Fragrance Analysis Using a Quartz Tube Microtrap

Application Note
Environment
Flavor & Fragrance

Author:

T. Wampler

A standard Pyroprobe quartz tube can be turned into a microtrap by filling it with a sorbent material, such as Tenax. When connected to a small vacuum pump, the microtrap can be used to collect volatile organics from the air for analysis. Once the sample is collected, the microtrap is thermally desorbed in the Pyroprobe, using the coil filament, which automatically starts the GC run. The microtrap can be reused by conditioning between runs at 350°C for 60 seconds.

For the chromatograms shown in Figures 1 and 2, gel-style air fresheners were opened and the air next to them sampled with the microtrap for one minute. The trap was then desorbed at 350°C using the Pyroprobe, interfaced to the GC in the normal way. Operating parameters for the Pyroprobe and GC are listed on the back of this sheet.

Figure 1 shows the compounds collected from a small freshener product intended to be inserted into a warmer in use. In this example, however, the sample was taken at room temperature. The name of the product suggested a fresh, outdoor scent, and some of the compounds identified include limonene, gardenol and alpha-citronellol.

The second product, a larger air freshener used at room temperature, had a more spice-like fragrance. Some of the compounds identified include cineol, menthol and methyl salicylate. The peaks numbered in the chromatograms are identified in Table 1.

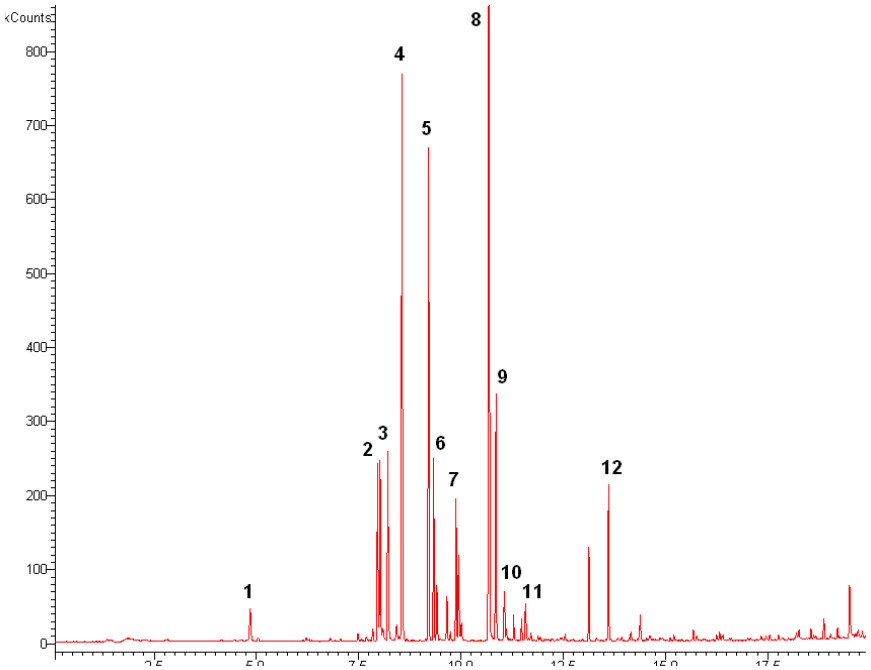

Figure 1. Compounds collected from air freshener #1.

Instrument Conditions

Pyroprobe

Filament:	350°C 30 seconds
Interface:	325°C for 4 minutes
Trap desorption:	325°C for 4 minutes
Dry(recondition):	350°C for 60 seconds
Valve Oven:	325°C
Transfer Line:	325°C

GC/MS

Column:	5% phenyl (30m x 0.25mm x 0.25μm)
Carrier:	Helium, 50:1 split
Inlet:	300°C
Oven:	40°C for 2 minutes
	10°C/min to 300°C
Mass Range:	35-600 amu

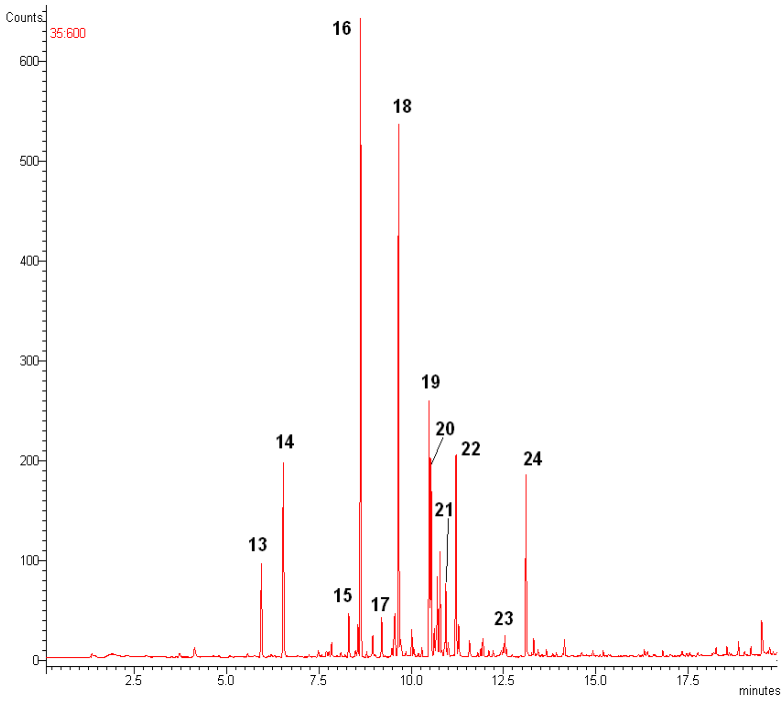

Figure 2. Compounds collected from air freshener #2.

Table 1. Compound Legend

1. n-Butyl acetate
2. Dipropylene glycol monomethyl ether
3. 2-Propanol, 1-(2-methoxypropoxy)-
4. Limonene
5. Dihydromyrcenol
6. Allyl hexanoate
7. 3-Cyclohexen-1-carboxaldehyde, 3,4-dimethyl-
8. Benzyl acetate
9. Allyl heptanoate
10. Gardenol
11. alpha-Citronellol
12. 4-tert-Butylcyclohexyl acetate
12. 4-tert-Butylcyclohexyl acetate
13. 2-Methylbutyl acetate
14. n-Amyl acetate
15. 1,4-Cineol
16. Eucalyptol
17. Dihydromyrcenol
18. Linalol
19. Citronellal
20. Camphor
21. Methol
22. Methyl Salicylate
23. Anethol
24. alpha-Methylcinnamaldehyde