GC Analysis of PAHs using an Agilent J&W FactorFour VF-17ms Column with EZ-Guard

Application Note

Author

Peter Heijnsdijk
Agilent Technologies, Inc.

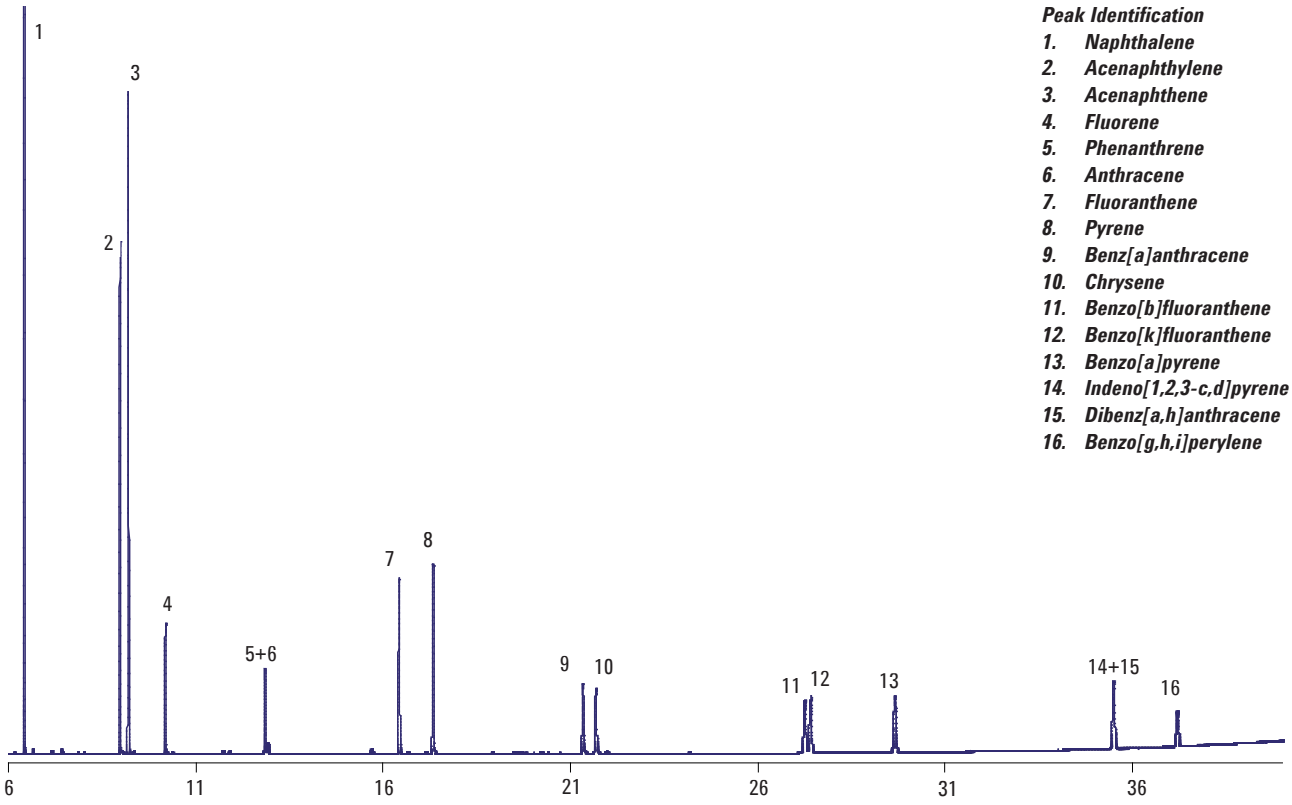
Introduction

Polycyclic aromatic hydrocarbons (PAHs) can be formed during incomplete combustion or pyrolysis of organic matter, industrial processes and cooking and food processing. US and European Union legislation require the monitoring of pollutant PAHs in air, waste, sludge, drinking water and food because of their carcinogenic properties. The matrix of the sample can be complex, depending on the nature of the sample. In particular, food, waste water and sludge can introduce non-volatiles into the column, despite sample preparation. These non-volatile components originating from the sample matrix will adhere to the analytical column and diminish separation and detector response.

By using an EZ-Guard in front of the analytical column, the non-volatile components are trapped on the integrated guard. When column performance diminishes, a meter of the EZ-Guard can be cut off to restore column performance with no loss of resolution in the analytical column.

The VF-17ms GC column is widely used for analyzing PAHs, being chosen for its high selectivity towards certain PAH isomers. This application note demonstrates the selectivity of the VF-17ms with EZ-Guard in the analysis of these important pollutants.

Agilent Technologies



Analysis of polycyclic aromatic hydrocarbons using a VF-17ms column with EZ-Guard

Materials and Methods

Technique:	GC-FID
Column:	FactorFour VF-17ms, 30 m x 0.25 mm ID, df=0.25 µm, + 10 m EZ-Guard (part number CP9025)
Temp Program:	70 °C (1.7 min) to 180 °C (20 °C/min) to 280 °C (8 °C/min) 5 min isothermal, to 350 °C (4 °C/min), 10 min isothermal
Carrier Gas:	He
Pressure:	2.0 bar
Injector Temp:	275 °C
Detector Temp:	325 °C, FID
Splitless Time:	1 min (split 100 ml/min)
Sample Size:	2 µL
Sample Info:	4-27 ug/mL, solvent acetonitrile

Results and Discussion

The figure above shows the performance of the VF-17ms with EZ-Guard for PAH analysis. EZ-Guard does not interfere with the column's inertness, as shown by the excellent peak shapes.

Conclusion

With the VF-17ms with EZ-Guard, Agilent introduces a GC column ideal for PAH analysis in complex matrices.

The EZ-Guard extends the lifetime of the GC column by trapping the non-volatile components arising from the sample matrix. In addition, EZ-Guard columns are quick, and easy to install and operate, boosting productivity and delivering improved efficiency as the integrated transfer line provides faster detector stabilization.

www.agilent.com/chem

Published in UK, October 08, 2010
SI-02221

Agilent Technologies