Solvents
Analysis of industrial waste water

Application Note

Environmental

Introduction
Waste water samples are prepared with K$_2$CO$_3$ (1:1) and a solid-phase microextraction (SPME) in the headspace mode is applied for 30 min at 50 °C. Splitless desorption is applied with pressure programming from 50 to 300 kPa in a large bore liner (0.75 mm ID) to achieve an optimal peakshape for the lower boiling compounds. A fast separation of 35 components is possible within 18 minutes using a narrow-bore thick film column.

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Conditions

Technique: GC-capillary

Column: Agilent CP-Sil 5 CB, 0.15 mm x 25 m fused silica WCOT (df = 2 μm) (Part no. CP7692)

Pre column: 0.32 mm x 5 m uncoated

Temperature: 40 °C (2 min) → 250 °C, 10 °C/min

Carrier Gas: H₂, 50 - 300 kPa (0.5 - 3.0 bar, 7.2 - 43 psi)

Injector: SPME + Splitless, 0.45 min initial time, T = 250 °C

Detector: FID, T = 300 °C

Sample Size: 2.5 g + 2.5 g K₂CO₃

Solvent Sample: none

Peak identification

1. methanol
2. acetone
3. 2-propanol
4. unknown
5. 2-methyl-2-propanol (tert-butanol)
6. 1-propanol
7. 2-butanone (methyl ethyl ketone)
8. 1,3-dioxolane
9. tetrahydrofuran
10. 2-methyl-1,3-dioxolane
11. 1-butanol
12. benzene
13. triethylamine
14. 1,4-dioxane
15. tetrahydropyran
16. 1-pentanol
17. toluene
18. unknown
19. unknown
20. unknown
21. ethylbenzene
22. m+p-xylene
23. cyclohexanol + cyclohexanone
24. styrene
25. o-xylene
26. cyclohexenone
27. aniline
28. N,N-diethylacetamide
29. 2,2-ethyl-1-hexanol
30. unknown
31. nitrobenzene
32. naphthalene
33. unknown
34. biphenyl
35. phenyl ether

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