

GASTEC Instructions for No.180 Amines Detector Tube

FOR SAFE OPERATION:

Carefully read this manual and the instruction manual of your Gastec Gas Sampling Pump.

⚠ WARNING:

1. Use only Gastec detector tubes in a Gastec pump.
2. Do not interchange or use non-Gastec parts or components in Gastec's detector tube and pump system.
3. Using non-Gastec parts or components in Gastec's detector tube and pump system or using a non-Gastec detector tube with a Gastec pump or using a Gastec detector tube with a non-Gastec pump may damage your detector tube and pump system, or may cause serious injuries, or death to the end-user. It will also void all warranties, and guarantees regarding performance and data accuracy.

⚠ 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 eyes.
2. Do not touch the broken glass tubes, broken pieces and reagent with bare hand(s).
3. The sampling time represents the time necessary to draw the air sample through the tube. The tube must be positioned in the desired sampling area for the entire sampling time or until the flow finish indicator indicates the end of the sampling.

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

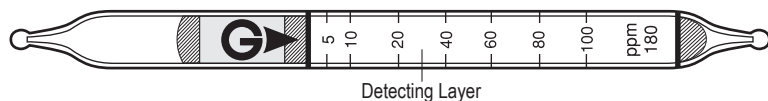
1. Use Gastec Gas Sampling Pump together with Gastec Detector Tubes only for the purposes specified in the instruction manual of the detector tube.
2. Use this tube within the temperature range of 0 - 40°C (32 - 104°F).
3. Use this tube within the relative humidity range of 0 - 90%.
4. This tube may be interfered with by the coexisting gases. Please refer to the table "INTERFERENCES" below.
5. The shelf life and storage condition of the tube are marked on the label of the tube box.

APPLICATION OF THE TUBE:

Use this tube for detecting Amines in the air or in industrial areas and for determining the environmental atmospheric condition.

SPECIFICATION:

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



Measuring Range	5 - 100 ppm
Number of Pump Strokes	1
Stroke Correction Factor	1
Sampling Time	30 seconds per pump stroke
Detecting Limit	0.5 ppm (n = 1)
Colour Change	Pink → Yellow to Brown
Reaction Principle	$2R \cdot NH_2 + H_2SO_4 \rightarrow (R \cdot NH_3)_2SO_4$

Coefficient of Variation: 10% (for 5 to 20 ppm), 5% (for 20 to 100 ppm)

**** Shelf Life: Please refer to the validity date printed on the tube box.**

**** Store the tubes in a dark and cool place.**

CORRECTION FOR TEMPERATURE, HUMIDITY AND PRESSURE:

Temperature correction table: Correct for temperature with the table below.

Temperature°C(°F)	0(32)	5(41)	10(50)	15(59)	20(68)	25(77)	30(86)	35(95)	40(104)
Correction Factor	2.0	1.7	1.4	1.2	1.0	0.9	0.8	0.7	0.6

Humidity: No correction is required between 0 - 90% R.H.

Pressure: To correct for pressure, use the formula below

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

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

MEASUREMENT PROCEDURE:

1. For checking the leakage of the pump, insert a freshly sealed detector tube into the pump. Follow instructions provided with the pump operation manual.
2. Break tips off a fresh detector tube with the tube tip breaker in the pump.
3. Insert the tube into the pump inlet with the arrow (G) on the tube pointing toward the pump.
4. Make certain the pump handle is all the way in. Align the guide marks on the pump body with the guide marks on the handle.
5. Pull the handle all the way out until it locks on one pump stroke (100mL). Wait 30 seconds and confirm the completion of the sampling. For monoethanolamine measurement, repeat the above sampling procedure two more times.
6. Read the concentration level at the interface where the stained reagent meets the unstained reagent.
7. If necessary, multiply the readings by the correction factors of the temperature and atmospheric pressure respectively.

INTERFERENCES:

Substance	Concentration	Interference	Changes colour by itself to
Aniline, Hydrazine, Pyridine		+	Yellow to Brown
Amidos		No	No discolouration
Amines, Ammonia		+	Yellow to Brown

This table of interference gases primarily expresses the interference of each coexisting gas in the concentration range, that is equivalent to the gas concentration. Therefore, the test result may show positive results due to other substances not listed in the table. If more information is needed, please contact us or our distributors in your territory.

APPLICATION FOR OTHER SUBSTANCES:

The Tube 180 can also be used to detect the following substances with correction factors.

Substance	Correction Factor	No. of Pump Strokes	Measuring Range (ppm)	Changes colour to
Allylamine	1.7	1	8.5 - 170	Yellow
Ammonia	0.3	1	1.5 - 30	Yellow
Isopropylamine	1.1	1	5.5 - 110	Pale yellowish orange
Ethylamine	1.0	1	5 - 100	Yellow
N - Ethyl Morpholine	1.0	1	5 - 100	Yellow
Ethylene diamine	2.8	1	14 - 280	Yellow
Diisopropylamine	1.0	1	5 - 100	Pale orange
Diethylamine	1.1	1	5.5 - 110	Pale brown
Diethylethanolamine	1.2	1	6 - 120	Pale brown
Cyclohexyl amine	1.4	1	7 - 140	Pale yellowish orange
Di - n - Butylamine	1.0	1	5 - 100	Pale orange
Dipropylamine	0.8	1	4 - 80	Yellow
Dimethyl aminopropylamine	1.6	1	8 - 160	Grayish Red
Dimethylamine	1.1	1	5.5 - 110	Pale yellowish orange
Dimethylethanolamine	1.3	1	6.5 - 130	Pale Orange to yellow
N, N - Dimethylethylamine	0.8	1	4 - 80	Yellow
Tetramethylenediamine	1.7	1	8.5 - 170	Purple to yellow
Triethyl Amine	0.9	1	4.5 - 90	Yellow
Trimethylamine	0.7	1	3.5 - 70	Yellow
n - Butylamine	1.6	1	8 - 160	Grayish red to brown
t - Butylamine	1.1	1	5.5 - 110	Pale brown
Propylamine	1.2	1	6 - 120	Pale yellowish orange
Propyleneimine	1.1	1	5.5 - 110	Yellow
n - Hexylamine	1.8	1	9 - 180	Pale Orange
Methylamine	1.0	1	5 - 100	Pale brown to yellow
N - Methyl Morpholine	1.0	1	5 - 100	Yellow
Monoethanolamine	1.4	3	7 - 140	Yellow
Morpholine	1.8	1	9 - 180	Yellow
n-Methyl pyrrolidone	2.7	1	13.5 - 270	White

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. The correction factor is a number which is multiplied by the concentration as interpreted from the colour on the detector tube. The correction factor may also be presented as a chart on the tube if the correction relationship is nonlinear. Therefore, make use of the correction factor/chart measurement ranges as a reference. Moreover, this factor may vary slightly between production batches. For a more precise factor please contact your Gastec distributor.

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 the quality of the tubes, please feel free to contact your Gastec representatives.

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IM00180E5
 Printed in Japan
 22H1D