

MTS-32 Pro™

Multi-tube sampler

Unattended, time-resolved sampling of airborne volatile organic compounds for TD-GC analysis

 MARKES



MTS-32 Pro™

Reveal airborne VOC trends with unattended, time-resolved air sampling

Monitoring the dynamic behaviour of volatile organic compounds (VOCs) in air over time is important for several applications:

- Aroma release and performance of fragranced consumer products
- Aroma evolution and flavour stability in foods
- Indoor air quality studies

Conventional single-point sampling is manual, laborious and can miss time-resolved changes, limiting confidence in results of airborne VOC studies.

The MTS-32 Pro:

- Delivers flexible, automated air sampling without manual intervention
- Ensures both immediate and long-term trends are accurately collected
- Combines high flow rates for rapid collection of volatiles, with programmable timing control
- Captures fast-changing events using short, precisely measured sampling durations
- Enables user-defined sampling sequences, easily tailored to different sampling studies or environments

Subsequent TD–GC–MS analysis of the sampled tubes enables compound characterisation within a single automated workflow, providing deeper insight into VOC and aroma behaviour.



We're now seeing a new universe of data."

Feedback from customer trial

Robust, automated sequential tube sampling

Key features:

- **High capacity:** Accommodates 32 tubes and is compatible with both industry-standard (3.5" x 0.25") and mini (60 mm x 6 mm) sorbent tubes.
- **Automated, customisable sampling:** Enables unattended operation over several days, with individual tube sampling times and dwell periods adjustable from 0.01 minutes to 4 hours.
- **In-built flow control:** Maintains a consistent sampling flow rate across all tubes, adjustable from 20 mL/min to 1 L/min.
- **Sample security:** Protects samples from atmospheric contamination and loss of volatiles using high-flow micro-check valve caps that remain in place during sampling.
- **Portability:** Features a compact, durable design with an integrated carry handle for easy transport between sampling locations.

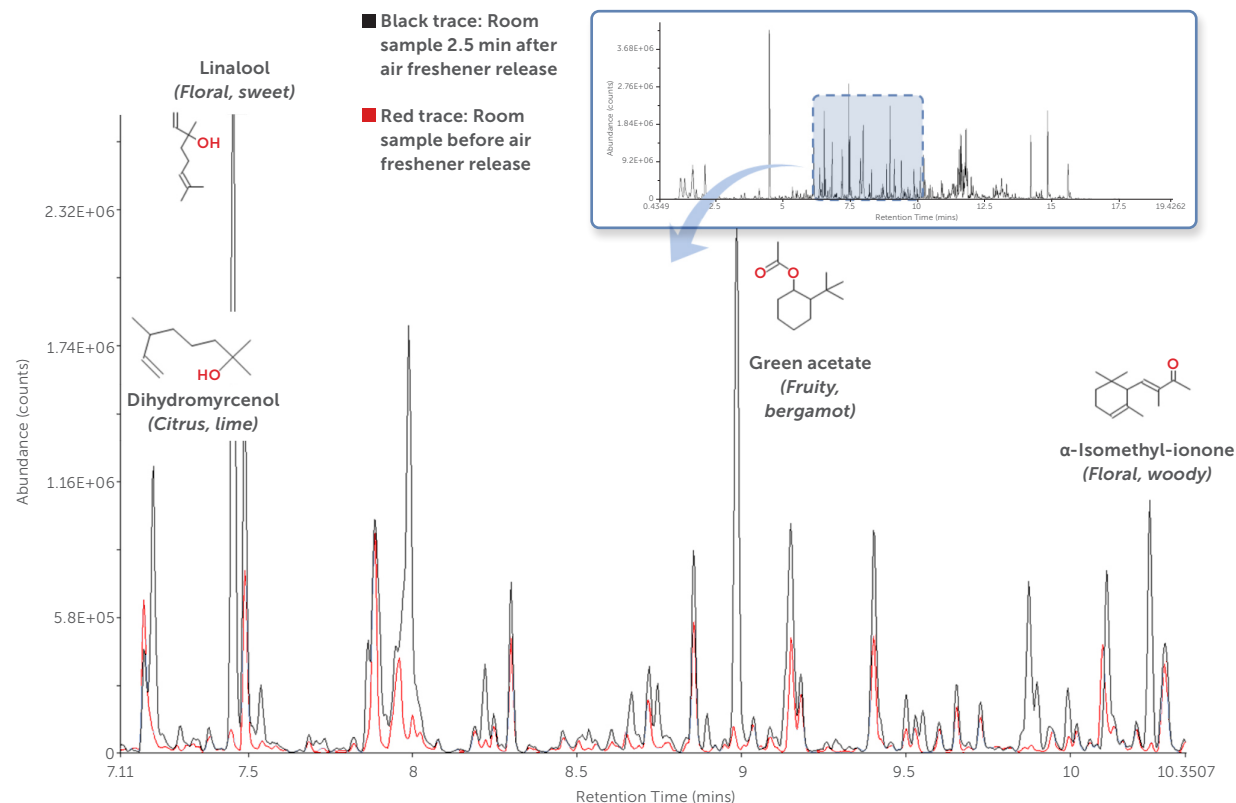


Understanding fragrance evolution

Powerful analyte preconcentration with TD delivers confident identification of wide-ranging aroma compounds

Time-resolved air sampling is essential for understanding how fragrance products perform in real-world conditions, as it captures how scent intensity and composition change over time rather than providing a single averaged measurement.

By tracking the dynamic release profile, from the initial burst through to long-term persistence and dissipation, it enables precise evaluation of fragrance longevity, consistency and peak intensity. This insight helps differentiate between formulations, optimise delivery systems and ensure that products convey the intended sensory experience across their full usage period.

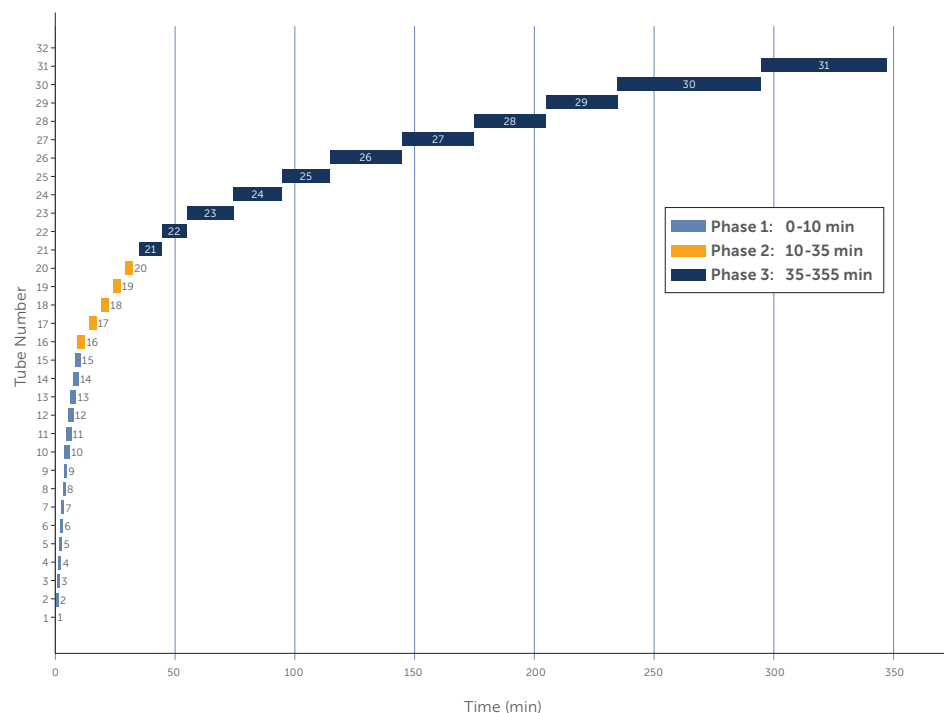


Four key aroma compounds were present within 2.5 minutes after air freshener application (black trace) in an enclosed room, sampled automatically using the MTS-32 Pro and analysed by TD-GC-MS. The compounds deliver a blend of citrus, floral, fresh and fruity notes. The results also highlight the importance of collecting a pre-spray room blank (red trace) to clearly distinguish air freshener-specific compounds from background indoor VOCs.

Revealing scent performance over time

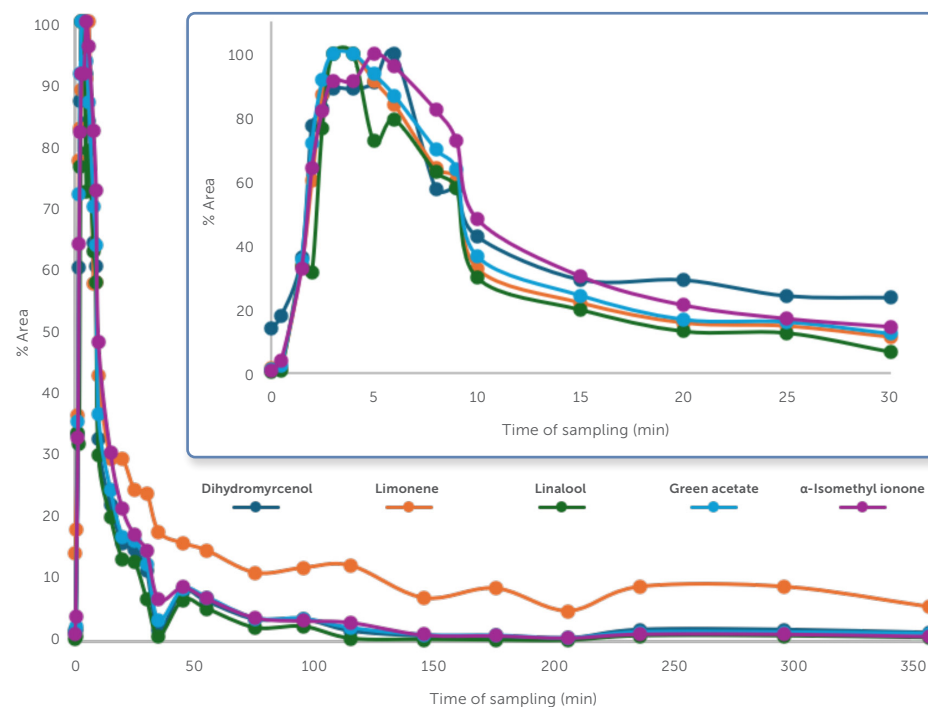
Fully programmable per tube, supporting short, high-volume sampling during initial high-concentration analyte release and less frequent collection during aroma dissipation

MTS-32 Pro sampling schedule



Fast automated sequential sampling reveals early peak concentrations not feasible with manual sampling. As demonstrated in the sampling schedule, very short sampling times (5 seconds) and closely spaced intervals (25 seconds) were programmed in the first 5 minutes, with longer spacing between later samples.

Concentration profiles of five abundant air freshener compounds

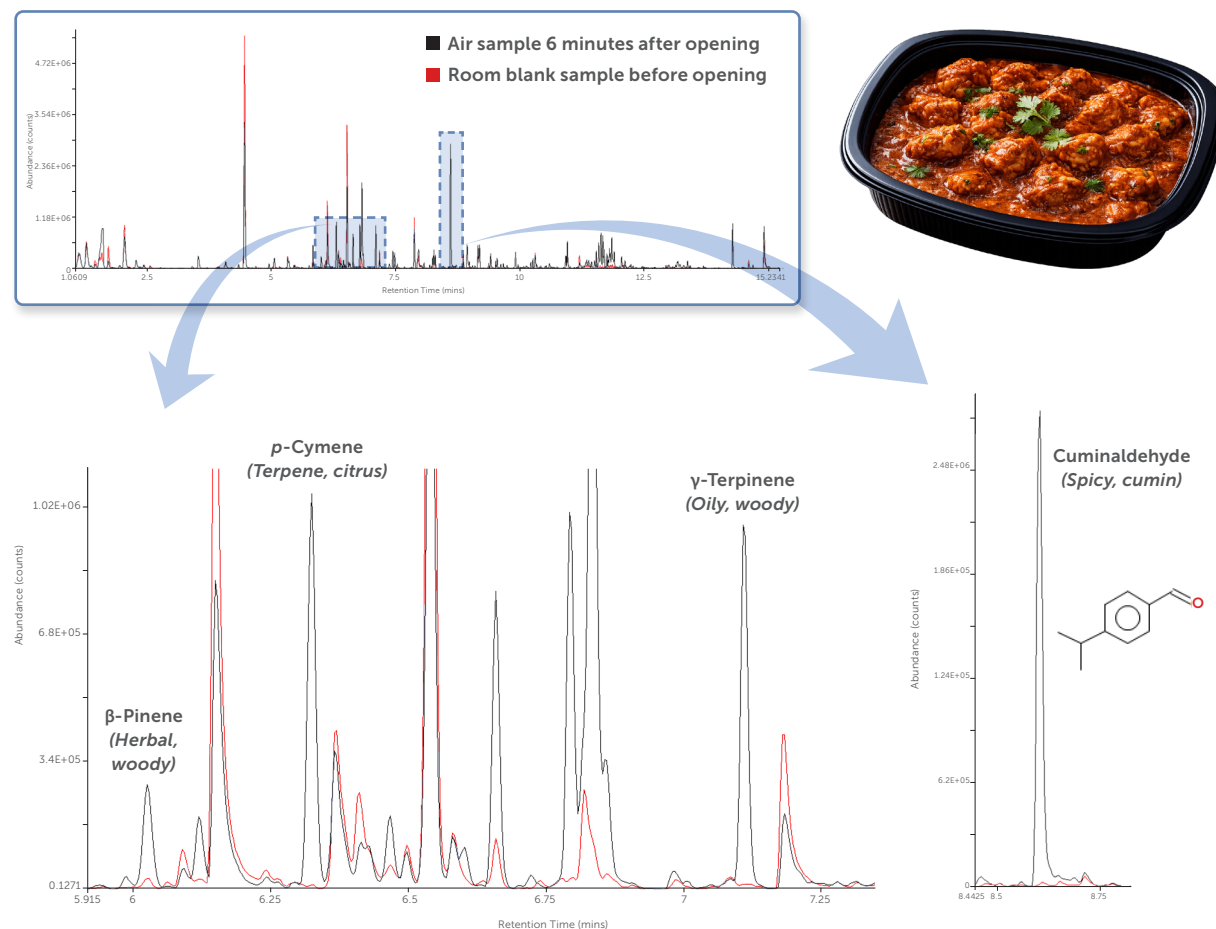


Concentration profiles of the five most abundant compounds detected illustrate rapid changes immediately after air freshener application, with the inset expanding the first 30 minutes.

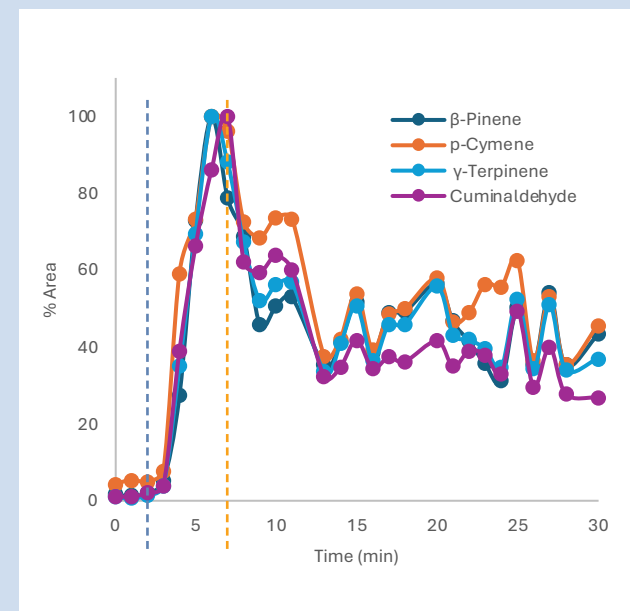
Deeper insights into food aroma experience

Aroma is a key driver of consumer perception, providing the first indication of quality, flavour and freshness while strongly influencing purchase decisions.

With over 75% of flavour attributed to smell, understanding aroma evolution and flavour stability is essential for food manufacturers, particularly for products like microwaveable ready-meals, where the aroma on opening signals freshness, safety and overall product acceptance.



Four high-abundance compounds present 6 minutes after opening a cooked curry ready-meal with characteristic herbal, woody and spicy notes, including cuminaldehyde, an ingredient-derived aroma, confirming the presence of cumin. (Blue dashed line indicates time of opening ready-meal. Yellow dashed line indicates 6 minutes with data shown to the left.)



Unmatched expertise in VOC monitoring

For more than 25 years Markes has defined the standard for trace-level VOC analysis by gas chromatography (GC).

Our market leading thermal desorption systems including the powerful Centri automation platform deliver unmatched sensitivity, robustness and workflow efficiency. Combined with our comprehensive range of sampling tools, they enable laboratories to generate high-confidence data, faster and more reliably.

Compatible with all major GC and GC-MS systems, Markes technology expands analytical capability across environmental testing, consumer products, food and beverage, fragrance, materials science and research.

Markes is headquartered in Bridgend, UK with specialist laboratories and demonstration facilities in the USA, Germany and China, and is a company of the Velaris brand.



TD100-xr™

Robust automated thermal desorber for high-throughput analysis.



UNITY-xr™

Versatile, high performance and cryogen-free single tube thermal desorber.



ULTRA-xr™

Modular unit for adding automated tube handling and extended throughput capabilities to UNITY-xr.



Centri®

Automated, cryogen-free, multi-mode platform for sample extraction and analysis.



**Micro-Chamber/
Thermal Extractor™**

Four-chamber system for dynamic headspace sampling onto sorbent tubes.



MTS-32™

Multi-tube sequential sampler, ideal for kinetic studies and outdoor field deployment.

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