

Waters® PAH Columns

**Waters PAH Columns
Improve Analysis
of PAH Compounds**



Polynuclear Aromatic Hydrocarbons (PAHs) are among the most frequently monitored environmental contaminants. Standard and official methods for the analysis of PAHs are found in compendia for air, drinking water, wastewater, solid waste, and food analysis¹.

Many of these methods specify HPLC, usually with UV and fluorescence detection, as the recommended analytical procedure.

Waters PAH columns are optimized for the HPLC analysis of PAHs. Figure 1 shows a chromatogram of 16 PAH compounds, listed as target pollutants by the U.S. EPA. The Waters PAH columns achieve baseline resolution and excellent peak symmetry for all 16 target analytes in less than 25 minutes, while employing a simple water; acetonitrile binary gradient. The resolving power of

the PAH Columns provides superior peak identification and quantitation for PAHs.

Florida Administrative Code 17.700 includes 2 additional compounds (1-methyl naphthalene and 2-methyl naphthalene) in addition to the 16 compound EPA 610 mix that we currently use to show the proficiency of Waters instrumentation to analyze PAH compounds. The new Waters PAH columns resolve these two compounds along with the other 16, (see Figure 2).

Waters PAH columns come in seven different dimensions (including a capillary format), and two particle sizes. Each column comes with a complete Certificate of Analysis backed by a world-class ISO 9002 registered documentation trail.

Waters

Reference:

1. AOAC 973.30; Deutsche DIN TVO; UK ISBN 0 11 & 752032 2; U.S. EPA Methods TO-13, 550 & 550.1, 610, 8310

Figure 1: PAH Analysis using Waters PAH Columns

Column: Waters PAH Column 5 µm 4.6 x 250 mm @ 27° C
System: Waters Alliance® System with 2996 Photodiode Array Detector
Eluent A: Water
Eluent B: Acetonitrile
Gradient: 60% B to 100% B using curve 9 in 12 minutes, hold 11 minutes, back to initial conditions
Flow Rate: 1.2 mL/min
Injection: 20 µL
Sample: EPA-610 mixture

- Peaks:**
- | | |
|----------------------------|------------------------------------|
| 1. Naphthalene - 20 ppm | 9. Benzo(a)anthracene - 2 ppm |
| 2. Acenaphthylene - 40 ppm | 10. Chrysene - 2 ppm |
| 3. Acenaphthene - 20 ppm | 11. Benzo(b)fluoranthene - 4 ppm |
| 4. Fluorene - 4 ppm | 12. Benzo(k)fluoranthene - 2 ppm |
| 5. Phenanthrene - 2 ppm | 13. Benzo(a)pyrene - 2 ppm |
| 6. Anthracene - 2 ppm | 14. Dibenzo(a,h)anthracene - 4 ppm |
| 7. Fluoranthene - 4 ppm | 15. Benzo(g,h,i)perylene - 4 ppm |
| 8. Pyrene - 2 ppm | 16. Indeno(1,2,3-cd)pyrene - 2 ppm |

UV @ 254 nm

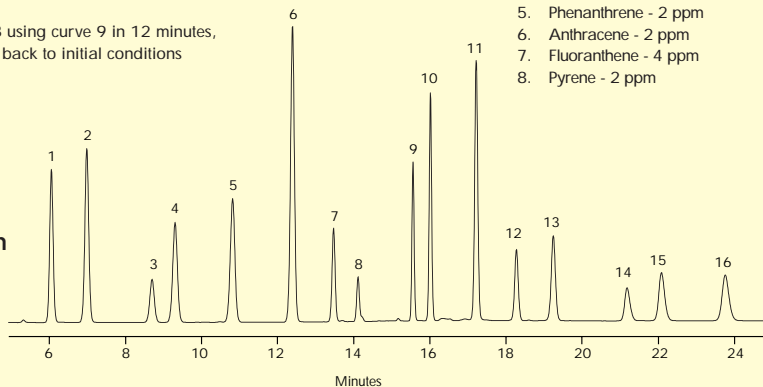
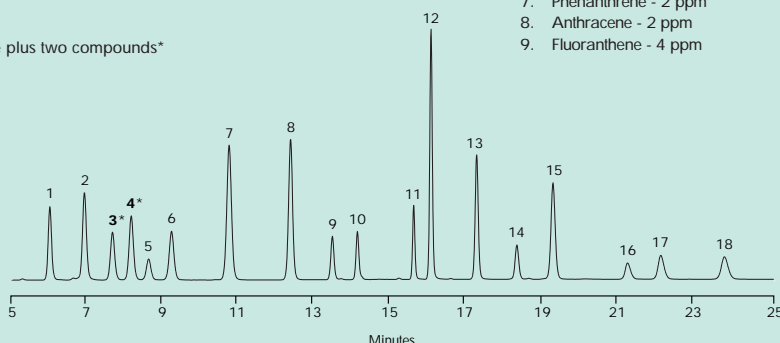


Figure 2: PAH Analysis According to Florida Administrative Code 17.700

Column: Waters PAH Column 5 µm 4.6 x 250 mm @ 27° C
Eluent A: Water
Eluent B: Acetonitrile
Gradient: 60% B to 100% B using curve 9 in 12 minutes, hold 11 minutes, back to initial conditions
Flow Rate: 1.2 mL/min
Injection: 20 µL
Sample: EPA-610 mixture plus two compounds*

- Peaks:**
- | | |
|-----------------------------------|------------------------------------|
| 1. Naphthalene - 20 ppm | 10. Pyrene - 2 ppm |
| 2. Acenaphthylene - 40 ppm | 11. Benzo(a)anthracene - 2 ppm |
| 3*. 1-methyl naphthalene - 25 ppm | 12. Chrysene - 4 ppm |
| 4*. 2-methyl naphthalene - 25 ppm | 13. Benzo(b)fluoranthene - 4 ppm |
| 5. Acenaphthene - 20 ppm | 14. Benzo(k)fluoranthene - 2 ppm |
| 6. Fluorene - 4 ppm | 15. Benzo(a)pyrene - 2 ppm |
| 7. Phenanthrene - 2 ppm | 16. Dibenzo(a,h)anthracene - 4 ppm |
| 8. Anthracene - 2 ppm | 17. Benzo(g,h,i)perylene - 4 ppm |
| 9. Fluoranthene - 4 ppm | 18. Indeno(1,2,3-cd)pyrene - 2 ppm |

UV @ 254 nm



Waters PAH Column Ordering Information

Particle Size	Dimensions	Part Number
5 µm	4.6 x 250 mm	186001265
5 µm	4.6 x 150 mm	186001264
3 µm	4.6 x 50 mm	186001260
5 µm	3.0 x 250 mm	186001263
5 µm	2.1 x 250 mm	186001262
5 µm	2.1 x 150 mm	186001261
5 µm	0.32 x 150 mm	186001259



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