Hydrocarbons, $C_{10} - C_{40}$

Analysis of mineral oil in water to proposed Dutch NVN 6678

Application Note

Environmental

Authors
Agilent Technologies, Inc.

Introduction
Mineral oil consists mainly of hydrocarbons, which can be separated on the non-polar Agilent CP-Sil 5 CB column. A relatively short column will provide sufficient separation for characterization of the mineral oil. The column must be stable up to 325 °C to elute the highest fractions. For trace analysis it is often necessary to inject larger volumes. In this method injection volumes up to 5 μL were used, which were injected via a temperature-programmed injection device. The Agilent CP-SimDist UltiMetal column can also be used for applications where the final temperature exceeds 300 °C. Special features of the UltiMetal column are the low bleed and the high mechanical stability.
Conditions

Technique: GC-capillary

Column: Agilent CP-Sil 5 CB Low Bleed/MS, 0.32 mm x 10 m fused silica WCOT CP-Sil 5 CB Low Bleed/MS (df = 0.4 μm) (Part no. CP7859)

Temperature: 40 °C (2.5 min) → 310 °C, 10 °C/min

Carrier Gas: He, 40 kPa (0.4 bar, 5.7 psi)

Injector: Temperature-programmed on-column injector, temperature program identical to oven program

Detector: FID, T = 340 °C

Sample Size: 5 μL

Concentration range: ca 10-5000 ppm total mineral oil (for this method)

Solvent sample: petroleum ether 40-60

Peak identification

1. decane (IS)
2. undecane
3. dodecane
4. C_{13}
5. C_{14}
6. C_{15}
7. C_{16}
8. C_{17}
9. C_{18}
10. C_{19}
11. C_{20}
12. C_{21}
13. C_{22}
14. C_{40} (IS)