

**Technical Data  
Bulletin**

#126, September, 1996

**3M Organic Vapor Monitors**  
3500/3510/3520/3530**Styrene**

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<b>Background</b>	This report contains supplemental information for sampling <i>Styrene</i> using 3M organic vapor monitors. Please see Tech Data Bulletin #124 for more information on the test protocol used to generate this report.
<b>Sampling Rate</b>	The <u>NEW</u> published sampling rate for Styrene is $28.9 \pm 1.4$ cc/min.
<b>Analytical Recovery</b>	Recovery over a range of .27 to 2.73 mg using carbon disulfide was 88% with a coefficient of variation of 2.0%.
<b>Accuracy</b>	The accuracy is within $\pm 25\%$ as determined from a series of concentration and time experiments (see Table 1 on page 2).
<b>Humidity</b>	Not significant (uptake rate was linear) when monitors were exposed to 50 ppm Styrene for 2, 4, 6 and 8 hour periods at 50% and 80% RH.
<b>Detection Limit</b>	Assuming an analytical detection limit of 2 $\mu\text{g}$ per monitor, the minimum detectable concentration is 1 ppm with a 15 minute sample, and 0.04 ppm with an 8 hour sample.
<b>Reverse Diffusion</b>	Not significant ( $<10\%$ ) when exposed to 100 ppm Styrene for 30 minutes, and then 450 minutes clean air at 80% RH, 23°C.
<b>Storage</b>	Samples may be stored at room temperature (23°C) or refrigerated (4°C) for 21 days without significant change from initial recovery.

- Temperature** No specific experimental data. No significant effects (<10% bias) observed for Toluene, 1,1,1 -Trichloroethane, Methylene Chloride and Hexane.
- 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.

Table 1 indicates the sampler accuracy for Styrene over a range of concentrations and times at 50% RH. According to our protocol, accuracy must be within  $\pm 25\%$ . Concentrations were chosen to bracket certain published exposure limits for Styrene at the time that this work was done.

Table 1: % Accuracies by concentration and sampling time.

	15 minutes	8 hours
8 ppm	12.6 %	16.9 %
93 ppm	9.7 %	10.1 %