SKC EPA 325 Passive TD Tubes for Benzene



Passive thermal desorption tubes for benzene at refinery fencelines and for low-level VOCs over long periods

The tubes sample low-level volatile and semi-volatile organic compounds (VOCs and SVOCs) by diffusion, with no pump, over extended periods. They meet EPA 325 for benzene monitoring at refinery fencelines over 14 days. Validated uptake rates for other VOCs extend their use; a weatherproof shelter protects them outdoors.

0.67 mL/min	14 days	3.5 × 0.25 in	GC or GC-MS
Uptake rate, benzene, Carbopack X	EPA 325 sample period	Tube size, length × OD	Analysis

Performance

Uptake rate, benzene	Carbopack X: 0.67 mL/min Anasorb GCB1: 0.63 mL/min
Compounds	Benzene, toluene, ethylbenzene, xylenes and many other VOCs with EPA-validated uptake rates; SVOCs
Analysis	Quantitative, by gas chromatography (GC) or GC with mass spectrometry (GC-MS), EPA 325B
Background	Sorbents purged and analysed for VOC background before packing; every tube conditioned and quality control tested for low background

Operating conditions

Sample period	Extended periods for low-level measurements; 14 days for EPA 325
Outdoors	In the weatherproof shelter, which protects the tubes from rain and debris
Applications	Fenceline monitoring, indoor air sampling, vapour intrusion studies

Mechanical

Sorbent [2]	Pre-conditioned Carbopack X or Anasorb GCB1
Tube	Stainless steel, 3.5 × 0.25-in outside diameter (OD), deactivated with SilcoNert 2000
Coating	SilcoNert 2000 improves corrosion resistance, inertness and hydrophobicity, for better detection limits and system performance
Caps	Brass Swagelok screw caps with polytetrafluoroethylene (PTFE) ferrules for transport; diffusion cap for sampling
Marking	Unique identification number and bar code; product ID number; airflow direction and cap placement arrows
Reuse [1]	Reusable after conditioning in the laboratory

Compliance

Methods	Meet EPA 325 for fenceline monitoring of benzene at petroleum refineries; analysis to EPA 325B

EPA Method 325

Deployment	12 to 24 passive samplers around the fenceline of each refinery every two weeks; the number depends on refinery size
Evaluation	Benzene on the samplers is tracked as an annual rolling average to detect significant excess fugitive emissions
Use of the tubes	First to establish a baseline that helps manage exceedances, then for compliance sampling
Other VOCs	EPA 325 can also screen average airborne concentrations of other VOCs, including hazardous air pollutants (HAPs), at ambient monitoring sites

Validated uptake rates, mL/min (EPA 325B, Table 12.1)

Compound	Carbopack X	Anasorb GCB1
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

Tubes

Order code	Description
226-520	Carbopack X tubes, 10 per pack
Ask Analyt-MTC	Anasorb GCB1 tubes, 10 per pack

Order from Analyt-MTC with the order codes. The tubes are 3.5 × 0.25-inch OD, filled with pre-conditioned sorbent and supplied with diffusion caps and Swagelok screw caps with PTFE ferrules.

Accessories

Diffusion caps, 10 per pack	226-525
Shelter, 4-inch diameter × 5.5-inch length	226-526

Notes

1. Use the tubes within 30 days of conditioning.
2. Anasorb GCB1 is equivalent to Carbopack B/Carbograph 1.
3. The EPA 325 rule sets the protocol for benzene; the uptake rates of the other compounds come from EPA Method 325B, Table 12.1.

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