

NITROGEN OXIDES LENGTH-OF-STAIN DETECTOR TUBES

(NO, NO₂ Separate Measurement)

for Industrial Hygiene

Kitagawa Detector Tube No.174A divides Nitrogen Oxides in working area such as welding, cutting, manufacturings of nitric acid and gunpowder, treatment of metal surface, blasting, etc. into NO, NO₂ and simultaneously provides an accurate, on-the-spot measurement for them.

PERFORMANCE:

	NO	NO ₂
Measuring Range:	10-300ppm	1-40ppm
Sampling Time:	1.5min. (1pump stroke)	
Colour Change:	White-Yellowish Orange	White-Pale Yellowish Orange
Detectable Limit:	1ppm	0.5ppm
Storage condition:	In a cool and dark place, not to exceed 25°C (77°F)	

* FLOW CONTROL ORIFICE SHOULD NOT BE USED WITH THIS TUBE.

SAMPLING AND MEASUREMENT:

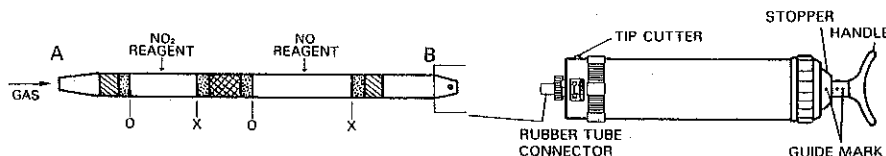
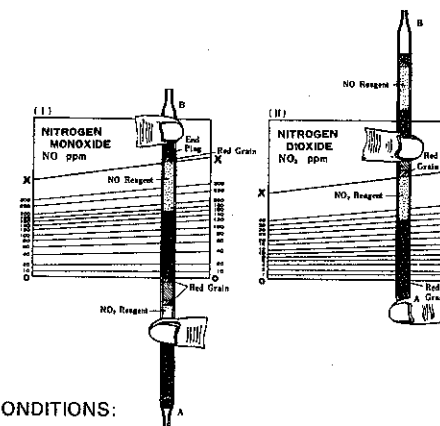


Fig. 1

1. Break both ends of a new detector tube by using the tip cutter, and insert the tube end (B) with the red dot into the rubber tube connector as shown in Fig. 1.
2. Align the guide marks (red dots) on the shaft and stopper of the pump. Pull the handle at a full stroke and wait for 1.5 minutes. (In case of using the previous Model 400, turn the handle by 1/4 to lock after pulling it.)
3. NO₂ reagent will be discoloured to pale yellowish orange with NO₂ in sample air and NO reagent to yellowish orange with NO.

CONCENTRATION CHART AND TEMPERATURE CORRECTION TABLE:

1. Concentration charts (I), (II) for Nitrogen oxides are provided for reading each concentration of NO and NO₂ separately.
Concentration chart is calibrated based on the temperature of 20°C (68°F).
A temperature correction table is provided for other temperatures.
2. Remove the tube and mark each top of discoloured layers with a pen.
3. Position "X" and "O" boundaries of reagent and red grain on the lines "X"- "X" and "O-O" of concentration chart respectively. Read each concentration by the length of stain.
4. Readings obtained in other temperature circumstances should be corrected with the following temperature correction table. The NO value indicates actual concentration.
5. It is necessary to correct NO₂ value with the table (III), by using values given by 4.
6. Total Nitrogen Oxides (NO_x) are composed of NO plus NO₂ concentration.



CORRECTION FOR AMBIENT CONDITIONS:

Humidity;
No corrections are necessary.
Atmospheric Pressure;
Tube readings can be corrected by using either the following equation:
True concentration = Tube reading × 1013/(Atmospheric pressure in hPa), or
True concentration = Tube reading × 760/(Atmospheric pressure in mmHg)

SPECIAL NOTE:

When the top "C" of the discoloured layer is made obliquely, read the concentration at the centre between the longest and the shortest points of the discoloured layer. The total stain length should be read, even if the stained layer gets multi-colour discolouration.

INTERFERENCES:

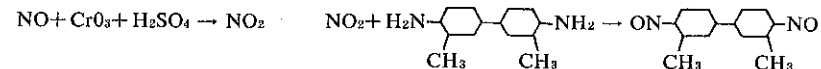
Chlorine produces a similar stain and coexistence of more than 1ppm gives higher readings.

HAZARDOUS PROPERTIES OF NITROGEN OXIDES:

TLV**	NO ₂	3ppm
	NO	25ppm

** Threshold Limit Value established by the American Conference of Governmental Industrial Hygienists, 1995.

CHEMICAL REACTION IN THE DETECTOR TUBE:



INSPECTION OF ASPIRATING PUMP:

Before testing, the pump shall be checked for proper performance. Leakage of air will affect accuracy of readings. The leakage check should be carried out by pulling the handle fully with an unopened tube into the connector and waiting for 3 minutes. If the handle comes back thoroughly to the original position when the lock is released, the performance is good. When the handle does not come back to the original position completely, give maintenance to the pump referring to the relevant description in the instruction manual of the pump. Then, confirm the pump by carrying out this inspection procedure again.

CAUTION:

Keep the detector tubes out of the reach of children and used tubes should be discarded carefully according to relevant regulations.