Solvents

Fast analysis of volatile organic compounds to EPA 524

Application Note

Environmental

Authors

Agilent Technologies, Inc.

Introduction

For maximum resolution of many different types of solvents the Agilent CP-Select 624 CB is the most promising. Separations with 0.32 mm x 60 m columns have long analysis times. Also, at higher temperatures the thick layer of stationary phase produces bleed, which results in detector pollution and reduced detector sensitivity. This can be avoided by using a 0.15 mm x 25 m column with a 0.84 µm film, having the same phase ratio as the 0.32 mm columns. This column gives the same separation, while analysis times are reduced and column bleed is minimized. The 0.15 mm column will show a factor 10- 15 lower bleed level, which results in low detection limits, especially with MS-detection. The isolation of solvents from waste water is usually done by using a Purge and Trap unit. The solvents are trapped and reinjected onto the 0.15 mm column. The components are present at ppb level and elute as sharp peaks, making accurate quantification possible in 30 minutes.
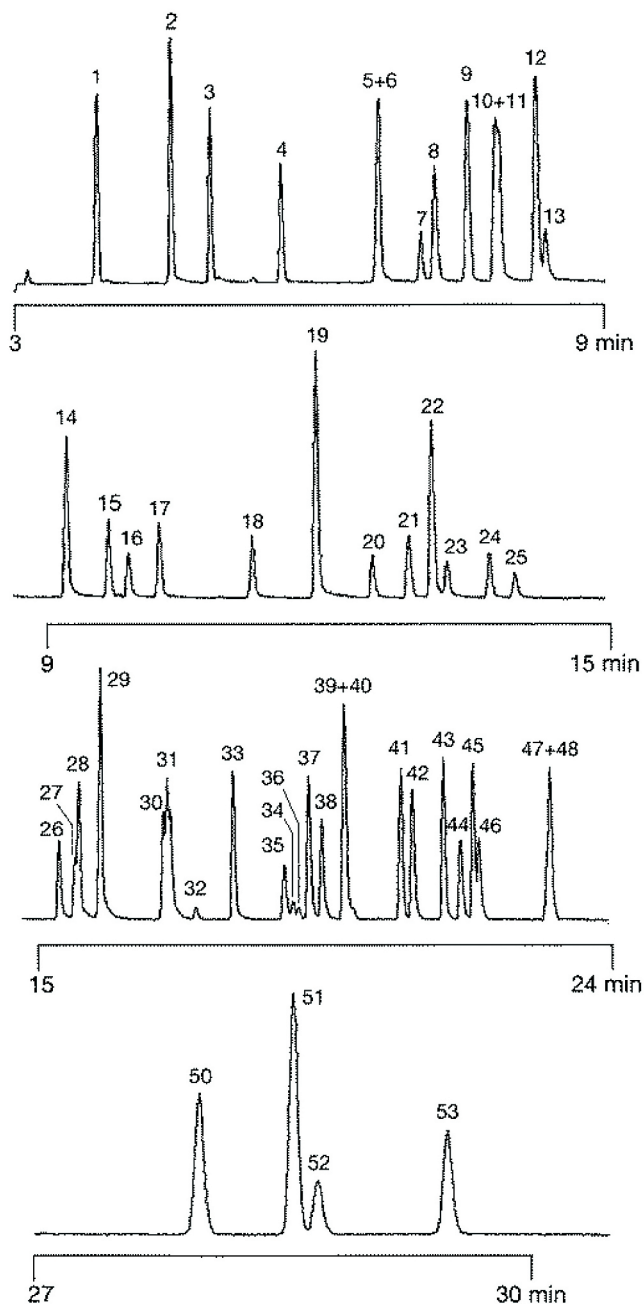
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Conditions

Peak identification

1. 1,1-dichloroethylene
2. dichloromethane
3. trans-1,2-dichloroethylene
4. 1,1-dichloroethane
5. 2,2-dichloropropane
6. cis-1,2-dichloroethylene
7. bromochloromethane
8. trichloromethane
9. 1,1,1-trichloroethane
10. 1,1-dichloropropene
11. tetrachloromethane
12. benzene
13. 1,2-dichloroethylene
14. trichloroethylene
15. 1,2-dichloropropane
16. dibromomethane
17. bromodichloromethane
18. cis-1.3-dichloropropene
19. toluene
20. trans-1,3-dichloropropene
21. 1,1,2-trichloroethane
22. tetrachloroethylene
23. 1,3-dichloropropane
24. chlorodibromomethane
25. 1,2-dibromoethane
26. chlorobenzene
27. 1,1,1,2-tetrachloroethane

28. ethylbenzene
29. m+p-xylene
30. o-xylene
31. styrene
32. bromoform
33. cumene
34. 1,1,2,2-tetrachloroethane
35. bromobenzene
36. 1,2,3-trichloropropane
37. propylbenzene
38. 2-chlorotoluene
39. 1,3,5-trimethylbenzene
40. 4-chlorotoluene
41. tert-butylbenzene
42. 1,2,4-trimethylbenzene
43. sec-butylbenzene
44. 1,3-trichlorobenzene
45. p-isobutyltoluene
46. 1,4-dichlorobenzene
47. butylbenzene
48. 1,2-dichlorobenzene
49. 1,2-dibromo-3-chloropropane
    (not shown)
50. 1,2,4-trichlorobenzene
51. hexachlorobutadiene
52. naphthalene
53. 1,2,3-trichlorobenzene

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