



Hydrocarbons, $C_6 - C_7$, aromatic hydrocarbons, $C_6 - C_8$

Analysis of impurities in cyclohexane

Application Note

Materials Testing & Research

Authors

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Introduction

The fast analysis of impurities in ethanol can be done very well using 0.15 mm id capillary columns in combination with split injection and FID detection. The 0.15 mm capillary offers a high plate number (ca. 150,000/25 m), can be operated with practical pressures (150 - 250 kPa) and can be used for a wide range of different applications. The problem of reduced loadability has been fully overcome by using a thick film Agilent CP-Sil 5 CB (1.2 μm) column. This allows accurate trace analysis of impurities in many chemical products. Some large chemical companies claim that they can run 85% of all their analyses on just one type of column: a 0.15 mm x 25 m coated with 1.2 μm CP-Sil 5 CB.

The reproducibility of the analysis is within 3% standard deviation, even for compounds that are present at 5 - 500 ppm. Despite the split injection, impurities can be measured at 1 - 5 ppm. Typically, a 100% method is used for integration. Ideally hydrogen is used as the carrier gas for the shortest analysis time. Helium is also very applicable. Typical analysis times are within 10 - 15 minutes.



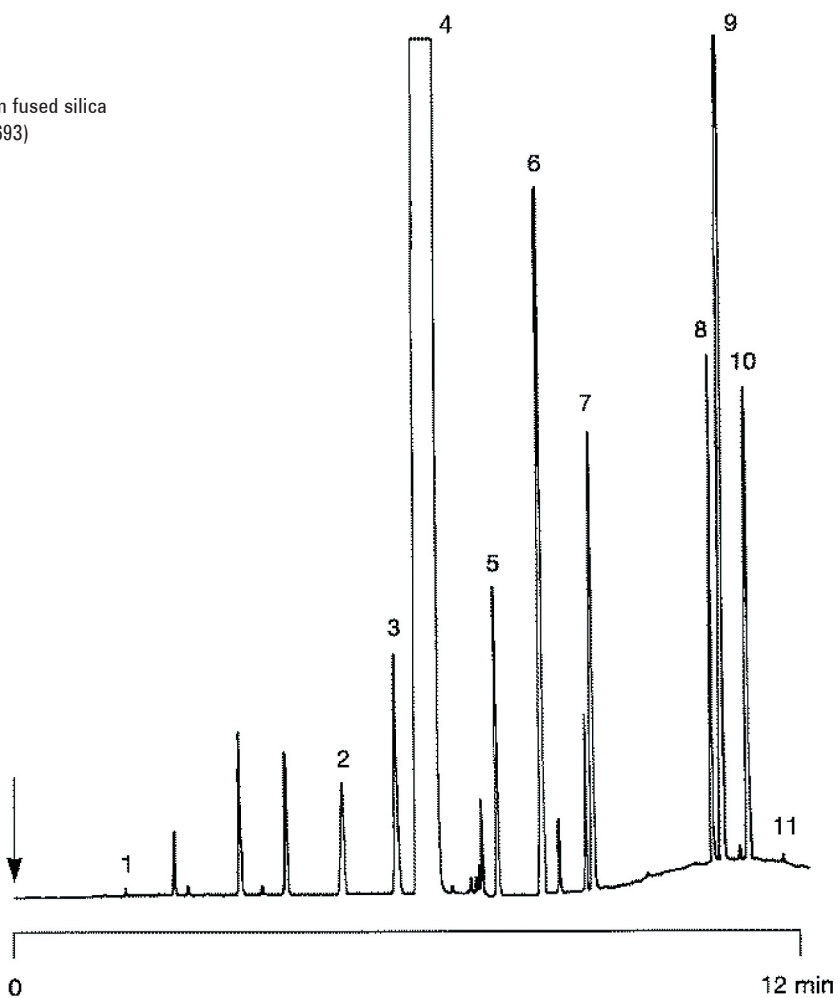
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Conditions

Technique : GC-capillary
Column : Agilent CP-Sil 5 CB, 0.15 mm x 25 m fused silica
WCOT (df = 1.2 µm) (Part no. CP7693)
Temperature : 70 °C (2 min) → 200 °C, 20 °C/min
200 °C (5 min)
Carrier Gas : H₂, 150 kPa (1.5 bar, 21 psi)
Injector : Split, T = 250 °C
Detector : FID, T = 250 °C
Sample Size : 2.0 µL
Concentration Range : 1-200 ppm
Solvent Sample : cyclohexane balance

Peak identification

1. impurity	1.8 ppm
2. methylcyclopentane	39 ppm
3. benzene	91 ppm
4. cyclohexane	
5. heptane	73 ppm
6. methylcyclohexane	173 ppm
7. toluene	83 ppm
8. ethylbenzene	79 ppm
9. m- + p-xylene	236 ppm
10. o-xylene	80 ppm
11. impurity	2.3 ppm



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This information is subject to change without notice.

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