

Technical Data Sheet: TDS 8

VOLATILE ORGANIC COMPOUNDS

These tubes are designed for passive (time weighted average concentrations) and active monitoring of volatile and semi-volatile organic compounds in the range C2 – C28. The tubes can be used passively for time weighted average concentrations or pumped (active) for workplace monitoring and comparison to health and safety workplace exposure limits.



Description: Stainless steel tube filled with a solid polymer absorbent, two brass swagelok caps. An appropriate sorbent is selected to suit the application required – several tubes may be required to measure all compounds required.

For passive sampling an aluminium air diffuser is supplied which is fitted to the sampling end of the tube (groove end) during exposure.

For active sampling, an air pump set to 50 ml/min (other flow rates available on request) is connected to the non-sampling end of the tube and run for a preset period.

Concentrations absorbed by the tube are measured by thermal desorption and analysis by GC/FID or GC/MS (UKAS Accredited Methods).

Suitable for carrying out spatial or localised assessments of volatile and semi-volatile organics in ambient air, soil, workplace, or industrial monitoring. Used for tracking VOC / SVOC in soil using soil probe (please see TDS 11).

Benefits of passive monitoring:

- No power supply required
- Can be used over a wide area
- Long-term monitoring

Benefits of active sampling:

- Faster sample collection so results are received sooner
- Controlled sample volume
- Effective sampling of low concentrations – ppb levels
- Very volatile compounds are retained
- Low cost pump hire from Gradko

Tube Dimensions: 6.3mm OD x 5.0mm ID x 90mm length.

Clips and straps are not included and must be ordered separately.

Recommended Exposure Periods:

Passive Sampling: 1 –4 weeks.

Active Sampling: The safe sampling volumes for each type of compound to be monitored should be considered (published figures).

| Suggested Guide Lines for Pumped Samples | |
|--|----------------------------|
| | Recommended Exposure Times |
| High (you can smell it) | 5 minutes |
| If you suspect it's high | 5 – 10 minutes |
| No Idea | 50 minutes |
| Low | 60 – 100 minutes |
| Expected Clean Air | 100 minutes |

Based on pump rate of 50-100 mL/min

It is very important that moisture does not enter the tube – if the environment is humid, please contact us for advice.

Air Velocity: Tube fitted with filter therefore negligible influence.

Storage: Store in a dark, cool environment free from residual airborne VOC. After sampling, tubes can be wrapped in tin foil if required – do not use any other form of wrapping.

Shelf Life: 12 weeks from conditioning date (dependant on type of solid sorbent used).

Analytical Expanded Measurement Uncertainty: Available upon request.

Limit of Detection: Specific values available upon request.

Toluene is used as the non-specific standard for most identification & estimation analysis – general limits of detection are given as a guide below:

For passive samples results are reported in ppb, for pumped samples results are reported in $\mu\text{g m}^{-3}$ unless otherwise requested.

Applications:

- Ambient air monitoring of traffic systems, factory outputs ie. paint shops and petrochemical boundaries.
- Stack monitoring.
- Workplace monitoring: Measuring levels of airborne solvent vapours.
- Personal monitoring.
- Soil monitoring.
- Measurement of occupational exposure levels.
- Biological monitoring i.e. non-invasive measuring of levels of VOCs taken into the body by skin adsorption, ingestion and inhalation. This method provides vital information on the potentially harmful build-up of chemicals in the body after prolonged low-level exposure.

Relevant Standards: ISO16017 : EN14662 : EN13528: MDHS 72 : MDHS 80: EPA T0-17

Packaging of Sorbents: Each type of sorbent is packed into the thermal desorption tube under strict quality control and under laboratory environment conditions. The weight of the sorbent packed is controlled to within +/- 5%.

Selection of Absorbents: The choice of absorbent depends on the volatility of the analyte concerned. Sorbents or series of sorbents selected must quantitatively retain the compounds from the volume of air/gas sampled and then be released as efficiently as possible when the tube is desorbed. A general rule is to use the boiling point of the component as a guide to its volatility. Gradko International Ltd Technical Services can advise users on the correct sorbent to be used.