PRODUCT SHEET

ULTRA *50:50*
Low-cost automation of quantitative re-collection for thermal desorption (TD)

Single autosampler re-collection*

ULTRA *50:50* is a **cost effective** and **space saving solution** for thermal desorption and re-collection of up to 100 tubes offering **quantitative and automatic re-collection** of up to 50 samples into a corresponding number of re-collection tubes. Alternatively up to 100 TD samples can be automatically re-collected back onto the original sorbent tube if required.

Pioneered by Markes International Ltd. in 1998, quantitative re-collection of TD samples (SecureTD-Q) has set a new benchmark for analytical thermal desorption technology. SecureTD-Q allows repeat analysis and validation of TD methods/data as referenced in **international standard methods** such as ASTM D6196-03.

For high throughput laboratories with a focus on data quality ULTRA *50:50* systems offer quantitative and automatic re-collection of all split flow during trap desorption. Sample and re-collection tubes are arranged in colour-coded trays for **error-free operation** and a clear user interface displays sequence status and a post run sequence report.

The ULTRA *50:50*
Thermal Desorption System

* Patent Application No GB_2003/005242

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ULTRA *50:50* automated thermal desorption summary

- Automatic and quantitative sample re-collection using one cost-effective 100-tube TD autosampler
- Electrically-cooled focusing trap for cryogen-free operation with capillary GC-MS
- Wide analyte and application range – from air monitoring to materials QA/QC
- Back flush desorption for simultaneous analysis of volatile and semi-volatile organic compounds
- Automatic leak testing of both sample and re-collection tubes to guarantee data validity
- Patented sample sealing technology (DiffLok*) maintains sample integrity while allowing simple/robust automation – no uncapping and re-capping required
- Optional electronic control of carrier gas plus split and desorb flows
- Compliant with international standard methods
- Unrestricted upgrade path

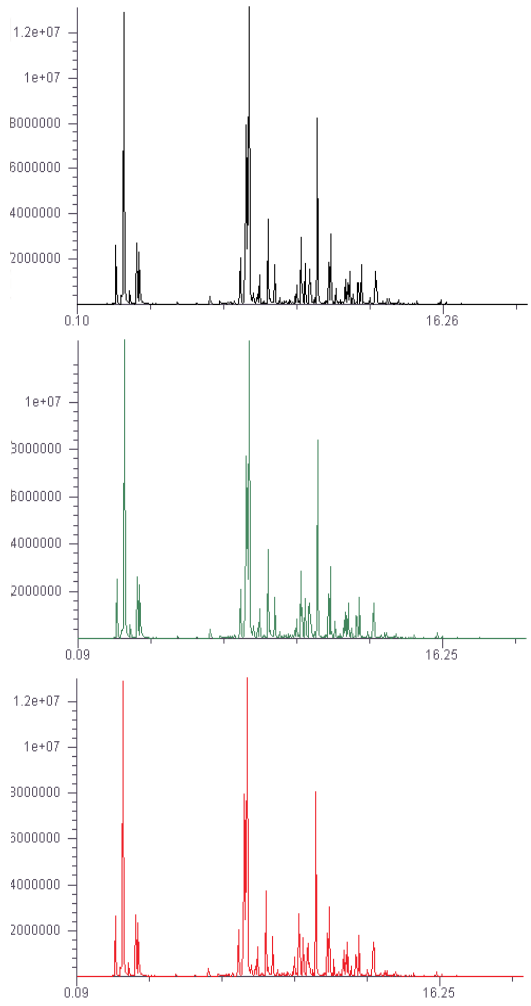
Extended automatic operation with optimum sample throughput

The ULTRA *50:50* offers over 24 hours automatic operation with capacity for up to 50 sample tubes and 50 re-collection tubes. Alternatively, up to 100 sample tubes can be desorbed; with or without automatic re-collection onto the original sample tubes. As with all Markes automated thermal desorbers, ULTRA *50:50* systems feature **'overlap mode' for optimum productivity** – this means that leak testing and tube desorption of a subsequent sample can begin while GC(-MS) analysis of a previous sample continues thus minimising analytical cycle times.

Assured integrity of sample and re-collection

In compliance with **international standard methods** all Markes thermal desorbers include stringent and automatic leak checking of both sample and re-collection tubes prior to thermal desorption. A **patented valve design**** ensures that re-collected samples are representative of the primary sample and suitable for repeat analysis and method/data validation. (See Markes brochure on validation and Secure TD-Q).

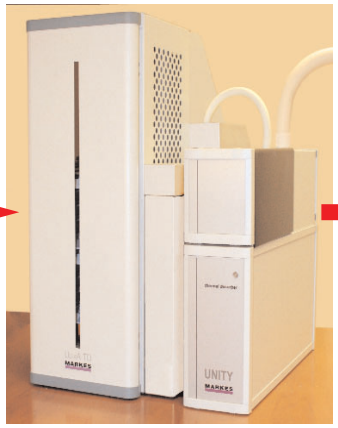
DiffLok caps seal tubes on the ULTRA autosampler both before and after analysis to prevent loss of analytes or ingress of laboratory air contaminants.



Secure TD-Q: Three chromatograms showing original sample (top), first re-collection (middle) and second re-collection (bottom). Reproducible chromatography validates TD method performance

* GB 2337513, US 6,564656 B1
** GB 2336649

UNITY(e)
Platform thermal desorber



ULTRA *50:50*
Automatic thermal desorption / re-collection

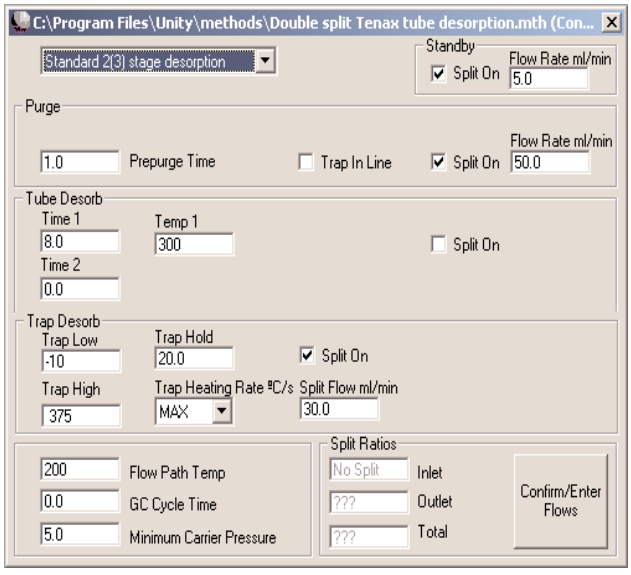
AutoSecure
Automatic thermal desorption / re-collection

Simple to use / reliable operation

- Colour coded trays clearly identify sample and re-collection tubes
- User friendly software ensures error-free operation
- Ease of cold trap change – simplifies system maintenance and improves uptime
- DiffLok caps offer mechanically simple and robust automation
- Secure TD-Q - quantitative re-collection for repeat analysis. Facilitates repeat analysis and validation of analyte recovery through the TD system as specified in standard methods
- Sophisticated and versatile water management. Tubes may be automatically dry purged in the sampling direction
- Automatic internal standard addition to blank or sampled tubes available

Simple upgrade path

Markes UNITY(e) TD system offers full thermal desorption functionality, including Secure TD-Q, for analysis of of single sample tubes and validation of TD methods. UNITY(e) can be easily upgraded to the ULTRA *50:50* system for automatic thermal desorption and re-collection (50 or 100-tubes) of all split flow during trap desorption. ULTRA *50:50* also offers full inlet and outlet split re-collection for single tube validation of double split methods. As work flow increases users can subsequently upgrade to an AutoSecure system allowing automated and quantitative re-collection of both inlet and outlet split flows for up to 100 tubes onto a second ULTRA autosampler. This offers optimum versatility and productivity – particularly for high throughput service laboratories.

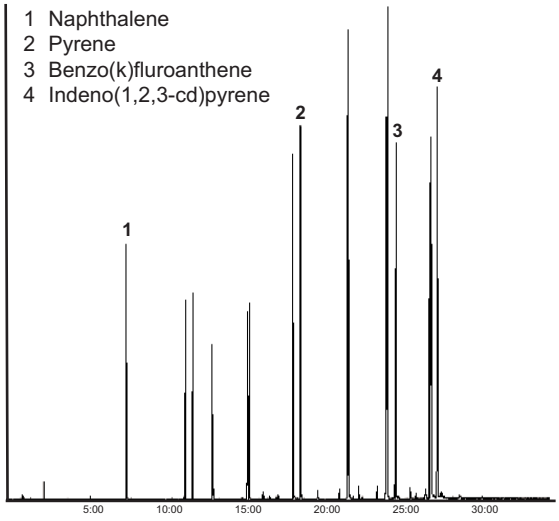


Complete TD method displayed on a single screen

Uncompromised analytical performance across the TD application range

ULTRA *50:50* has a completely inert flow path (no metal fittings) and one version covers the **complete volatility range** of TD applications **(acetylene to n-C_{40})**. Flexible flow path temperature settings (below 150°C) allow reactive compounds, such as mercaptans and labile chemical warfare (CW) agents, to be quantitatively recovered through the system. Applications include:

- Environmental air monitoring
- Occupational health & safety
- Civil defence and military/forensic applications
- Materials testing
- Food, flavour and fragrance
- Residual solvents



Innovation and excellence in thermal desorption

Over the last 10 years, Markes International has re-engineered analytical thermal desorption for the 21st century. Harnessing unparalleled technical expertise, the company has developed a suite of TD systems and unique sampling accessories incorporating key proprietary innovations such as SecureTD-Q, single autosampler re-collection, diffusion-locking and innovative low volume valving. The TD product range includes systems to suit every budget & TD application and features an unrestricted 'future proof' upgrade path.

Ordering information

Description	Part Number
To configure an ULTRA *50:50* you will require:	
EPC-ready thermal desorption platform with SecureTD-Q	U-UNITYe
100-tube autosampler for thermal desorption	U-ULTRA
Backing pneumatics for carrier and dry gas supply	U-GAS01
50:50 module for addition to ULTRA TD autosampler	U2-5050
Additional options to consider:	
USB HUB	U-USHUB
USB-serial port cables	U-USBSR
Spare cold traps with sorbents to suit application	Consult local distributor
UNITY routine maintenance kit	RMK-0001
Accessory for electronic mass flow control of split and desorb flow	U-MFC
Calibration solution loading rig	C-CSLR
Internal standard addition / dry purge accessory	Consult local distributor
Sampling tubes, caps, pumps, diffusion caps	Consult local distributor

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