

**Technical Data
Bulletin**

OH&ESD

#132, September, 1997

3M Organic Vapor Monitors
3500/3510/3520/3530**Methyl tert-Butyl Ether (MTBE)**

Background	This bulletin contains updated information on sampling <i>Methyl tert-Butyl Ether (MTBE)</i> . Please see Tech Data Bulletin #124 for more information on the test protocol used to generate this report.
Sampling Rate	The <u>NEW</u> published sampling rate for MTBE is 30.8 cc/min.
Analytical Recovery	Recovery over a range of 0.01 to 3.03 mg using carbon disulfide was 98% with a coefficient of variation of 3.9%.
Accuracy	The accuracy is within $\pm 25\%$ as determined from a series of concentration and time experiments (see Table 1 on page 2).
Humidity	Not significant (uptake rate was linear) when monitors were exposed to 40 ppm MTBE for 2, 4, 6 and 8 hour periods at 50% and 80% RH.
Detection Limit	Assuming an analytical detection limit of 1 μg per monitor, the minimum detectable concentration is 0.60 ppm with a 15 minute sample, and 0.02 ppm with an 8 hour sample.
Reverse Diffusion	Not significant (<10%) when exposed to 84 ppm MTBE 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 28 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.

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Interferences No significant bias in the sampling rate when sampling 4, 11, and 46 ppm MTBE in the presence of 311, 618 and 832 mg/m³ gasoline respectively. Monitors were desorbed with CS₂ and then analyzed by GC/MS to eliminate the interference with coeluting peaks from the gasoline.

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

Table 1 indicates the 3500/3510 accuracy for MTBE 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 MTBE at the time that this work was done.

Table 1: 3500/3510 % Accuracies by concentration and sampling time.

Conc. (ppm)	15 min	8 hrs
6	7.9 %	14.7 %
12	18.9 %	
20	12.8 %	
85	13.5 %	13.6 %