TC-30

Multi-tube conditioner

Enhance productivity and data confidence in TD–GC laboratories

MARKES a Velaris brand

SEPSOLVE a Velaris brand

TC-30™ tube conditioner

Protect your sample integrity: Reliable results start with clean tubes

In TD–GC workflows, residual contaminants and carryover in sorbent tubes can introduce unwanted artefacts, mask low-level targets and reduce confidence in results reported. Even small amounts of contamination can lead to costly re-analysis, particularly in trace-level volatile organic compound (VOC) applications where sensitivity is critical. Clean sorbent tubes are essential to minimise background, maximise sensitivity and protect data quality.

The TC-30 is an easy-to-use, off-line device for the automated and simultaneous conditioning and dry-purging of up to 30 thermal desorption tubes. The system uses a flow of clean, dry nitrogen rather than expensive helium carrier gas, significantly reducing operating costs. Its integrated touch-screen with in-built preset and fully-programmable methods improves workflow efficiency and accelerates routine tasks in busy laboratories.

The advantages of Markes automated off-line conditioning:

- **Enhance laboratory productivity** by freeing up your analytical instrument to run samples, including overnight.
- **Improve overall analytical performance** by off-line dry-purging, removing excess water collected during sampling, prior to analysis.
- **Lower operating costs** by allowing dry nitrogen to replace more expensive helium gas.
- **Reduced gas consumption** with operation in batches of 15, as well as automated gas flow reduction during cooling.
- **Operate from anywhere in the laboratory** with any source of mains power and gas supply. Use the intuitive touch-screen controls, to enable processing of samples away from the analytical instrument.

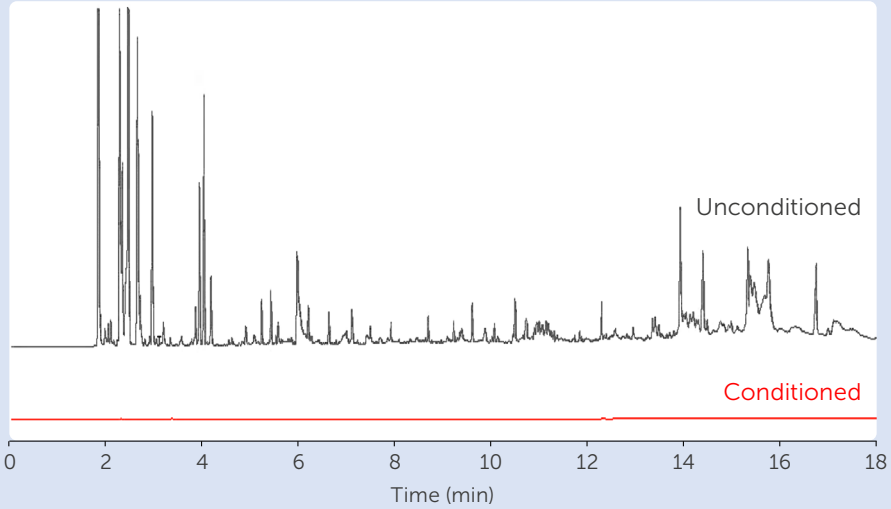
The need for sorbent tube conditioning

Sorbent tubes require rigorous conditioning whenever they are:

- Contaminated during sampling.
- Required for trace-level monitoring.
- Freshly packed with sorbent.
- Stored without being properly capped using long-term storage caps.

Advice on conditioning parameters can be found in Application Note 005 and is also supplied with all pre-packed tubes from Markes.

The effectiveness of tube conditioning using the TC-30



The GC–MS chromatograms show VOC profiles of a new stainless-steel sorbent tube packed with Tenax TA before and after conditioning.

The units bring consistency we can rely on. Tubes are conditioned in the same way, every time, helping teams trust their data, work efficiently, and focus on what really matters: delivering high-quality studies.

Luke Cartwright, Principal Analytical Validity and Compliance Scientist, Owlstone Medical

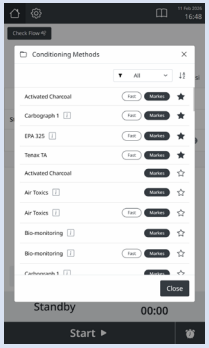
Versatile conditioning to accelerate every workflow

Key features

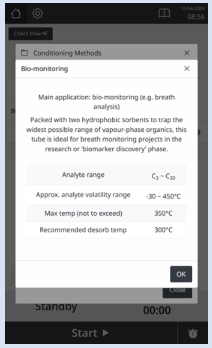
The TC-30 features an integrated touch-screen for simple, rapid and intuitive navigation to expedite laboratory workflows requiring clean and conditioned TD tubes.

- **Quick set up time** thanks to a library of preset methods for all Markes sorbent tubes. Rapidly choose the correct method and access additional information such as maximum operating and desorption temperatures for the tube type selected.
- **Flexible method control** allows users to set their own parameters with multiple temperatures and hold times in a single, automated conditioning method.
- **Unattended operation** is ideal for lengthy conditioning methods in busy laboratories. A start-delay function also allows a batch of tubes to be conditioned overnight or over the weekend, by enabling the system to automatically 'finish at' or 'start at' a chosen time, maximising lab operations.
- **Low operating costs and maximum batch throughput** thanks to advanced post-conditioning cooling and efficient gas management to keep performance high.
- **Consistent operation and dependable, high-quality results** across multiple users with in-built visual guides, colour-coded indicators, and clear status alerts. A low-pressure warning and subsequent operation cut-off ensures tubes are not damaged if gas isn't supplied correctly, for example, if a gas cylinder needs changing.
- **Track activity and prevent unintended operator changes** with access to sequence history and a password-protected read-only mode.
- **Engineer-free installation**, simply setup and connect wherever a gas supply and mains power are available.

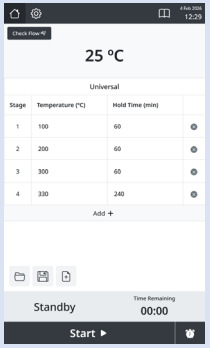
Minimal set-up time: Presets and saved method recall. Favoured methods prioritised at top.



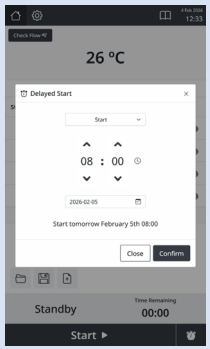
Built-in guidance: Instant access to recommended operating temperatures.



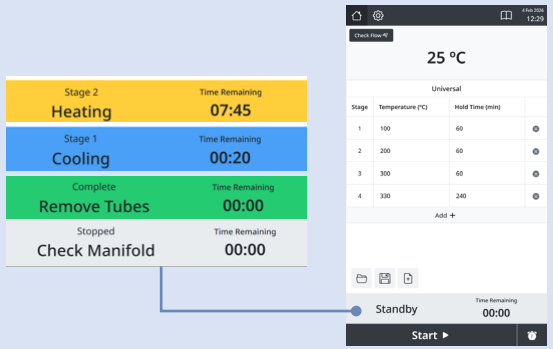
Flexible method control: Multiple temperatures and times in a single automated method.



Unattended operation: Includes a start-delay function for overnight conditioning.



Clear visual status and safety alerts: Indicators, timers and warnings protect tube integrity and reduce operator error.



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Condition tubes and analyse samples simultaneously

TD–GC–MS laboratory with a TC-30			TD–GC–MS laboratory without a TC-30		
Simultaneous conditioning of 30 tubes using TC-30	×	9 hours: 8 hours (typical working day) +1 (overnight run)	Conditioning of single tubes using TD–GC–MS (using a 1-hour method)	×	24 hours (Available time on automated TD–GC–MS system)
= Up to 270 tubes conditioned			**= Up to 24 tubes conditioned**		
+			+		
40 minutes (average TD–GC–MS analysis time)	×	24 hours	NO SAMPLE ANALYSIS		
= 36 samples analysed			**= 0 samples analysed**		
TOTAL 270 tubes conditioned	+	36 samples analysed	**TOTAL** 24 tubes conditioned		
Conditioned tubes and samples analysed simultaneously.			**Conditioned tubes only. No samples analysed.**		

The conclusion?

Without a TC-30 for tube conditioning, sample analysis stops the moment your TD system is conditioning tubes. Markes' tube conditioner saves you time and money by releasing your TD–GC–MS instrument to run more analytical samples. It also helps to reduce operating costs by allowing conditioning with nitrogen instead of helium gas*. As a result, a TC-30 could pay for itself in as little as 3–4 weeks, or even faster for laboratories with large sample throughputs.**

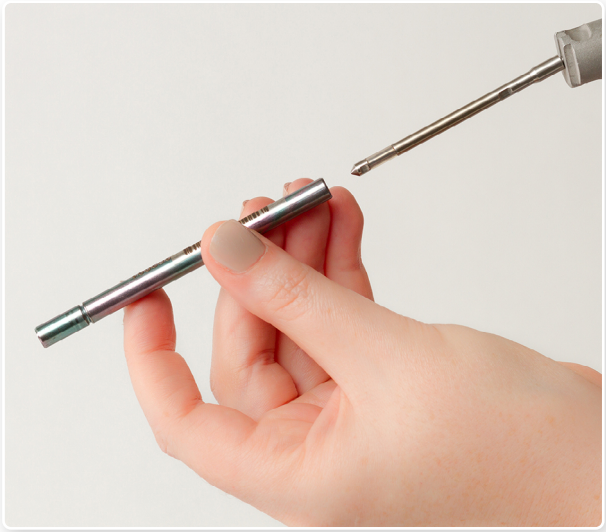
*Estimated incremental cost for helium is approximately $150 per batch of 270 tubes. This information is provided for reference only. Actual costs may vary and Markes assumes no responsibility for cost fluctuations or final material pricing.

**Any cost savings, operating cost reductions or payback periods stated are illustrative only and based on typical assumptions. Actual performance and financial outcomes will depend on laboratory and method conditions used, and current gas pricing.

Industry-wide compatibility

The TC-30 is compatible with a wide variety of tube-based sample collection formats for the flexible conditioning of:

- Industry-standard size tubes (3.5" x 0.25" O.D from Markes or alternative suppliers):
  - Stainless-steel
  - Inert coated stainless-steel
  - Glass
- GERSTEL:
  - Mini-tubes (60 mm x 6 mm O.D.)
  - Twister® Stir Bar Sorptive Extraction (SBSE)
- HiSorb™ probes
- Thin-film solid-phase microextraction (TF-SPME)
- radiello® cartridges
- POD samplers



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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 laboratory 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 field deployment.

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MARKES
a Velaris brand

UK:
1000B Central Park, Western Avenue, Bridgend, CF31 3RT
T: +44 (0)1443 230935

US:
2355 Gold Meadow Way, Gold River, Sacramento, California 95670
T: +1 866-483-5684 (toll-free)

Germany:
Bieberer Straße 1-7, 63065 Offenbach am Main
T: +49 (0)69 6681089-10

China:
Room 901, Building 1, No. 2899 Lianhua South Road, Minhang District, Shanghai 201109
T: +86 21 5465 1216

E: enquiries@markes.com
W: www.markes.com

SEPSOLVE
a Velaris brand

UK:
4 Swan Court, Forder Way, Hampton, Peterborough, PE7 8GX
T: +44 (0)1733 669222

Germany:
Bieberer Straße 1–7, 63065 Offenbach am Main
T: +49 (0)69 668 108 910

Canada:
1060 Guelph Street, Kitchener, Ontario, N2B 2E3
T: +1 519 206 0055

E: hello@sepsolve.com
W: www.sepsolve.com