
	M	Dark brown (I)	Dark brown (I)	—	—	—
	L	—	—	—	—	—
2) Butane	H	Dark brown (I)	Dark brown (I)	—	—	—
	M	Dark brown (I)	Dark brown (I)	—	—	—
	L	Dark brown (III)	Dark brown (III)	—	—	—
3) Pentane	H	Greenish brown (I)	Greenish brown (I)	—	—	—
	M	Dark brown (I)	Dark brown (I)	—	—	—
	L	Dark brown (III)	Dark brown (III)	—	—	—
4) Hexane	H	Greenish brown (I)	Greenish brown (I)	—	—	—
	M	Dark brown (I)	Dark brown (II)	—	—	—
	L	Dark brown (III)	Dark brown (III)	—	—	—
5) Trichloroethylene	H	Dark brown (I)	Dark brown (I)	—	—	—
	M	Dark brown (II)	Dark brown (II)	—	—	—
	L	Dark brown (III)	Dark brown (III)	—	—	—
6) Tetrachloroethylene	H	Dark brown (I)	Dark brown (I)	—	—	—
	M	Dark brown (III)	Dark brown (III)	—	—	—
	L	—	—	—	—	—
7) Vinyl chloride	H	Dark brown (I)	Dark brown (I)	—	—	—
	M	Dark brown (II)	Dark brown (II)	—	—	—
	L	Dark brown (III)	Dark brown (III)	—	—	—
8) Butadiene	H	Dark brown (II)	Dark brown (II)	Yellow orange (I)	Brown (I)	—
	M	Dark brown (III)	Dark brown (III)	—	White (II)	—
	L	—	—	—	—	—
9) Gasoline	H	Dark brown (I)	Greenish brown (II)	Brown (I)	Pale blue (I)	—
	M	Dark brown (III)	Greenish brown (III)	Brown (I)	Pale blue (I)	—
	L	Dark brown (III)	Greenish brown (III)		Pale blue (II)	—
10) Benzene	H	Dark brown (I)	Dark brown (III)	Pale brown (I)	—	—
	M	Dark brown (II)	—	Pale brown (I)	—	—
	L	Dark brown (III)	—	—	—	—
11) Toluene	H	Dark brown (I)	Dark brown (III)	Brown (I)	—	—
	M	Dark brown (III)	—	Pale brown (I)	—	—
	L	Dark brown (III)	—	—	—	—

ORGANIC SUBSTANCES	CONC. LEVEL	"A" side sampling	"D" side sampling			
		SECTION	SECTION			
		A (Orange)	A (Orange)	B (White)	C (Yellow)	D (Yellow)
12) Xylene	H	Dark brown (II)	—	Pale brown (II)	—	—
	M	Dark brown (III)	—	—	—	—
	L	—	—	—	—	—
13) Ethyl benzene	H	Dark brown (II)	—	Brown (I)	—	—
	M	Dark brown (III)	—	Pale brown (II)	—	—
	L	—	—	—	—	—
14) Ethylene	H	Dark brown (I)	Dark brown (I)	—	Deep blue (II)	—
	M	Dark brown (I)	Dark brown (II)	—	Deep blue (II)	—
	L	Dark brown (III)	—	—	Pale blue (II)	—
15) Acetylene	H	Dark brown (I) Section "C" is also discoloured to Brown (III).	Dark brown (I)	—	Deep blue (II)	—
	M	—	—	—	Pale blue (II)	—
	L	—	—	—	—	—
16) Styrene	H	Dark brown (III)	—	Dark brown (III)	Yellowish orange (I)	—
	M	Dark brown (III)	—	—	Yellowish orange (I)	—
	L		—	—	—	—
17) Acetone	H	Dark brown (III)	—	—	—	—
	M	—	—	—	—	—
18) Methyl ethyl ketone	H	Dark brown (III)	—	—	—	—
	M	Dark brown (III)	—	—	—	—
	L	—	—	—	—	—
19) Ethyl acetate	H	Dark brown (III)	—	—	—	—
	M	—	—	—	—	—
20) Butyl acetate	H	Dark brown (III)	—	—	—	—
	M	Dark brown (III)	—	—	—	—
	L	—	—	—	—	—
21) Ethylene oxide	H	Dark brown (III)	—	—	—	—
	M	Dark brown (III)	—	—	—	—
	L	—	—	—	—	—

ORGANIC SUBSTANCES	CONC. LEVEL	"A" side sampling	"D" side sampling			
		SECTION	SECTION			
		A (Orange)	A (Orange)	B (White)	C (Yellow)	D (Yellow)
22) Formaldehyde	H	Greenish brown (I)	—	—	—	—
	M	Dark brown (III)	—	—	—	—
	L	Dark brown (III)	—	—	—	—
23) Kerosene	H	Dark brown (II)	—	—	—	—
	M	Dark brown (III)	—	—	—	—
	L	Dark brown (III)	—	—	—	—
24) Heptane	H	Greenish brown (I)	Greenish brown (I)	—	—	—
	M	Greenish brown (II)	Greenish brown (II)	—	—	—
	L	Greenish brown (III)	Greenish brown (III)	—	—	—
25) Carbon disulphide	H	Greenish brown (I)	Greenish brown (I)	—	—	—
	M	Greenish brown (II)	Greenish brown (II)	—	—	—
	L	—	—	—	—	—
26) Methyl mercaptan	M	Greenish brown (III)	—	—	Deep blue (II)	—
	L	—	—	—	Yellowish orange (III)	—
27) Methyl alcohol	H	Greenish brown (III)	—	—	—	—
	M	Greenish brown (III)	—	—	—	—
	L	—	—	—	—	—
28) 1-Butanol	H	Greenish brown (III)	—	—	—	—
	M	Greenish brown (III)	—	—	—	—
	L	—	—	—	—	—
29) Acetaldehyde	H	Green (II)	—	—	—	—
	M	Greenish brown (III)	—	—	—	—
	L	—	—	—	—	—
30) Methyl isobutyl ketone	H	Greenish brown (III)	—	—	—	—
	M	Greenish brown (III)	—	—	—	—
	L	—	—	—	—	—
31) Ethyl cellosolve	H	Green (III)	—	—	—	—
	M	Greenish brown (III)	—	—	—	—
	L	—	—	—	—	—
32) Tetrahydrofuran	H	Green (III)	—	—	—	—
	M	Greenish brown (III)	—	—	—	—
	L	—	—	—	—	—

ORGANIC SUBSTANCES	CONC. LEVEL	"A" side sampling	"D" side sampling			
		SECTION	SECTION			
		A (Orange)	A (Orange)	B (White)	C (Yellow)	D (Yellow)
33) 1,1,1-Trichloroethane	H	Greenish brown (III)	—	—	—	—
	M	—	—	—	—	—
34) Hydrogen sulphide (H_2S)	H	Green (II)	Green (II)	—	Black (III)	—
	M	Green (III)	—	—	Black (III)	—
	L	—	—	—	Black (III)	—
35) Arsine	M	Green (II)	—	—	Black (I)	—
	L	—	—	—	Black (II)	—
36) Isopropyl alcohol	H	Green (III)	—	—	—	—
	M	—	—	—	—	—
37) Carbon monoxide (CO)	H	—	—	—	Pale blue (II)	—
	M	—	—	—	Pale blue (III)	—
	L	—	—	—	—	—
38) Phenol	M	—	—	—	—	Pale brown (I)
	L	—	—	—	—	Pale brown (I)
39) Cresol	M	—	—	—	—	Pale brown (I)
	L	—	—	—	—	Pale brown (I)
40) Aniline	M	—	—	—	—	Bluish green (III)
	L	—	—	—	—	Bluish green (III)
41) Ethyl amine	H	—	—	—	—	White (I)
	M	—	—	—	—	Pale blue (III)
	L	—	—	—	—	—

NOTE : —
1) — : Undiscoloured
2) CONC. LEVEL (Gas concentration level) : H ; approx. 1,000-5,000 ppm
M ; approx. 100-500 ppm
L ; approx. 10-50 ppm
3) Discolouration level : 1 ; The whole layer is discoloured.
2 ; A half layer is discoloured.
3 ; Approx.0.5-2.0 mm of the layer is discoloured.
4) Substance No.34), 35) and 37) are inorganic substances.

NON-DISCOLOURATION CONFIRMED SUBSTANCES
1) Carbon tetrachloride 2) Pyridine 3) Methyl bromide
4) Acetic acid 5) Methane 6) Ethane