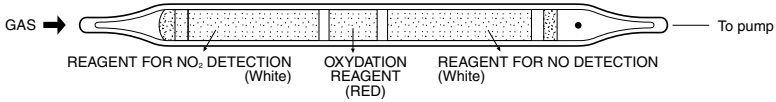
Tube No.
174A,B

NITROGEN OXIDE / NITROGEN DIOXIDE



1. PERFORMANCE

1) Measuring range : NO ; 10 − 300 ppm NO_2 ; 1 − 40 ppm
   Number of pump strokes 1 (100mℓ)
2) Sampling time : 1.5 minutes/1 pump stroke
3) Detectable limit : NO ; 1 ppm NO_2 ; 0.5 ppm
4) Shelf life : 2 years
5) Operating temperature : 10 ~ 30℃
6) Temperature compensation : Necessary (See "TEMPERATURE CORRECTION TABLE")
7) Reading : Concentration chart method
8) Colour change : NO ; White → Yellowish orange
   NO_2; White → Pale yellowish orange

2. RELATIVE STANDARD DEVIATION

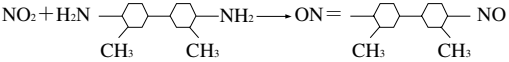
NO ; RSD-low : 10% RSD-mid. : 10% RSD-high : 10%
NO_2 ; RSD-low : 10% RSD-mid. : 10% RSD-high : 5%

3. CHEMICAL REACTION

NO ; By reacting with an Oxidizer, NO_2 is produced.

$$NO + CrO_3 + H_2SO_4 \rightarrow NO_2$$

NO_2 ; By reacting with *o*-Toluidine, Nitroso-*o*-Toluidine is produced.



4. CALIBRATION OF THE TUBE

NO ; STANDARD GAS CYLINDER METHOD
NO_2 ; PERMEATION TUBE METHOD

5. INTERFERENCE AND CROSS SENSITIVITY

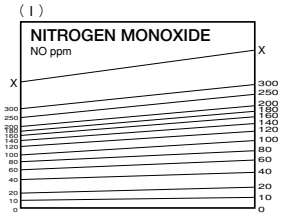
Substance	Interference	ppm	Coexistence
Chlorine	Similar stain is produced.	1	Higher readings are given.

(III) CORRECTION TABLE OF NO_2 CONCENTRATION COEXISTING WITH NO

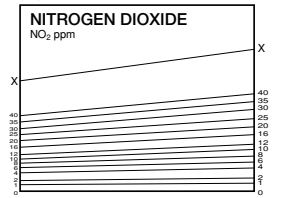
(II) NO_2 Temperature Corrected Concentration (ppm)	NO_2 Actual Concentration (ppm)						
	(I) NO Temperature Corrected Concentration (ppm)						
	20	60	100	150	200	250	300
40			34	33	32	31	30
38			32	31	30	29	28
36			30	29	28	27	26
34			28	27	26	25	24
32			26	25	24	23	22
30		25	24	23	22	21	20
28		23	22	21	20	20	19
26		20	20	20	19	19	18
24		18	18	18	17	17	16
22		16	16	16	15	15	15
20		15	15	15	14	14	14
18		13	13	13	12	12	12
16		12	12	12	11	11	11
14		10	10	10	9	9	9
12		9	9	9	8	8	8
10	8	7	7	7	6	6	6
8	6	5	5	5	5	5	5
6	5	4	4	4	4	4	4
4	3	3	3	3	3	3	3
2	2	2	2	2	2	2	2

NITROGEN OXIDES CONCENTRATION CHART
Sampling Gas Volum 100mℓ

(I)



(II)



(I) NO TEMPERATURE CORRECTION TABLE

Chart Readings (ppm)	NO True Concentration (ppm)									
	10℃ 50˚F	12℃ 53.6˚F	14℃ 57.2˚F	16℃ 60.8˚F	18℃ 64.4˚F	20℃ 68˚F	22℃ 71.6˚F	24℃ 75.2˚F	26℃ 78.8˚F	28℃ 82.4˚F	30℃ 86˚F
300	—	—	—	—	—	300	270	245	220	200	190
280	—	—	—	—	—	280	250	230	210	190	180
260	—	—	—	—	300	260	235	215	195	180	170
240	—	—	—	—	280	240	215	195	180	170	160
220	—	—	—	300	250	220	195	180	170	160	150
200	—	—	—	290	230	200	180	165	155	145	140
180	—	—	300	250	200	180	165	150	140	135	130
160	—	310	260	215	180	160	150	140	130	125	120
140	310	260	220	185	155	140	130	122	117	113	110
120	260	215	180	155	135	120	112	106	101	98	95
100	210	185	150	130	110	100	95	90	86	83	80
80	160	140	120	100	87	80	77	75	72	71	70
60	100	90	80	70	64	60	57	54	52	51	50
40	60	56	52	48	43	40	38	37	36	35	35
20	30	28	26	24	22	20	20	20	20	20	20
10	10	10	10	10	10	10	10	10	10	10	10

(II) NO_2 TEMPERATURE CORRECTION TABLE

Chart Readings (ppm)	NO_2 True Concentration (ppm)										
	10℃ 50˚F	12℃ 53.6˚F	14℃ 57.2˚F	16℃ 60.8˚F	18℃ 64.4˚F	20℃ 68˚F	22℃ 71.6˚F	24℃ 75.2˚F	26℃ 78.8˚F	28℃ 82.4˚F	30℃ 86˚F
40	—	—	—	—	—	40	39	38	37	37	36
38	—	—	—	—	39	38	37	36	35	35	34
36	—	—	—	38	37	36	35	34	34	33	33
34	—	39	37	36	35	34	33	33	32	32	31
32	39	37	35	34	33	32	31	31	30	30	30
30	36	34	33	32	31	30	30	29	29	28	28
28	33	32	31	30	29	28	28	27	27	26	26
26	31	30	29	28	27	26	26	25	25	25	24
24	28	27	26	25	25	24	24	24	23	23	22
22	26	25	24	23	23	22	22	22	21	21	21
20	24	23	22	21	21	20	20	20	19	19	19
18	21	21	20	19	19	18	18	18	18	17	17
16	19	18	18	17	17	16	16	16	16	16	15
14	17	16	15	15	14	14	14	14	14	14	14
12	14	14	13	13	12	12	12	12	12	12	12
10	12	12	11	11	10	10	10	10	10	10	10
8	10	9	9	8	8	8	8	8	8	8	8
6	7	7	6	6	6	6	6	6	6	6	6
4	4	4	4	4	4	4	4	4	4	4	4
2	2	2	2	2	2	2	2	2	2	2	2