

Portable Thermal Desorber

HandyTD TD265



Simplified High Sensitivity Analysis by Thermal Desorption

When high sensitivity analysis of trace compounds is required, sample introduction by thermal desorption can introduce a large amount of sample in a very effective way.
However, conventional thermal desorption equipment occupies a GC and the operation is complicated.
HandyTD can solve these problems.

Analyzing Trace VOC

Sampling
(Trap and Concentrate)

Injection to GC
Solvent extraction
Thermal Desorption

Separation and Detection
GC, GC/MS

- Want simplified high sensitivity analysis?
- Need to use existing GC, GC/MS?
- Spend for expensive devices?



Portable Thermal Desorber

HandyTD TD265

Using a GC inlet, concentrated volatile compounds in sorption media are introduced into GC by thermal desorption.

Due to the compact design that can be transported, it does not occupy your GC.

Using HandyTD and MonoTrap simplifies the process from sampling to sample injection.

Controller

TD-Probe



5 kg
Approx.

Space-Saving Design

Compact design allows installation without occupying space next to each GC.

Operating Navigation

The touchscreen guides the user through the TD steps.

User-friendly.
No PC necessary.



Probe Holder

The probe holder automatically starts cooling the probe when it is put back in the holder after sample injection.

The "BAKEOUT mode" executes baking and cleaning of the TD Probe when it is placed in the holder.

Electronic Pressure and Flow Control

The Handy-TD has its own pressure and flow control module, it is not needed to change the host GC.

He or N₂ can be used.

Fast temperature heating ramp-rate

Temperature ramp-rate is one of the important parameters to improve the chromatography peaks shape.

Handy TD has a very fast heating with a maximum of 45 °C/sec.

MonoTrap in Liner for TD- GC or GCMS Analysis.

Easy sample injection by putting a liner loaded with sample-sorbent MonoTrap into the probe.



Please refer to Page 7 for trapping material, MonoTrap

Standard TD sorbent tubes can be used.

The industry-standard (3½ x ¼-inch) TD tubes can be used. (Only glass versions)

Sampling to Injection

Sampling

Headspace passive sampler



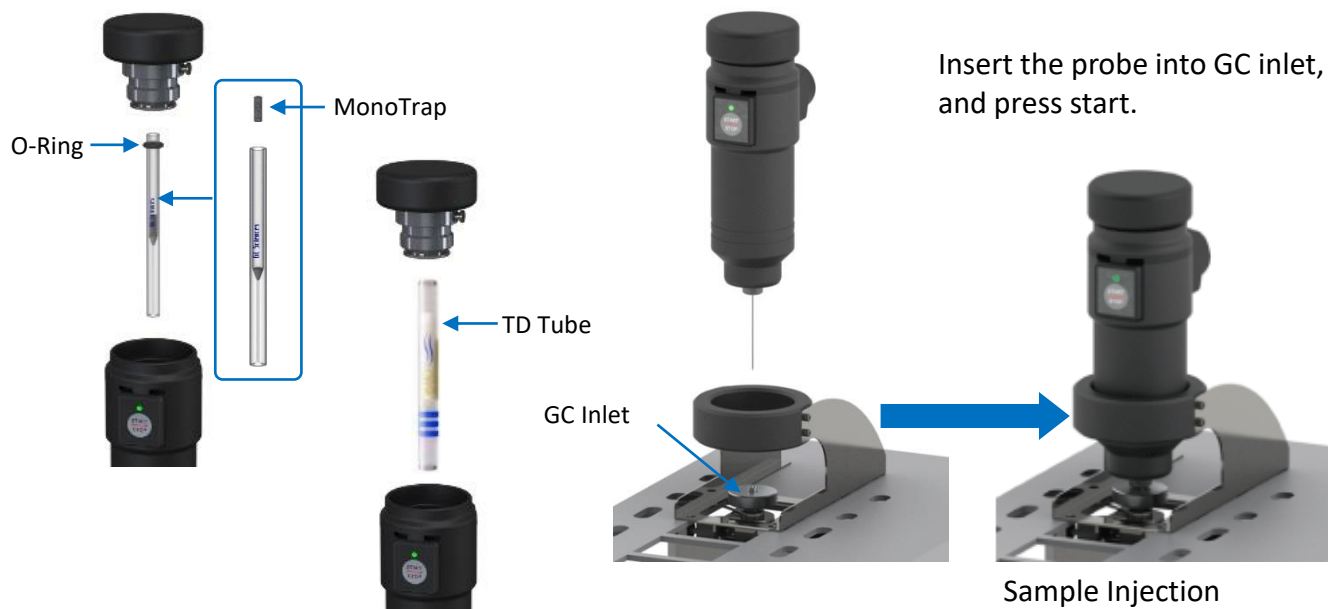
MonoTrap



TD Tube



Sample Injection



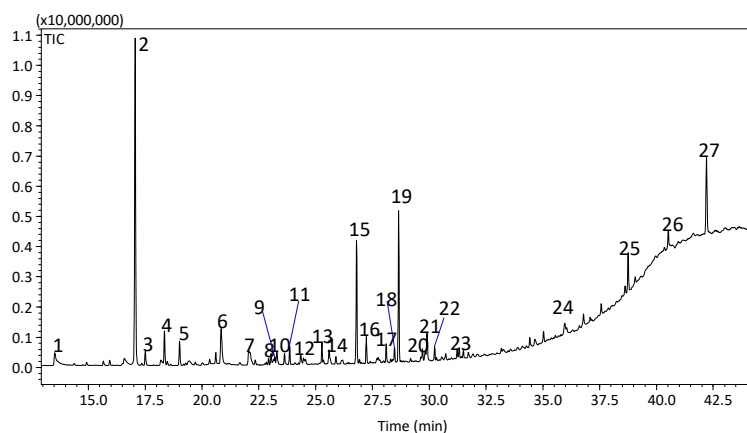
Suitable for GC, GC-MS of any manufacturer

Analytical examples of flavor compounds in mandarin orange juice with MonoTrap

Mandarin orange juice 30 mL
NaCl 9 g 40 mL Vial

HS Sampling
MonoTrap RGC18 TD x 2
40 °C, 1 hr

TD-GC/MS



GC Conditions

System : GC/MS-Thermal Desorption (HandyTD)
Column : InertCap Pure-WAX (0.32 mm I.D. x 60 m, df = 0.50 µm)
Col.Temp. : 40 °C (5 min) - 6 °C/min - 250 °C (20 min)
Carrier Gas : He, 1.6 mL/min
GC Inlet : 250 °C, Split 10:1
Detection : MS Scan (*m/z* 29-500)

HandyTD Conditions

Desorb Temp. : 40 °C - 45 °C/sec - 250 °C (1.5 min)
Desorb Press. : 92 kPa

- | | |
|-------------------|--------------------------|
| 1.Hexanal | 15.Terpineol |
| 2.D-Limonene | 16.Menthadienol |
| 3.2-Hexenal | 17.Menthadienol |
| 4.Terpinene | 18.Citral |
| 5.Cymene | 19.Terpineol |
| 6.1-Hexanol | 20.Isopiperitenol |
| 7.Nonanal | 21.Isopiperitenol |
| 8.Acetic acid | 22.Dibutyl formamide |
| 9.Linalool oxide | 23.Carveol |
| 10.Heptanol | 24.Dihydroxyacetone |
| 11.Linalool oxide | 25.Dihydroxy maltol |
| 12.Formic acid | 26.Dihydroactinidiolide |
| 13.Linalool | 27.Hydroxymethylfurfural |
| 14.Octanol | |

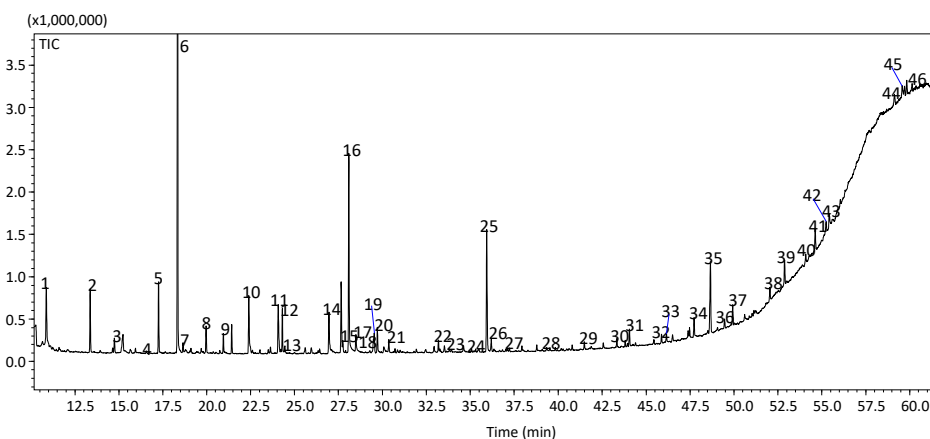
NOTE) No qualitaton is performed with the reference sample. This **results** in a library search.

Analytical examples of flavor compounds from grilled meat with MonoTrap

Grilled meat 30 mL 40 mL Vial

HS Sampling
MonoTrap RGPS TD x 2
80 °C, 15 min

TD-GC/MS



GC Conditions

System : GC/MS-Thermal Desorption
(HandyTD)
Column : InertCap Pure-WAX
(0.25 mm I.D. x 60 m, df = 0.25 µm)
Col.Temp. : 40 °C (5 min) - 6 °C/min - 250 °C
Carrier Gas : He, 2.0 mL/min
GC Inlet : 250 °C, Split 9:1
Detection : MS Scan (*m/z* 45-450)

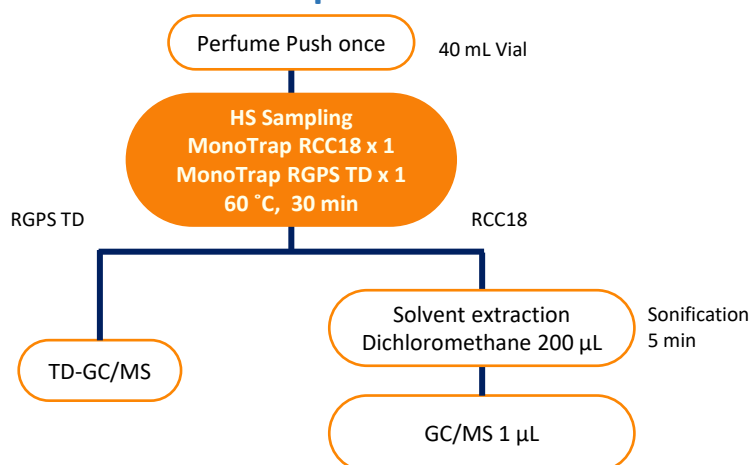
HandyTD TD265 Conditions

Desorb Temp. : 40 °C - 45 °C/sec - 250 °C (1.5 min)
Desorb Press. : 114 kPa

- | | | |
|------------------------|--------------------------|-------------------------|
| 1. Hexanal | 18. (E)-2-Octen-1-ol | 33. Pyranone |
| 2. 1-Butanol | 19. Butyrolactone | 34. Heneicosane |
| 3. Heptanal | 20. Butanoic acid | 35. 9-Heptadecanone |
| 4. 2-Pentylfuran | 21. (E)- 2-Decenal | 36. Docosanal |
| 5. 1-Pentanol | 22. 2(5H)-Furanone | 37. Heneicosane |
| 6. Acetoin | 23. 2,4-Decadienal | 38. Heneicosane |
| 7. Octanal | 24. (E,E)-2,4-Decadienal | 39. 4-hydroxydihydro |
| 8. 2-Methyl-3-octanone | 25. Hexanoic acid | -2(3H)-Furanone |
| 9. 1-Hexanol | 26. 2-(2-Butoxyethoxy) | 40. Heneicosane |
| 10. Nonanal | ethyl acetate | 41. δ-Undecalactone |
| 11. Acetic acid | 27. Dimethyl sulfone | 42. 5-methyl-2,4 |
| 12. 1-Octen-3-ol | 28. 1-(1H-Pyrrol-2-yl) | -Imidazolidinedione |
| 13. 1-Heptanol | ethanone | 43. Tetradecanoic acid |
| 14. 2,3-Butanediol | 29. Octanoic acid | 44. δ-Dodecalactone |
| 15. 1-Octanol | 30. 2-Phenoxyethanol | 45. n-Hexadecanoic acid |
| 16. 2,3-Butanediol | 31. Nonanoic acid | 46. Niacinamide |
| 17. Propylene Glycol | 32. 2-Heptadecanone | |

NOTE) No qualitaton is performed with the reference sample. This **results** in a library search.

Examples of Analyzing Flavor Compounds of Perfume with MonoTrap

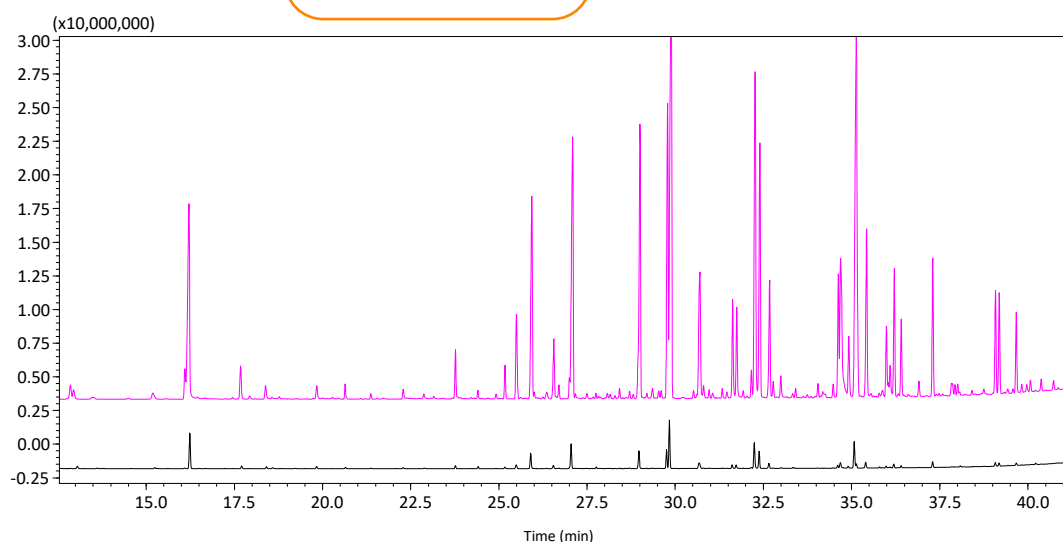


GC Conditions

System : GC/MS-Thermal Desorption (HandyTD)
GC/MS(Solvent Extraction)
Column : InertCap Pure-WAX
(0.25 mm I.D. x 60 m, df = 0.25 µm)
Col.Temp. : 40 °C (5 min) - 6 °C/min - 250 °C
Carrier Gas : He, 2.0 mL/min
GC Inlet : 250 °C,
Split 9:1 (TD)
Splitless (Solvent Extraction)
Detection : MS Scan (m/z 45-450)

HandyTD TD265 Conditions

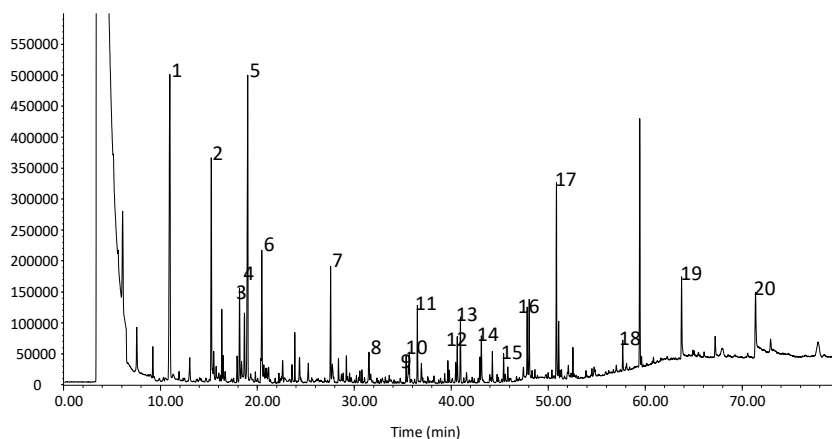
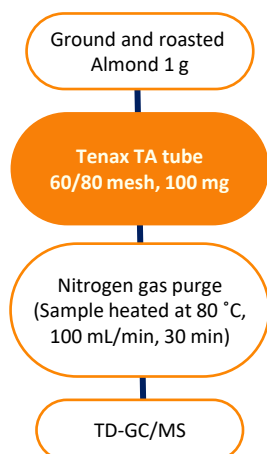
Desorb Temp. : 40 °C - 45 °C/sec - 250 °C (1.5 min)
Desorb Press. : 114 kPa



MonoTrap RGPS TD
(HandyTD)

MonoTrap RCC18
(Dichloromethane extraction)

Examples of Analyzing Flavor Compounds from Roasted Almonds Using Tenax Sampling Tubes



1. Dodecane
2. Dimethylpyrazine
3. Ethylmethylpyrazine
4. Trimethylpyrazine
5. Tetradecane
6. Dimethylethylpyrazine
7. Hexadecane
8. 1-Acetylpyrrole
9. 2,4-Decadienal
10. Cyclotene
11. Hexanoic acid
12. Maltol
13. 2-Acetylpyrrole
14. Franeol
15. Octanoic acid
16. Nonanoic acid
17. 2,3-Dihydro-3,5-dihydroxy-6-methyl-4H-pyran-4-one
18. Lauric acid
19. Myristic acid
20. Palmitic acid

GC Conditions

System : GC/MS-Thermal Desorption (HandyTD TD265)
Column : InertCap Pure-WAX (0.25 mm I.D. x 60 m, df = 0.25 µm)
Col.Temp. : 70 °C (5 min) - 3 °C/min - 240 °C (40 min)
Carrier Gas : He, 2.0 mL/min
GC Inlet : 250 °C, Split 1:1
Detection : MS Scan (m/z 35-450)

HandyTD Conditions

Desorb Temp. : 45 °C - 45 °C/sec - 240 °C (5 min)
Desorb Press. : 294 kPa

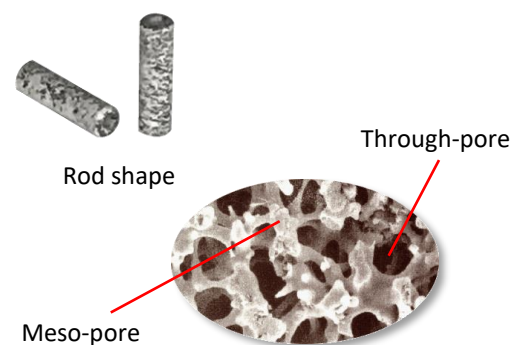
Sorptive Media and TD Tubes

A State-of-Art media for the Extraction & Enrichment

MonoTrap Series

MonoTrap is sorptive media with the large surface area provided by the three dimensional silica monolith's network of through-pores and meso-pores.

- Ready to use without any conditioning
- High efficient adsorption
- Flexible ways of sampling
- Abundant series line-up



MonoTrap Line-up

	Description	Operating Temp.	Appearance	Shape	Size	Adsorbent and Stationary Phase			Qty.	Cat.No.
						Graphite Carbon	ODS Function	PDMS		
Thermal Desorption	MonoTrap RGC18 TD	200 °C		Rod	O.D. 2.9 mm Len. 10 mm	●	●		30	1050-74201
	MonoTrap RSC18 TD	200 °C					●			1050-73201
	MonoTrap RGPS TD	250 °C				●		●		1050-74202

Note: MonoTrap for Thermal Desorption is packed individually in an ampoule.

Liner for MonoTrap

The MonoTrap in this liner has the best position for heating and gives a fast transfer of volatile compounds.

Description	Qty.	Cat.No.
MonoTrap TD Liner for HTD w/Deactivated Wool	1	1003-75005



TD tubes that can be used

- AERO TD Tube from glass
- CAMSCO Sorbent Tube from glass
- GL Sciences TD Tube from glass

Suitable tube size:

O.D. : 1/4 inch (= 6.35 mm) Length : 89 +/- 0.5 mm

Sorbent position lowest : 15 mm from the low end of tube

Sorbent position highest : 60 mm from the low end of tube

Material: Glass-based (Not resin nor electrically-conductive)



Specification of HandyTD TD265

Specification

Controller	
Display	3.5-inch touch panel
Modes	RUN, BAKEOUT, EDIT, SETUP
Temp-control	(Ambient temp +10 °C) - 350 °C
Temp ramp-rate range	5 °C to 45 °C/sec (1 °C/sec steps)
Temp range	Initial: 40 - 150 °C (1 °C steps)
	Desorb: (Initial Temp.) - 350 °C (1 °C steps)
	Bake: 40 - 350 °C (1 °C steps)
Time-setting range	Initial: 0.0 to 30.0 min (0.1 min steps)
	Desorb: 0.1 to 5.0 min (0.1 min steps)
	Bake: 1 to 120 min (1 min steps)
Gas supplied	Helium or Nitrogen (selectable)
Diameter of gas pipe	IN: 1/8 inch, OUT: 1/16 inch
Pressure units	kPa or psi (selectable)
Gas control system	Electronic control
Gas control mode	Initial /Bakeout /Cool Down : Flow Mode
	Pre Desorb /Desorb : Pressure Mode
Max pressure supplied	800 kPa (116 psi)
Pressure setting range	10 to 450 kPa (1 kPa steps)
	(1.5 to 65.2 psi) (0.1 psi steps)
Flow rate setting range	5 to 100 mL/min (1 mL/min steps)
Number of methods	RUN mode: 9; BAKEOUT mode: 1
Signal input/output	Input: READY (NC, NO selectable)
	Output: START (relay contact output)
Size	133 (W) x 275 (D) x 222 (H) mm
Weigh	Approx. 4.4 kg
Power	AC100-240 V $\pm$ 10 % 50/60 Hz

TD Probe	
Heating method	Direct heating
Injection method	Total-volume injection (split injection in GC)
Tube, Liner	Borosilicate glass *
	O.D. 6.35 x L 89 +/- 0.5 mm
Needle	SUS316L
	O.D. 0.52 x I.D. 0.13 x L 60 mm
Cable length	Approx. 1.4 m
Size	O.D. 47 mm (max.) x L 135 mm (without needle)
Weight	Approx. 0.7 kg
Power	Supplied from controller

*: No metal nor resin liner is usable.

Main Unit

Description	Cat.No.
HandyTD TD265-EU	2702-30001

HandyTD Startup kit

Description	Cat.No.
HandyTD Startup kit	1050-78006

Contents:

Sorptive Media, MonoTrap RGPS TD x 10
 MonoTrap TD Liner for HTD w/Deactivated Wool x 2
 TD-Needle x 2
 Copper pipe for gas fitting: 1/8 inch x 10 m
 Tee joint (Brass) 1/8 inch x 1
 SL-type plug (Brass) 1/8 inch x 1
 SL-type cap (Brass) 1/8 inch x 1

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