GASTEC No.183TP Instructions for N,N-Dimethylformamide Detector Tube

FOR SAFE OPERATION :

Carefully read this manual and the instruction manual of your Air Sampling Pump before use.

⚠ CAUTION : If you do not observe the following precautions, you may suffer injuries or damage the product.

1. When breaking the tube ends, keep away from the eyes.
2. Do not touch the broken glass tubes, pieces or reagent with bare hands.

⚠NOTES : For maintaining performance and reliability of the test results, observe the following.

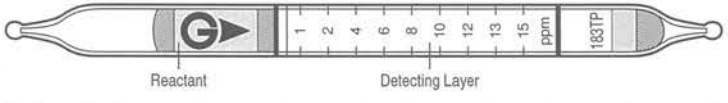
1. Recommend to use Gastec Gas Sampling device Model GSP-300FT-2 or GSP-501FT together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 5 - 40℃ (41 - 104℉).
3. Use this tube within the relative humidity range of 20 - 90% (30 - 90% if the temperature is 5 - 9°C (41 - 48°F)).
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
5. Shelf life and storage condition of the tubes are marked on the label of the box of tubes.

APPLICATION OF THE TUBE :

Use this tube for the measurement of N,N-Dimethylformamide in air or in the industrial areas and environmental atmospheric condition.

SPECIFICATION :

(Because of Gastec's commitment to continued improvement, specifications are subject to change without notice.)



The Minimum Scale (0.5ppm) is not printed on the tube and is indicated as a Scale Line only.

Measuring Range	(0.5) – 15 ppm	15 – 30 ppm
Sampling Rate	100 mL/min	50 mL/min
Correction Factor	1	2
Sampling Time	10 min	10 min
Detecting Limit	0.1 ppm (1000 mL)	
Colour Change	Pink → Yellow	
Reaction Principle	N,N-Dimethylformamide reacts with reagent to produce amines which turn the indicator yellow.	

Coefficient of Variation : 15% (for 0.5 to 4 ppm), 5% (for 4 to 15 ppm)
****Shelf Life : Please refer to the validity date printed on the box of tubes.**
****Store the tubes in a cool and dark place.**

CORRECTION FOR ENVIRONMENTAL CONDITIONS :

When the Tube Temperature is 10 - 40°C :

Temperature : Correct for temperature, by the table below.

Temperature (℃)	10 (50℉)	15 (59℉)	20 (68℉)	25 (77℉)	30 (86℉)	35 (95℉)	40 (104℉)
Correction Factor	1.4	1.2	1.0	0.90	0.86	0.84	0.82

Humidity : No correction is required between 20 - 90% R.H.

Pressure : To correct for pressure, multiply the tube reading by

$$\frac{\text{Tube Reading* (ppm)} \times 1013 \text{ (hPa)}}{\text{Atmospheric Pressure (hPa)}}$$

* This value is after other correction(s), if any, are applied.

When the Tube Temperature is 5 - 9°C :

Temperature : To correct for the effects of temperature, substitute in the table below the Tube Reading to obtain the true values.

Temperature (℃)	Temperature Correction Formula
5	True Concentration (ppm) = 1.4 × Tube Reading (ppm)+2.0
6 – 7	True Concentration (ppm) = 1.4 × Tube Reading (ppm)+1.0
8 – 9	True Concentration (ppm) = 1.4 × Tube Reading (ppm)+0.35

Humidity : No correction is required between 30 - 90% R.H.

Pressure : To correct for pressure, multiply the tube reading by

$$\frac{\text{Tube Reading* (ppm)} \times 1013 \text{ (hPa)}}{\text{Atmospheric Pressure (hPa)}}$$

* This value is after other correction(s), if any, are applied.

MEASUREMENT PROCEDURE :

If the Automatic Air Sampling Pump Model GSP-300FT-2 or GSP-501FT is used.

1. Prior to operation please confirm if black colour inlet rubber tube holder is equipped with the pump.
2. Break tips off a detector tube with the Tube Tip Holder supplied.
3. Insert the tube into the pump inlet with arrow (G►) on the tube pointing toward pump.
4. Set the flow rate to 100 mL/min and timer to 10 minutes at the pump. Press the start switch of the pump to start the sampling.
5. After sampling is completed, remove the detector tube from the pump.
6. Read the concentration level at the interface where the stained reagent meets the unstained reagent. For measurements higher than 15 ppm, prepare a fresh tube. Set the flow metre at 50 mL/min and timer to "10 minutes" of the pump and start the sampling again.
7. If temperature correction is necessary, obtain the true concentration by using the temperature correction factor or table. Afterwards multiply the correction factor of sampling volume if necessary.
8. If pressure correction is necessary, use the pressure correction formula.

INTERFERENCES :

Substance	Concentration	Interference	Changes colour by itself to
Ammonia	≧0.1ppm	+	Yellow from 0.1ppm
Amines	≧0.1ppm	+	Yellow from 0.1ppm
N,N-Dimethylhydrazine	≧0.1ppm	+	Yellow from 0.1ppm
Toluene	≦170ppm	No	No discolouration
Carbon dioxide	≧1500ppm	−	No discolouration
Chlorine	≧1000ppm	−	Decolourizes from 1.0%

This table of interference gases primarily expresses the interference of each coexisting gas in the gas concentration range, that is equivalent to the gas concentration. Therefore, the test result may give a positive result from other substances not listed in the table. If more information is needed, please contact us or Gastec representatives.

WHEN MEASURING OVER AN INTERVAL OF 15 MINUTES :

This Detector Tube can measure continuously for 15 minutes, so it is possible to measure the average concentration for 15 minutes in one measurement. In the case where this Detector Tube is used to measure over 15 minutes, follow the MEASUREMENT PROCEDURE and use values from the table below for set Sampling Rate, Sampling Time, and Correction Factor.

Measuring Range	(0.31) – 9.3 ppm	9.3 – 19.5 ppm
Sampling Rate	100 mL/min	50 mL/min
Correction Factor	0.62	1.3
Sampling Time	15 min	15 min

APPLICATION FOR OTHER SUBSTANCES :

Tube 183TP can also be used for the other substances as below :

Correction Scale	
N,N-Dimethylacetamide (ppm)	3.0 6.5 12.5 23.0 32.5 40.5 47.0 52.5 54.5 57.5
Tube reading with 100mL/min, 10 minutes sampling (ppm)	(0.5) 1 2 4 6 8 10 12 13 15

When the gas is drawn in, the colour of the reagent changes from pink to pale pink. During this time the target gas changes the reagent colour to yellow, as in the normal reaction.

CORRECTION FACTOR :

Detector tubes are primarily designed to measure specific gases. But it is also possible to measure other substances of similar chemical properties with the aid of a correction factor or chart. Therefore, please make use of the correction factor/chart measuring ranges as a reference. For more precise factor please contact your Gastec representatives.

DANGEROUS AND HAZARDOUS PROPERTIES :

Threshold Limit Value-Time Weighted Average by ACGIH (2023): 5 ppm

INSTRUCTIONS ON DISPOSAL :

The reagent of the tube does not use toxic substances. When disposing the tube regardless of whether it has been used or not, follow the rules and regulations of your local government.

WARRANTY :

If you have any questions regarding gas detection and quality of the tubes, please feel free to contact us or your Gastec representatives.

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