C146-E349B

SHIMADZU
Excellence in Science

Thermal Desorption Systems

TD-30 Series

TD-30 Thermal Desorption System

Revolutionary Thermal Desorption System Provides Excellent Processing Ability and Reliability

The TD-30 was developed as the optimal solution for gas and materials analysis. Its outstanding processing ability and excellent expandability provide strong support for all types of analysis, from work in research departments to quality control.

Outstanding Processing Ability and Basic Functionality

- Extensive sample capacity capable of accommodating 120 samples
- Efficient analysis with the overlap function and interrupt function
- High-sensitivity analysis of high boiling point components using a sample line with no cold points

Excellent Expandability Enables a Variety of Analyses

- Hedging risks with the retrapping function
- Highly accurate quantitative analysis using a function that automatically adds an internal standard substance
- Highly reliable sample management using a barcode reader

Simple Operations and Ease of Maintenance

- Easy-to-maintain, user-friendly design
- Reliable analysis is simple to implement with GCMSsolution™ software

Outstanding Processing Ability and Basic Functionality

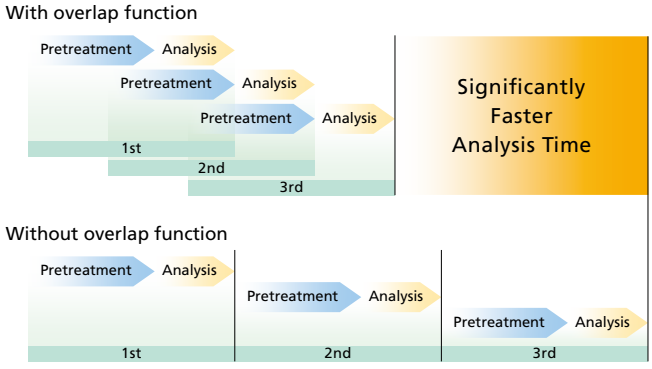
Extensive Sample Capacity Capable of Accommodating 120 Samples

The TD-30R has a maximum capacity of 120 samples, which allows processing a large number of samples via consecutive analyses overnight and on weekends.
In addition, the sample tray is positioned lower down on the front of the instrument. This makes it easy to access even during analysis, and prevents tube positioning errors.

TD-30R

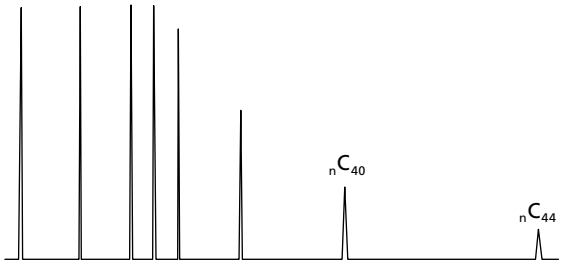
Efficient Analysis with the Overlap Function and Interrupt Function

With the TD-30 series, the overlap function enables the next sample to be pretreated during GC analysis, which shortens the analysis cycle time.
In addition, the interrupt function enables unscheduled samples to be inserted even during consecutive analysis. As a result, a sample can be added after checking the results for a different sample, and an urgent sample analysis request can be accommodated.



High-Sensitivity Analysis of High Boiling Point Components Using a Sample Line with No Cold Points

With the TD-30 series, the entire sample line can be heated, so there are no cold points.
In addition, the sample line, including the transfer line, is designed to be short, which minimizes dead volume, and even highly adsorbent components and high boiling point components can be analyzed with high sensitivity.



Analysis of High Boiling Point Hydrocarbons

Tube

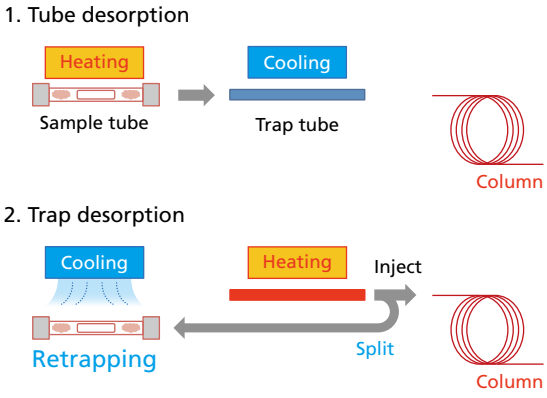
Transfer Line

Trap

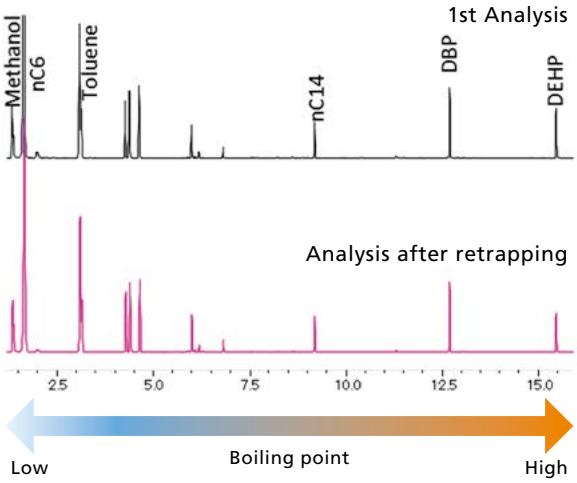
Excellent Expandability Enables a Variety of Analyses

Hedging Risks with the Retrapping (Restore) Function

With the retrapping (restore) function, split samples desorbed from the tube and loaded into the GC-MS are once again trapped by the tube.
Even if a problem occurs, the sample can be measured again, so that even precious trace samples can be analyzed with a sense of ease.
In addition, with the TD-30R, the tube is cooled rapidly after desorption, so even low boiling point components can be restored.

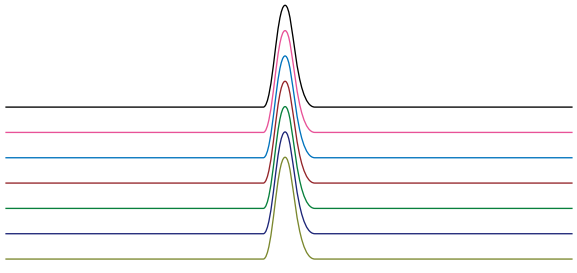


Thermal desorption system achieves sharp peaks by heating sample tube and trapping condensed sample in trap tube. Retrapping function of TD-30R traps split samples, which saves precious samples.

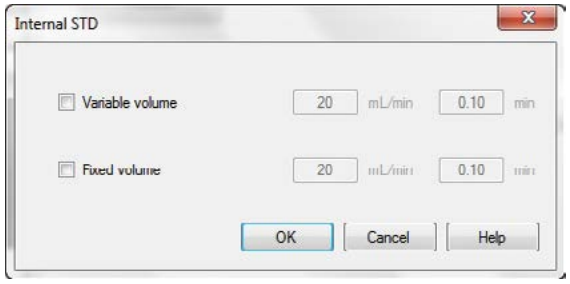


Highly Accurate Quantitative Analysis Using a Function That Automatically Adds an Internal Standard Substance

The TD-30R can automatically add a gaseous internal standard substance to the sample tube.
Highly reliable quantitative results can be obtained, even for the analysis of trace components.



The area reproducibility when an internal standard substance (D_8-Toluene, at a concentration of 1 ppm) is added for 0.2 min at a flow rate of 20 mL/min is an RSD% of <2, and the substance can be added with high accuracy.



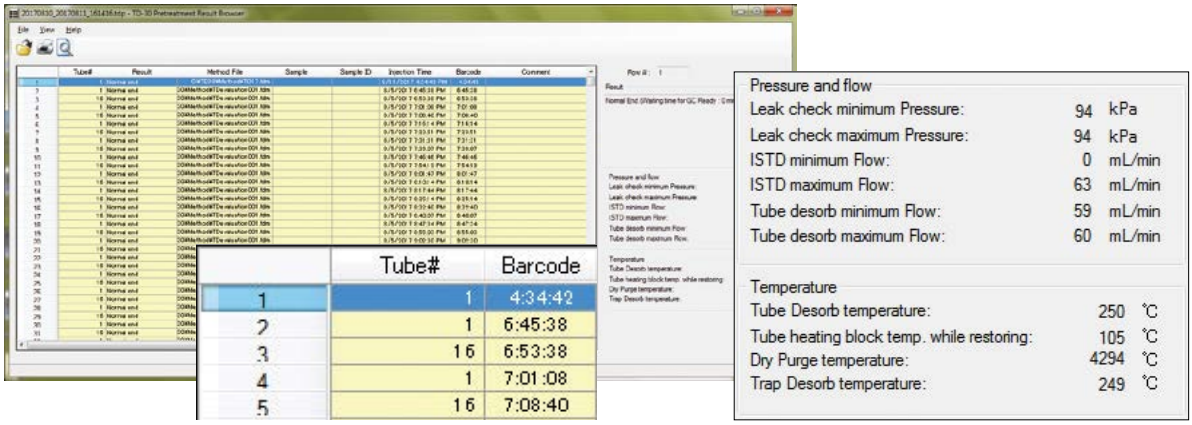
Two methods of addition can be selected: a fixed additive volume mode using a sample loop kept warm, and a variable additive volume mode using a mass flow controller.

Highly Reliable Sample Management Using a Barcode Reader Function

The TD-30 series can be optionally equipped with a barcode reader function. The barcode printed on the tube can be automatically read, and the tube and sample information recorded by the software.
Furthermore, the conditions when the tube was analyzed can be easily checked.

The barcode is read by a 3D scanner.

Pretreatment Result Browser



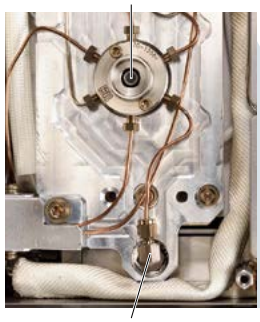
Supports Sample Tubes from Various Manufacturers

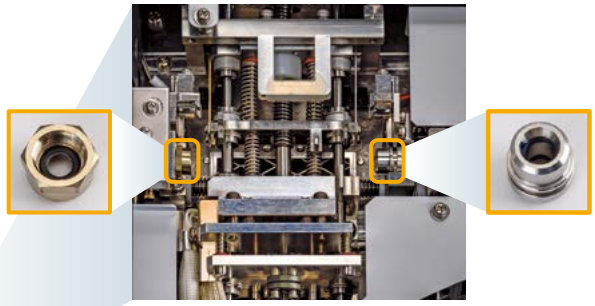
The TD-30 series supports sample tubes (size: 1/4″ × 3.5″) from various manufacturers. The user can select the optimal tube to suit the application.In addition, TD tubes that the customer already has can be used.

Simple Operations and Ease of Maintenance

Easy-to-Maintain, User-Friendly Design

With the TD-30 series, traps, O-rings, and other consumables and maintenance parts can be accessed from the top surface of the instrument, so replacement is simple.
The system is equipped with a software function that records the number of uses of consumables and maintenance parts, and notifies the user when a pre-specified number of uses has been reached. Accordingly, problems due to the operating life of parts can be avoided.



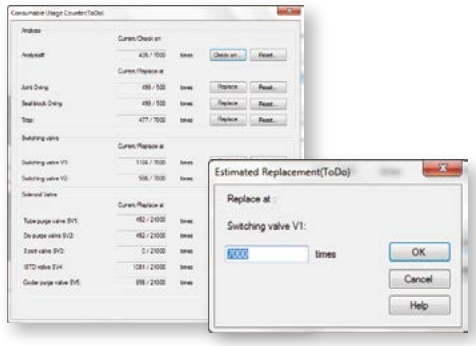


Seal O-Ring

O-rings can be replaced without using tools.

Column Joint

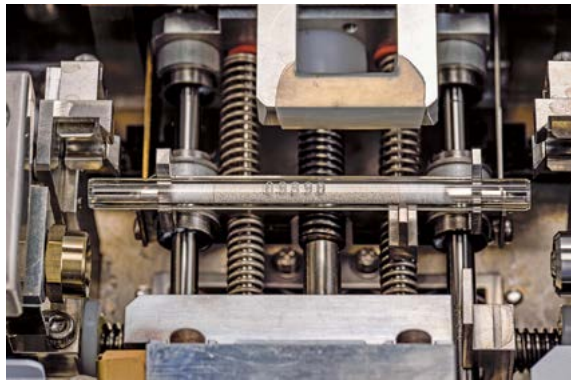
Easily accessed from the Shimadzu GC oven.
The tools are also the same as those used with the Shimadzu GC.



Consumable Usage Counter

Problems with Tubes Are Prevented Using the Tube Protection Function and the Pressure Release Function

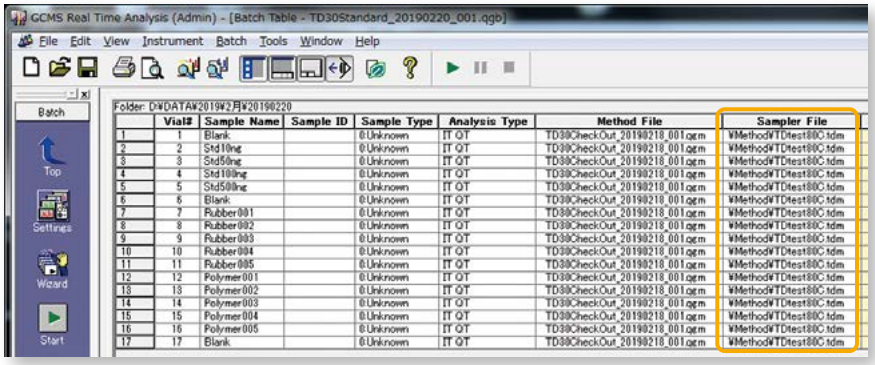
The TD-30 series features a built-in tube protection sensor, which significantly reduces tube damage during cap removal.
In addition, before the tube is removed, the pressure inside the tube is reduced, extending the tube's lifetime.



Reliable Analysis Is Simple to Implement with GCMSsolution Software

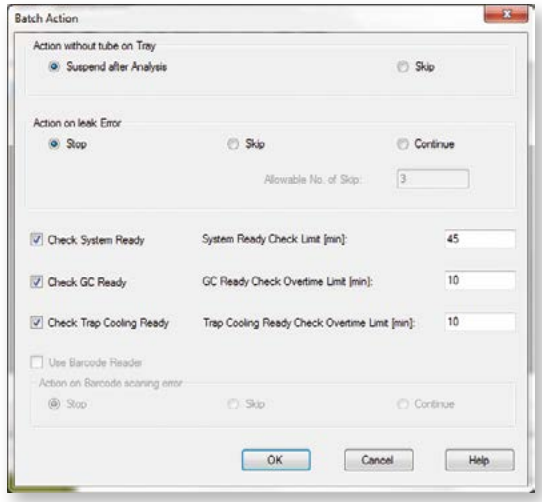
Method files for the TD-30/30R can be set for a GCMS batch using the optional software GCMSsolution TD Add-in.* Both GCMS and TD can be controlled from GCMSsolution without the need for additional software. This not only improves operability, but also prevents mistakes in applying settings.

* GCMSsolution TD Add-in is not compatible with LabSolutions™ GC. Overlapping will be deactivated by installing the Add-in.



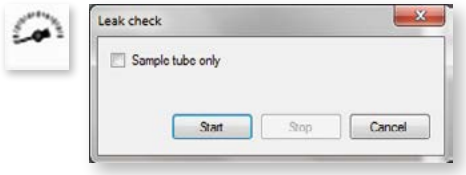
Appropriate Measures When an Analysis Error Occurs (Skip Function)

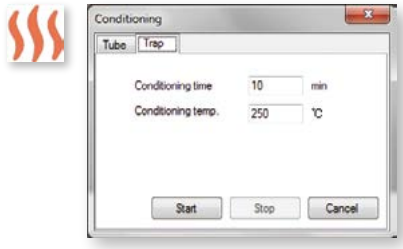
If a user forgets to place a sample in the tray, or a leak error is detected due to a defective product, it's possible to select whether to stop the consecutive analysis, or skip that step and continue. As a result, precious time is not wasted by simple mistakes.



Effective Instrument Management Using Various Tools

The independent leak check function can be used for confirmation after maintenance, and to confirm the status of the sample tubes. By using the trap tube conditioning function, users can reduce the background noise immediately after trap tube replacement.

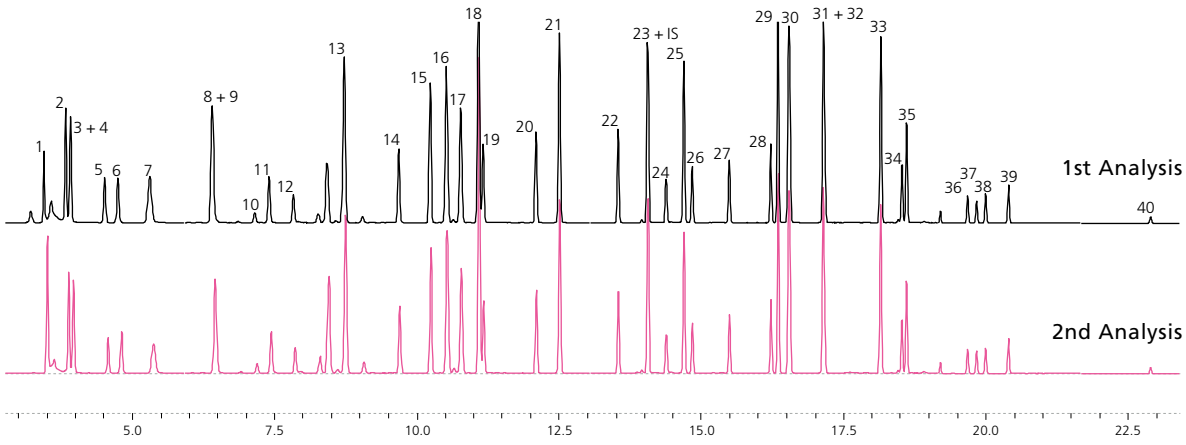




Applications

Toxic Air Pollutants

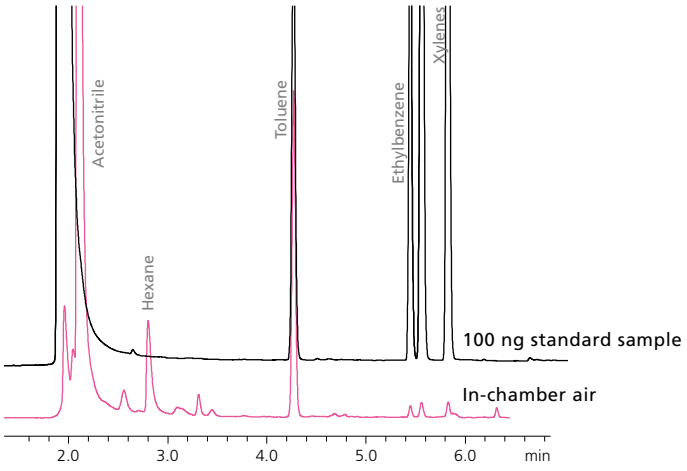
With time-consuming air sampling measurements, if analysis fails, re-measurement can be expensive. The risk of analysis failures can be lowered by using the TD-30R restore and internal standard additive functions.



1	1,2-Dichlorotetrafluoroethane	11	Dichloromethane	21	1,2-Dichloropropane	31	*o*-xylene
2	Chloroethene	12	Acrylonitrile	22	*cis*-1,3-Dichloropropane	32	Styrene
3	Chloromethane	13	1,1-Dichloroethane	23	Toluene	33	1,1,2,2-Tetrachloroethane
4	1,3-Butadiene	14	*cis*-1,1-Dichloroethene	24	*trans*-1,3-Dichloropropane	34	1,3,5-Trimethylbenzene
5	Bromoethane	15	Chloroform	25	1,1,2-Trichloroethane	35	1,2,4-Trimethylbenzene
6	Chloroethane	16	1,1,1-Trichloroethane	26	Tetrachloroethane	36	*m*-Dichlorobenzene
7	Trichlorofluoromethane	17	CarbonTetrachloride	27	1,2-Dibromoethane	37	*p*-Dichlorobenzene
8	1,1-Dichloroethene	18	Benzene	28	Chlorobenzene	38	Benzylchloride
9	Trichlorotrifluoroethane	19	1,2-Dichloroethane	29	Ethylbenzene	39	o-Dichlorobenzene
10	3-chloro-1-propene	20	Trichloroethene	30	*m*+*p*-xylene	40	1,2,4-Trichlorobenzene
						IS	d_8-Toluene

Working Environment

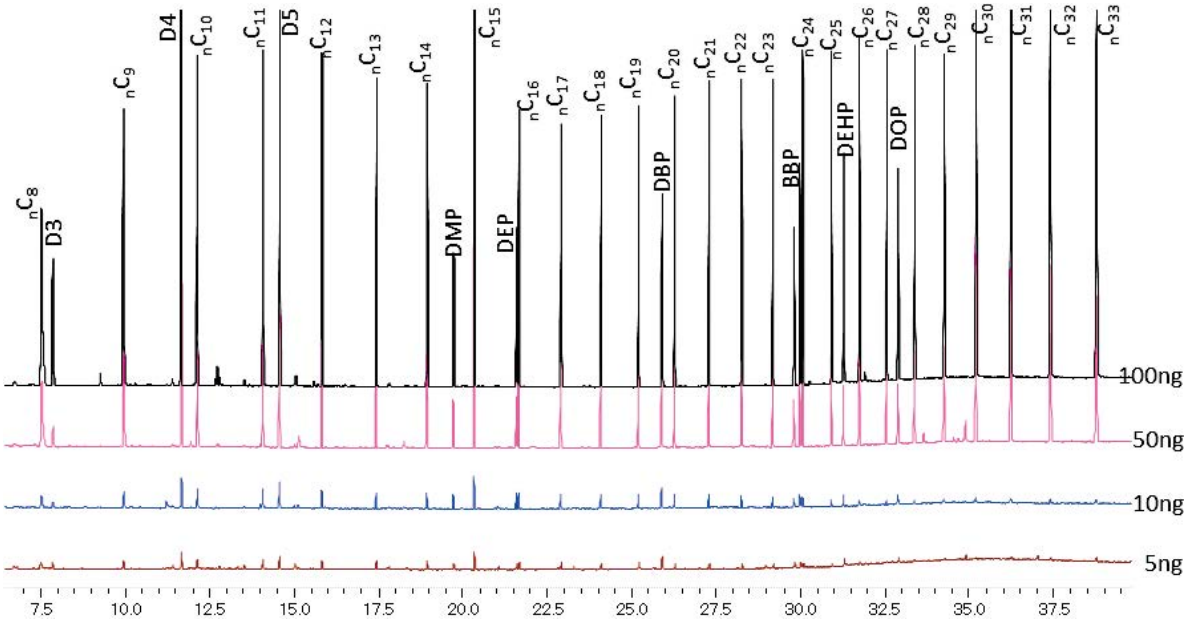
With its wide dynamic range, a TD–GC–FID system has a low running cost, and can measure many components simultaneously.



GC-2030AF with TD-30

Diffused Gases

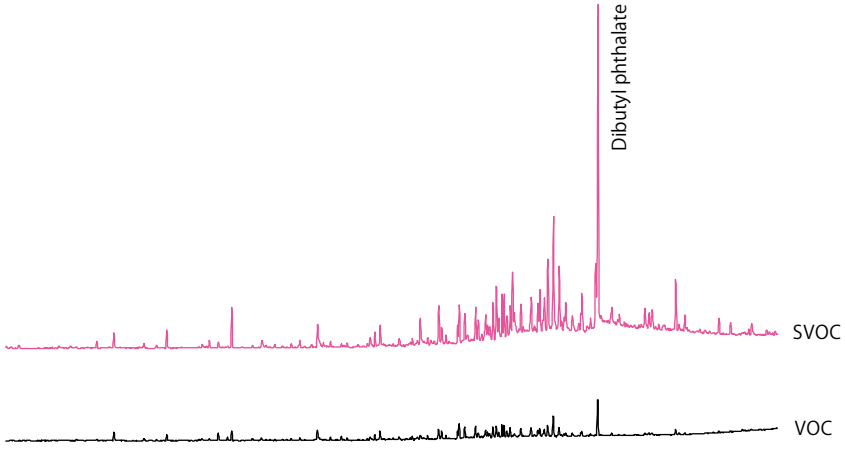
The TD-30 series, which features a short transfer line with no cold points, is optimal for SVOC measurements.
With its low background noise, it can accommodate trace analysis, including measurements of diffused gases using a chamber, and measurements of the air inside a clean room.



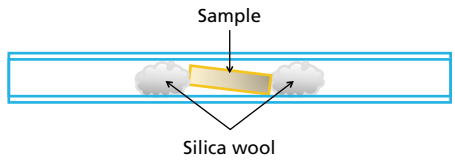
Simultaneous Analysis of SVOC Standard Samples

Thermal Extraction

With VDA 278, the diffused gas measurement method for automotive parts, the tube is filled with the specimen, and then heated to 100 °C before the VOCs are measured. Afterwards, the sample is removed, the tube is heated to 280 °C, and the adhered SVOCs are measured. Because tubes are easily accessed from the TD-30 series sample tray, procedures are easy.

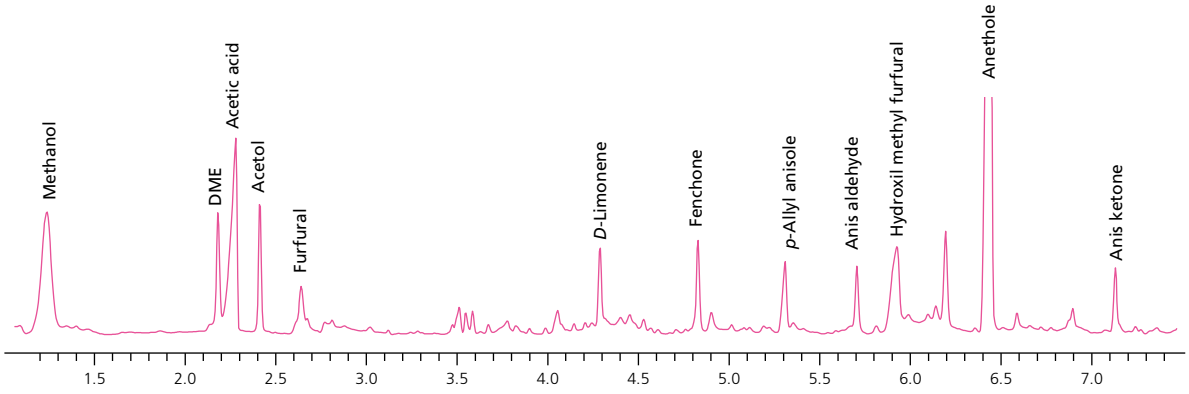


Analysis of Gas Produced by Rubber



Fragrant Components in Foods

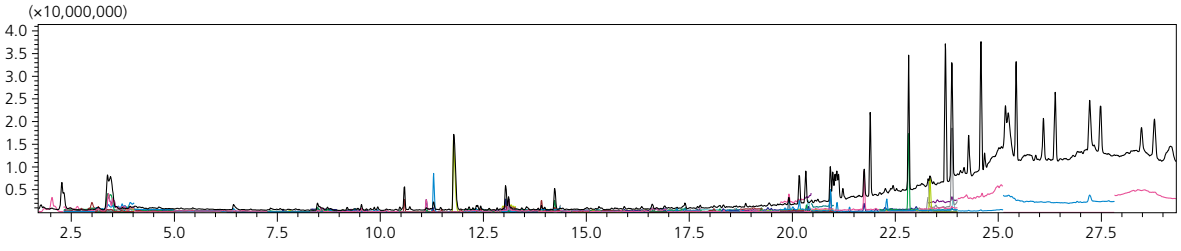
The sample tray of the TD-30 series, in which the tubes are oriented horizontally, enables the placement of not only solid materials but also soft materials and viscous materials, making it suitable for the analysis of foods.



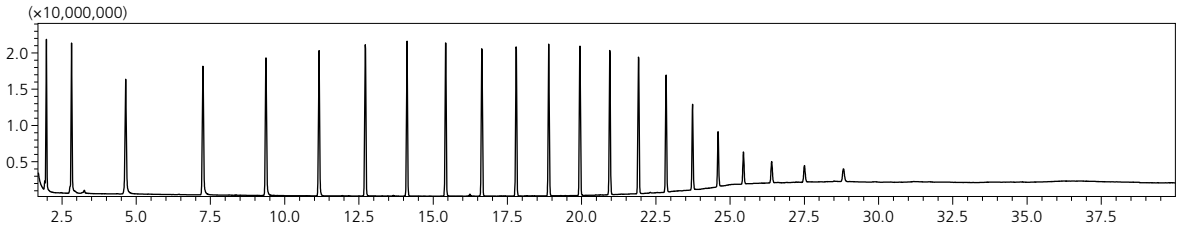
Fragrant Components in Fennel Seeds

Foul Odors from Products

Highly repeatable carrier gas control due to an advanced flow controller (AFC) enables the qualitative analysis and semi-quantitative analysis of unknown peaks in combination with a retention index database.



Foul Odors from a Cardboard Box



n-Alkane Standard Sample

Compound Name (E)	Rel. Index 1 (InertCap Pure-W)	Comment (E) Odor Quality	threshold Odor Threshold
Benzophenone	2470	Almond, Burnt sugar	10
2,4,6-Tribromophenol	2800	Iodoform	100
1-Tetradecanol	2158	Coconut	1000
gamma-Dodecalactone	2364	Sweet, Flower, Fruit	1
Dibenzyl disulfide	3022	Ether	1

GC/MS Off-flavor Analysis Database

GCMS-TQ8040 NX with TD-30R

Specifications and Installation Conditions

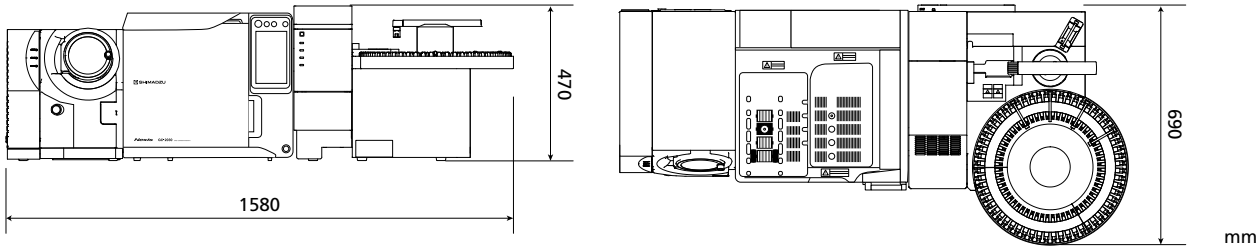
Model	Number of Samples	Restore	Dry Purge	Internal Standard Added
TD-30R	120 tubes	✓	✓	✓
TD-30	60 tubes			

TD-30R

TD-30

Tube Size	Outer diameter: 1/4" (6.35 mm); Length: 3.5" (89 mm)
Tube Desorption Temperature	Settings: 0 °C to 430 °C (1 °C increments), Control: Room temperature +15 °C to 430 °C (Accuracy ±1 °C)
Tube Desorption Flow Rate	Settings: 20 mL/min to 200 mL/min (1 mL/min increments; Accuracy ±2 mL/min)
Tube Desorption Time	Settings: 0 min to 240 min (0.01 min increments)
Trap Size	Outer diameter: 1/8" (3.2 mm); Inner diameter: 2 mm; Length: 102 mm SilcoNert® 2000 stainless steel tube rendered inert
Trap Adsorbent	TenaxTA™ 60–80 mesh (60 mg) is standard. Carbopack™ (50 mg) + Carbosieve® (10 mg) are optionally available. Carboxen® 1000 (70 mg) is optionally available.
Trap Desorption Temperature	Settings: 0 °C to 350 °C (1 °C increments); Control: 0 °C to 350 °C (Accuracy ±1°C)
Trap Cooling Temperature	Settings: –40 °C to 80 °C (1 °C increments) Control: Room temperature –50 °C to 80 °C (Valve temperature <250 °C); Room temperature –45 °C to 80 °C (Valve temperature > 250 °C); (Accuracy ±1 °C)
Split Ratio	1:5 to 1:200
Sample Path	SilcoNert® 2000
Switching Valve	6-port, 2-position, high temperature valve, motorized
Joint Temperature	Settings: 0 °C to 300 °C (1 °C increments); Control: Room temperature +15 °C to 300 °C (Accuracy ±1 °C)
Valve Temperature	Settings: 0 °C to 300 °C (1 °C increments); Control: Room temperature +15 °C to 300 °C (Accuracy ±1 °C)
Transfer Line Temperature	Settings: 0 °C to 350 °C (1 °C increments); Control: Room temperature +15 °C to 350 °C (Accuracy ±1 °C)
Internal Standard Added (TD-30R)	Fixed volume added: 0.5 mL; Variable volume added: 4 mL to 2000 mL
Dry Purge (TD-30R)	Temperature settings: –40 °C to 140 °C (1 °C increments) Control: Room temperature –50 °C to 140 °C (Valve temperature <250 °C); Room temperature –45 °C to 140 °C (Valve temperature >250 °C); (Accuracy ±1 °C) Flow rate: 20 mL/min to 200 mL/min (1 mL/min increments); Time: 0 min to 30 min (0.01 min increments)
Carrier Gas	High-purity helium or nitrogen, controlled by the advanced flow controller (AFC) built into the GC
Purge Gas	High-purity helium or nitrogen, controlled by the mass flow controller (MFC) built into the TD
PC Interface	USB
Control Software	TD-30 Control Software or GCMSsolution + GCMSsolution TD Add-in
Control Software Operating Environment	Microsoft® Windows® 7/10 (64/32 bit)
Environment for Guaranteed Performance	Temperature 18 °C to 28 °C; Relative humidity 20 % to 70 %
Power Supply	100 V AC / 120 V AC / 220 V AC / 240 V AC, 50/60 Hz, 1200 VA max.
Size	TD-30R: W720 × D690 × H470 mm, TD-30: W580 × D550 × H470 mm
Weight	TD-30R: 49 kg, TD-30: 48 kg

Installation Example (GCMS-QP2020 NX with TD-30R)



mm

Shimadzu Corporation
www.shimadzu.com/an/

First Edition: October 2017, Printed in Japan 3655-10904-10ANS