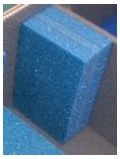
Concentration Analysis of VOCs Derived from Expanded Foam Plastic Cushioning Material - Using MonoTrap a Simple Enrichment Tool

MonoTrap DCC18, a simple concentration tool was used to screen and analyze the components that volatilized from expanded foam plastic cushioning material used in a carrier case. The atmosphere in the case was collected using MonoTrap, then extracted with dichloromethane and analyzed by GC/MS. A number of peaks, including alkylbenzene compounds were detected.

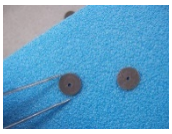
Measurement procedure

Carrier case



Collection (HS)
5 MonoTrap DCC18

At room temperature for 15 hours



Solvent extraction

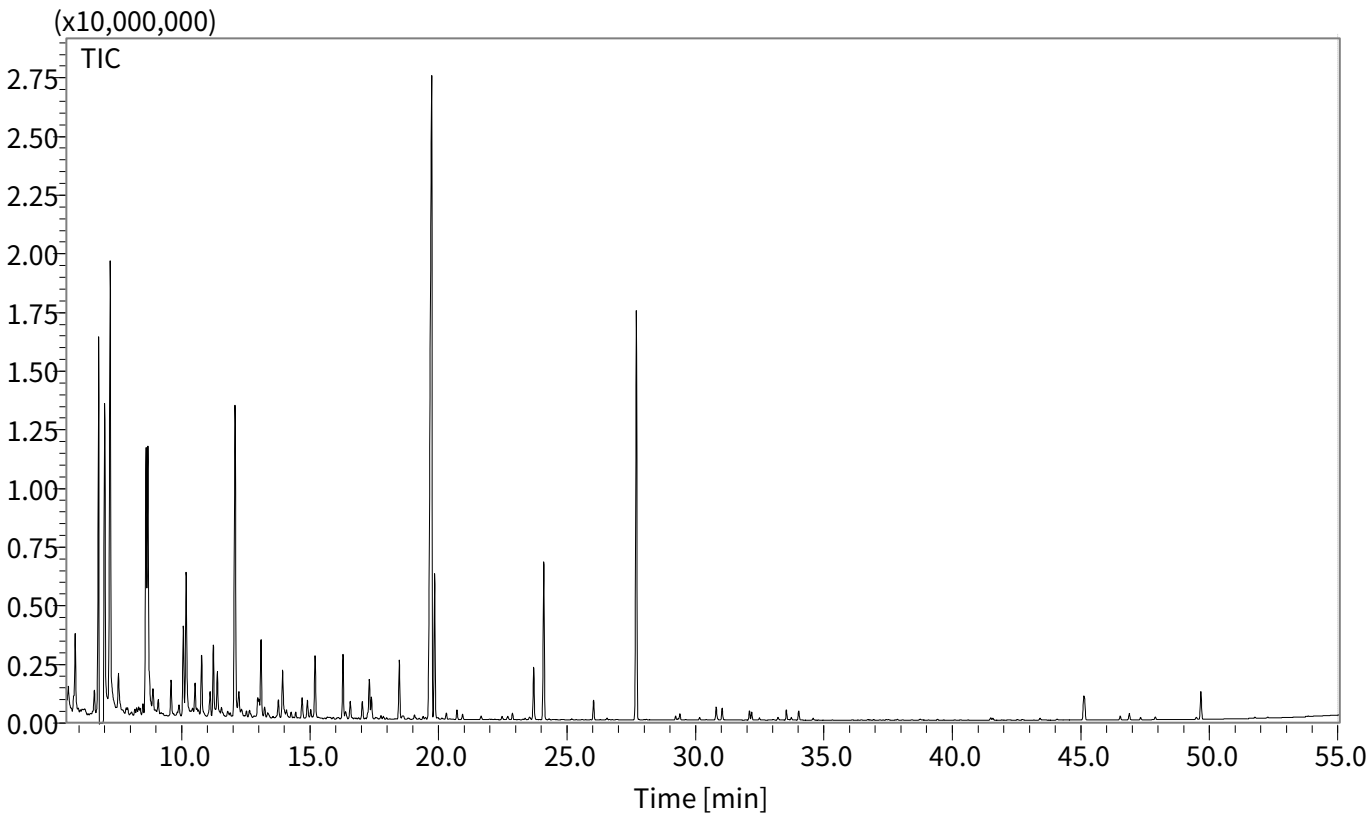
500 µL of Dichloromethane
5 minutes of ultrasonication

GC/MS

GC/MS Conditions

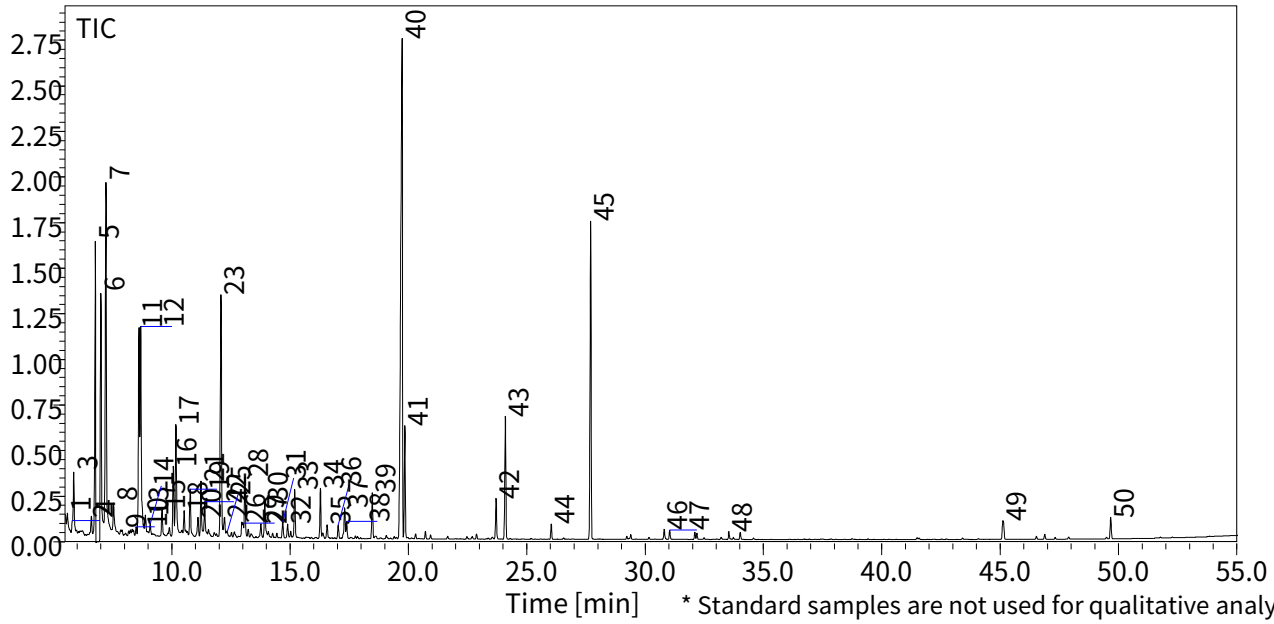
System	: GC - MS
Column	: InertCap Pure-WAX 0.25 mm I.D. X 30 m, df = 0.25 µm
Col.Cat. No.	: 1010-68162
Col.Temp.	: 40 ˚C (5 min) - 4 ˚C/min - 250 ˚C
Carrier Gas	: He, 50 kPa
GC Inlet	: 250 ˚C, Splitless
Sample Size	: 1 µL
Detection	: MS Scan (*m/z* 45-450)

GC/MS chromatogram



See the following page for the qualitative results of the components obtained by library searching...

Results of library search



* Standard samples are not used for qualitative analysis.

1. Tridecane, 4-cyclohexyl-
2. 1-Propanol, 2-methyl-
3. Propane, 1-(1,1-dimethylethoxy)-2-methyl-
4. Undecane
5. Ethylbenzene
6. Xylene
7. Xylene
8. 1-Butanol
9. 1-Undecene
10. 2,3-Dimethyldecane
11. Xylene
12. 4-Heptanone, 2,6-dimethyl-
13. Undecane, 4-cyclohexyl-
14. Trans-Decalin, 2-methyl-
15. Benzene, propyl-
16. Benzene, 1-ethyl-2-methyl-
17. Benzene, 1-ethyl-3-methyl-
18. 1-Methoxy-2-propyl acetate
19. Benzene, 1,3,5-trimethyl-
20. 2-Heptanone, 4,6-dimethyl-
21. Styrene
22. Benzene, 1-ethyl-2-methyl-
23. Benzene, 1,3,5-trimethyl-
24. Propanoic acid, 2-hydroxy-, 2-methylpropyl ester
25. 9-Eicosyne
26. Benzene, 1-methyl-2-(1-methylethyl)-
27. Benzene, 1-methyl-2-propyl-
28. 2-Ethoxyethyl acetate
29. Benzene, 1-ethyl-3,5-dimethyl-
30. Benzene, 1,2,3-trimethyl-
31. Benzene, 1-methyl-2-(1-methylethyl)-
32. Benzene, 1-methyl-3-(1-methylethyl)-
33. Benzene, 2-ethyl-1,4-dimethyl-
34. Acetic acid, 2-ethylhexyl ester
35. Ethanol, 2-butoxy-
36. Benzene, 1,2,4,5-tetramethyl-
37. Benzene, (1-methoxy-1-methylethyl)-
38. Benzene, 1,2,3,5-tetramethyl-
39. 2-Ethylhexyl chloroformate
40. 2-Propenoic acid, 2-ethylhexyl ester
41. 1-Hexanol, 2-ethyl-
42. Tetramethylbutanedinitrile
43. Acetophenone
44. Pentanedioic acid, dimethyl ester
45. Benzenemethanol,-dimethyl-
46. Propanoic acid, 2-methyl-, 3-hydroxy-2,4,4-trimethylpentyl ester
47. 2,2,4-Trimethyl-1,3-pentanediol diisobutyrate
48. 2H-Pyran-3(4H)-one, 6-ethenyldihydro-2,2,6-trimethyl-
49. Tetramethyl-1,4-benzenedimethanol
50. Dibutyl phthalate

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