



# Technical Note

## Validated Uptake Rates for Benzene and Other VOCs Using SKC Passive TD Tubes Cat. Nos. 226-520 and 226-521

U.S. EPA Methods 325A and B — Volatile Organic Compounds from Fugitive and Area Sources — are used primarily for determining compliance with national emissions standards for benzene, but may be used for other volatile organic compound (VOC) fugitive emissions from petroleum refineries.

EPA has reported the following passive sampling (uptake) rates for benzene and other selected Clean Air Act compounds using passive thermal desorption (TD) tubes containing either Carpack® X sorbent or Anasorb® GCB1 sorbent (equivalent to Carpack B/Carbograph 1).

### Validated Uptake Rates (ml/min) and Sorbents for Selected Clean Air Act Compounds

Compound	Carpack X (Tube Cat. No. 226-520)	Anasorb GCB1* (Tube Cat. No. 226-521)
Benzene	0.67 ± 0.06	0.63 ± 0.07
Carbon tetrachloride	0.51 ± 0.06	N/A
Chlorobenzene	0.51 ± 0.06	N/A
3-Chloropropene	0.51 ± 0.3	N/A
p-Dichlorobenzene	0.45 ± 0.05	N/A
1,1-Dichloroethane	0.57 ± 0.1	N/A
1,2-Dichloroethane	0.57 ± 0.08	N/A
1,1-Dichloroethene	0.57 ± 0.14	N/A
1,2-Dichloropropane	0.52 ± 0.1	N/A
Ethylbenzene	0.46 ± 0.07	0.50
Styrene	0.50 ± 0.14	N/A
Tetrachloroethene	0.48 ± 0.05	N/A
Toluene	0.52 ± 0.14	0.56 ± 0.06
1,1,1-Trichloroethane	0.51 ± 0.1	N/A
1,1,2-Trichloroethane	0.49 ± 0.13	N/A
Trichloroethene	0.50 ± 0.05	N/A
m,p-Xylene	0.46 ± 0.09	0.47 ± 0.04
o-Xylene	0.46 ± 0.12	0.47 ± 0.04

\* SKC Anasorb GCB1 is equivalent to Carpack B/Carbograph 1.

For more information on the SKC Passive TD Tube, visit [goo.gl/EyynRQ](http://goo.gl/EyynRQ).

### References

McClenny, W.A. et al., "24 h Diffusive Sampling of Toxic VOCs in Air onto Carpack X Solid Adsorbent Followed by Thermal Desorption/GC/MS Analysis—Laboratory Studies," *J. Environ. Monit.*, Vol. 7, Issue 3, 2005, pp. 248-256

Federal Register, Vol. 80, No. 230, 40 CFR Parts 60 and 63, [www.gpo.gov/fdsys/pkg/FR-2015-12-01/pdf/2015-26486.pdf](http://www.gpo.gov/fdsys/pkg/FR-2015-12-01/pdf/2015-26486.pdf)

EPA Method 325A, Volatile Organic Compounds from Fugitive and Area Sources, (sampling), <https://www3.epa.gov/ttn/emc/promgate/m-325a.pdf>

EPA Method 325B, Volatile Organic Compounds from Fugitive and Area Sources, (analysis), <https://www3.epa.gov/ttn/emc/promgate/m-325b.pdf>