

Technical Data Bulletin

OVI&ESD

#119

3M™ Organic Vapor Monitors 3500/3510/3520/3530

Toluene

Published: September, 1996

Background

3M has developed a protocol for evaluating the performance of diffusion monitors. Please refer to Technical Data Bulletin #124 for a summary of this protocol. The information in this report is for *Toluene*.

Sampling Rate

The published sampling rate for Toluene is 31.4 ± 0.6 cc/min.

Analytical Recovery

Recovery over a range of 0.43 to 5.64 mg using carbon disulfide was 100% with a coefficient of variation of 3.5%.

Accuracy

The accuracy is within $\pm 25\%$ as determined from a series of concentration and time experiments (see table).

Humidity

Not significant (uptake rate was linear) when monitors exposed to 100 ppm Toluene for 2, 4, 6 and 8 hour periods at 50% and 80% RH.

Detection Limit

Assuming an analytical detection limit of 2 μg per monitor, the minimum detectable concentration is 1 ppm with a 15 minute sample, and 0.04 ppm with an 8 hour sample.

Reverse Diffusion

Not significant ($<10\%$) when exposed to 200 ppm Toluene for 30 minutes, and then 450 minutes clean air at 80% RH, 23°C.

Storage

Samples may be stored at room temperature (23°C) or refrigerated (4°C) for 21 days without significant change from initial recovery.

Temperature

Not significant ($<10\%$) in the range of 10–40°C (50–104°F).

Interferences

The sampling rate is not affected by the presence of other solvents provided that the monitor is not overloaded.

Orientation/Air Velocity

To accurately sample at any orientation, there must be a minimum air velocity of 25 ft/min.

This table indicates the sampler accuracy for Toluene over a range of concentrations and times at 50% RH. For our protocol, accuracy must be within $\pm 25\%$. Concentrations were chosen to bracket certain published exposure limits for Toluene at the time that this work was done.

Percentage Accuracies by Concentration and Sampling Time

Concentration	15 minutes	8 hours
10 ppm	23.8%	12.1%
200 ppm	11.3%	6.8%

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