

Easily improve your **sensitivity** and **recovery** before analysis!

With the widest range of sample preparation solutions from Phenomenex you can clean up any matrix before testing for PAHs!

roQ

Type: QuEChERS (Quick, Easy, Cheap, Effective, Rugged, and Safe)

Description: Quick and efficient process to extract multi-residue target analytes from food samples while removing unwanted interferences such as organic acids, lipids, pigments, sugars, and more. Each kit contains centrifuge tubes, pre-weighed salts in convenient single-use packets, and pre-weighed and packed SPE centrifuge tubes.

roQ
QuEChERS Kits



Strata Silica SPE

Type: Solid Phase Extraction

Description: Reversed phase, normal phase, or ion-exchange based media that allows for direct retention and elution of compounds of interest, with wash steps to remove unwanted interferences. Available in tubes (ranging from 1 mL to 60 mL) and 96-well plate formats. Strata PAH is available for clean up of water samples.

 **strata**
Solid Phase Extraction



Strata-X Polymeric SPE

Type: Solid Phase Extraction

Description: Unique, combined reversed phase and ion-exchange polymeric media developed to cover a diverse spectrum of analytes and simplify the method development process for fast and efficient sample preparation. Available in tubes (ranging from 1 mL to 60 mL) and standard and microelution 96-well plate formats.

strata[®]
Polymeric SPE

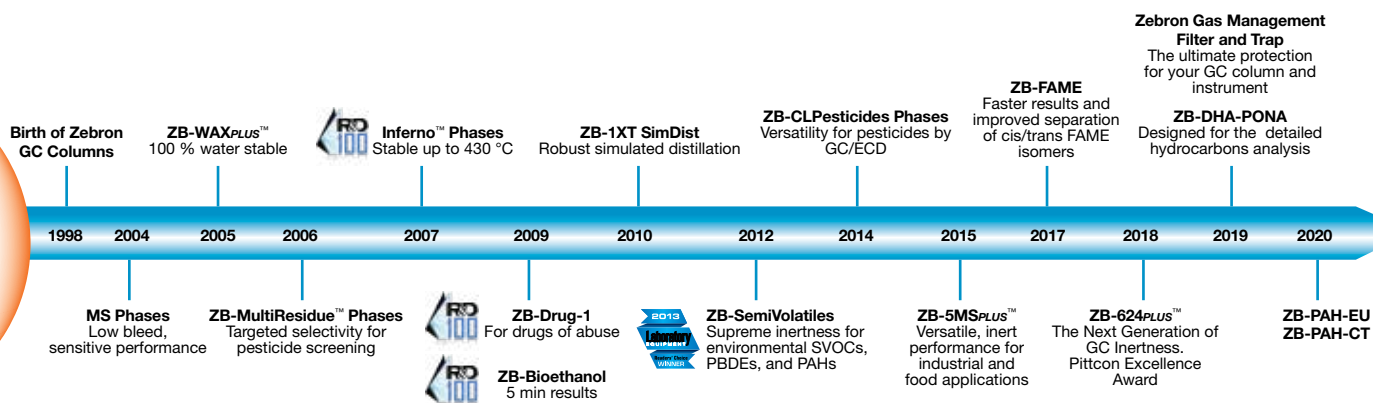


SULTS DRIVEN BY:

Zebron™ Gas Chromatography Technology

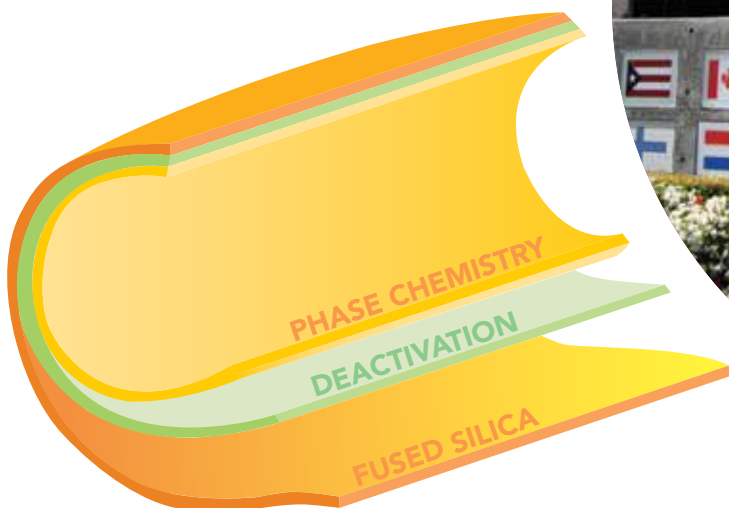
Continued Innovation with GC Expertise

Our inventive GC scientists have 25+ years of experience, and many helped create keystone phases at J&W Scientific before joining the Phenomenex team. Zebron's GC column track record of innovation is the only one to be recognized with 3 R&D 100 Awards, 2 Readers' Choice Awards, and a Pittcon Excellence Award. This tradition of GC column innovation continued with ZB-DHA-PONA, and continues with the NEW Zebron ZB-PAH-EU and Zebron ZB-PAH-CT.



More Than Just A Column

When you choose Zebron, you get more than just high quality GC products. Choosing Zebron means you get access to a wide variety of tools, resources, and personalized support to help make your GC work easier, faster, and simply better.



PAH Priority Analysis

Find more methods and applications online at
www.phenomenex.com/PAH

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Strata-X is patented by Phenomenex. U.S. Patent No. 7,119,145.

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PAH Priority Analysis

LC GC



Kinetex PAH

- Expanded resolution with chemical selectivity specifically for PAHs
- Increased throughput and sensitivity with core-shell technology for HPLC/UHPLC

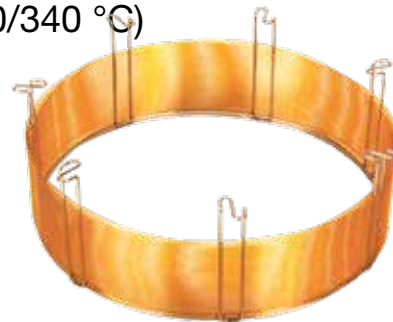


Zebron ZB-PAH-EU

- Up to 70% Faster PAH Analysis
- Elevated Temperature Stability (340/360 °C)

Zebron ZB-PAH-CT

- Enhanced Resolution for Chrysene and Triphenylene (PAH interferences)
- Elevated Temperature Stability (320/340 °C)



FASTER, BETTER RE

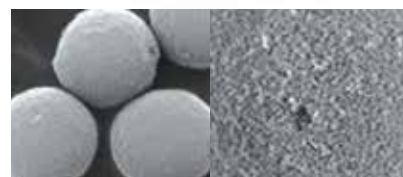
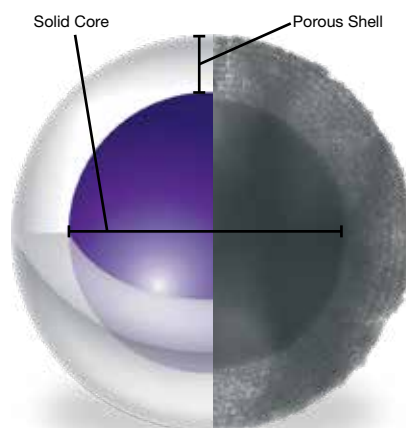
Kinetex Core-Shell Technology

The Chosen Core-Shell Brand

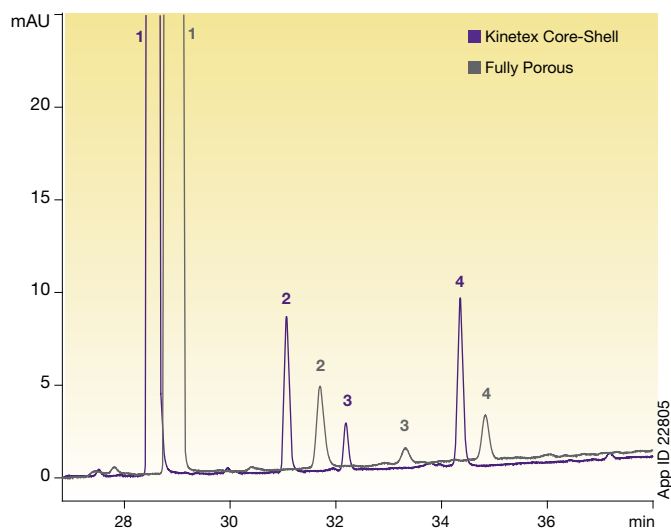
Kinetex® Core-Shell Technology delivers dramatic improvements in efficiency over conventional fully porous media which can be leveraged to increase resolution, greatly improve productivity, reduce solvent consumption, and decrease costs. Whether you are running HPLC or UHPLC methods, the Kinetex core-shell family can deliver shockingly improved performance over the current column you are using.

Finely Tuned, Unique Core-Shell Manufacturing Process

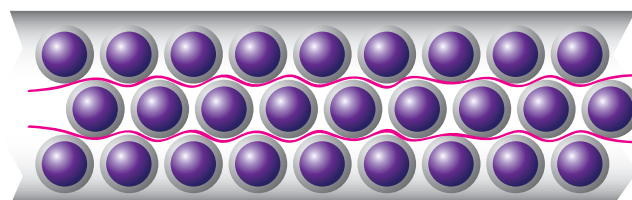
Phenomenex designs, manufactures, and sells its very own silica and organo-silica core-shell particles. Using silica sol-gel processing techniques that incorporate nano-structuring technology, a durable, homogeneous porous shell is grown on a solid silica core to create a core-shell particle. The combination of a consistent, solid high density core along with proprietary column packing technologies ensures optimum bed structure and high column performance.



Typical Core-Shell Performance Gains!

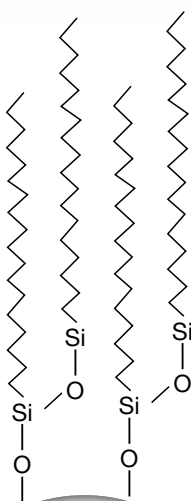


You can unleash the power of Kinetex Core-Shell Technology columns to achieve faster and better results just not possible on conventional fully porous materials. No matter what type of system you have or type of analysis you are performing, there is a Kinetex solution for you.

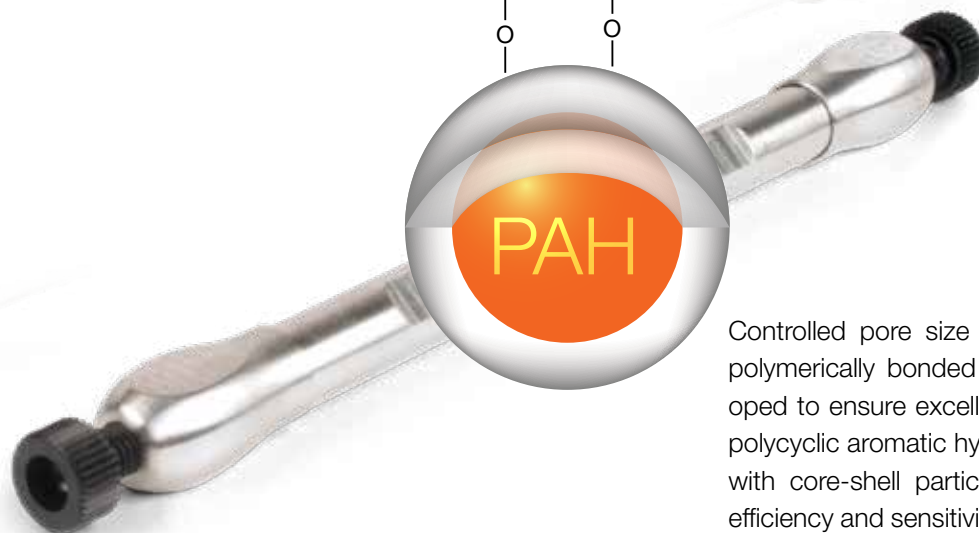


Designed for **PAH Analysis** by HPLC/UHPLC

“**Innovative Polymerically Bonded C18 Core-Shell PAH Column!**”



Polycyclic aromatic hydrocarbons (PAHs) are a hazardous set of compounds that come from a variety of materials and processes. With the need to accurately identify toxic forms of these compounds quickly in the environmental, fuel, and food industries, we specifically developed the first core-shell based LC product for PAH analysis. Now high resolution PAH separations can be attained under fast run times on both HPLC or UHPLC instrumentation.



Controlled pore size processing and a proprietary polymerically bonded stationary phase were developed to ensure excellent resolution between priority polycyclic aromatic hydrocarbons (PAHs). Combined with core-shell particle technology, incredibly high efficiency and sensitivity at comfortable LC pressures is very achievable.

- **QC tested for PAHs (EPA 610)**
- **Enhanced resolution and performance for PAH analysis**

Have either an HPLC or UHPLC?

No worries! The Kinetex® PAH 3.5 μm core-shell particle size and format has been chosen to provide optimal performance on both HPLC and UHPLC instrumentation.

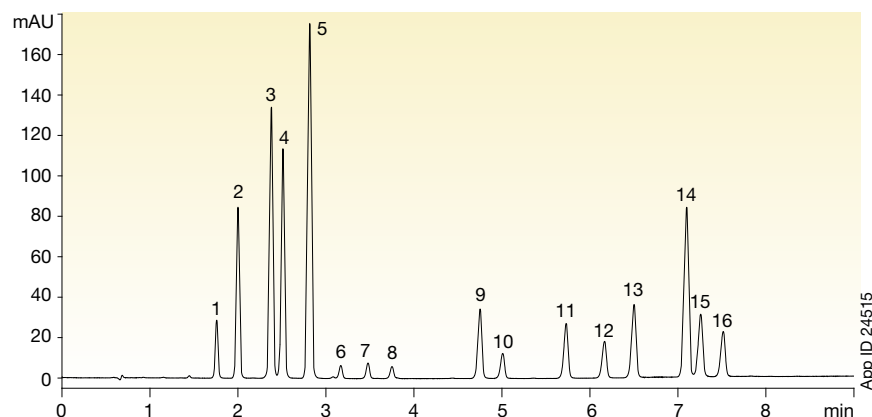


Learn More Online

Find more methods and applications online at
www.phenomenex.com/PAH

LC Application Examples

EPA 610 – PAH Analysis



Column: Kinetex 3.5 µm PAH
Dimensions: 100 x 4.6 mm
Part No.: 00D-4764-E0
Mobile Phase: A: Water
 B: Acetonitrile
Gradient:

Time (min)	% B
0	50
7	100
8	100
9	50
12	50

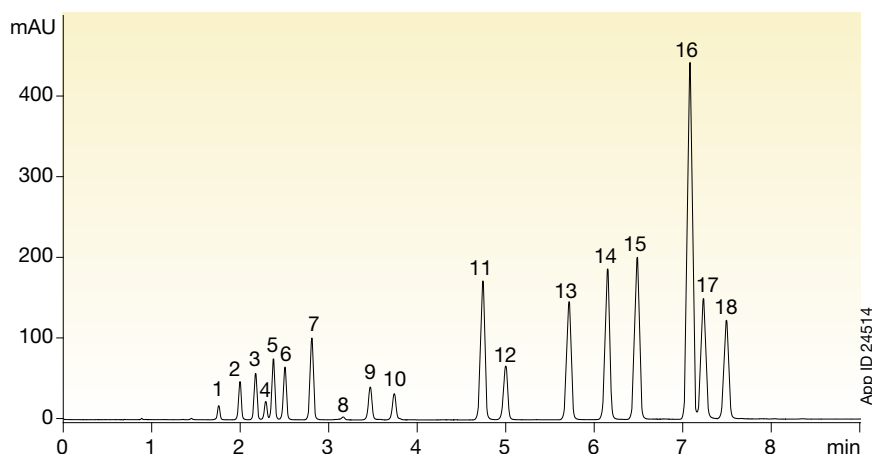
Flow Rate: 1.2 mL/min
Backpressure: 136 Bar
Temperature: 35 °C

Detection: UV @ 292 nm

Sample:

1. Naphthalene	9. Benzo[a]anthracene
2. Acenaphthylene	10. Chrysene
3. Acenaphthene	11. Benzo[b]fluoranthene
4. Fluorene	12. Benzo[k]fluoranthene
5. Phenanthrene	13. Benzo[a]pyrene
6. Anthracene	14. Dibenzo[a,h]anthracene
7. Fluoranthene	15. Benzo[g,h,i]perylene
8. Pyrene	16. Indeno[1,2,3-cd]pyrene

EPA 8310 – PAH Analysis



Column: Kinetex 3.5 µm PAH
Dimensions: 100 x 4.6 mm
Part No.: 00D-4764-E0
Mobile Phase: A: Water
 B: Acetonitrile
Gradient:

Time (min)	% B
0	50
7	100
8	100
9	50
12	50

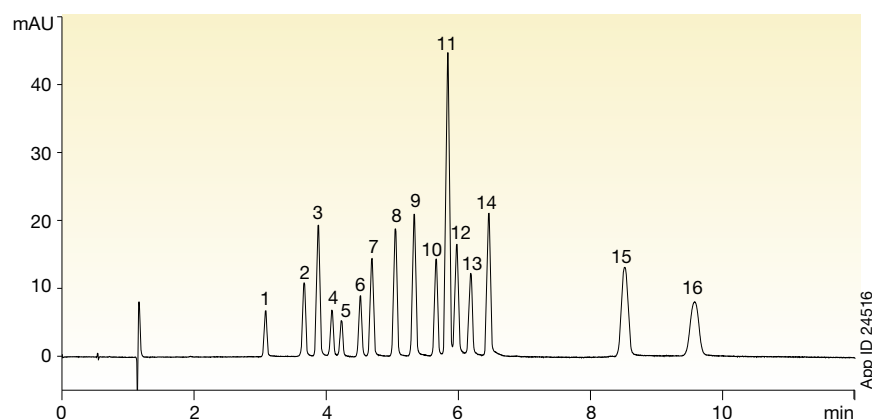
Flow Rate: 1.2 mL/min
Backpressure: 136 Bar
Temperature: 35 °C

Detection: UV @ 292 nm

Sample:

1. Naphthalene	10. Pyrene
2. Acenaphthylene	11. Benz[a]anthracene
3. 1-Methylnaphthalene	12. Chrysene
4. 2-Methylnaphthalene	13. Benzo[b]fluoranthene
5. Acenaphthene	14. Benzo[k]fluoranthene
6. Fluorene	15. Benzo[a]pyrene
7. Phenanthrene	16. Dibenzo[a,h]anthracene
8. Anthracene	17. Benzo[g,h,i]perylene
9. Fluoranthene	18. Indeno[1,2,3-cd]pyrene

EU 15+1 PAH Analysis



Column: Kinetex 3.5 µm PAH
Dimensions: 100 x 4.6 mm
Part No.: 00D-4764-E0
Mobile Phase: A: Water
 B: Acetonitrile
Gradient:

Time (min)	% B
0	50
6	100
11.5	100
12	50
14	50

Flow Rate: 1.5 mL/min
Backpressure: 136 Bar
Temperature: 35 °C

Detection: UV @ 292 nm

Sample:

1. Benzo[c]fluorene	9. Benzo[a]pyrene
2. Cyclopenta[cd]pyrene	10. Dibenzo[a,l]pyrene
3. Benz[a]anthracene	11. Dibenzo[a,h]anthracene
4. Chrysene	12. Benzo[g,h,i]perylene
5. 5-Methylchrysene	13. Indeno[1,2,3-cd]pyrene
6. Benzo[j]fluoranthene	14. Dibenzo[a,e]pyrene
7. Benzo[b]fluoranthene	15. Dibenzo[a,i]pyrene
8. Benzo[k]fluoranthene	16. Dibenzo[a,h]pyrene

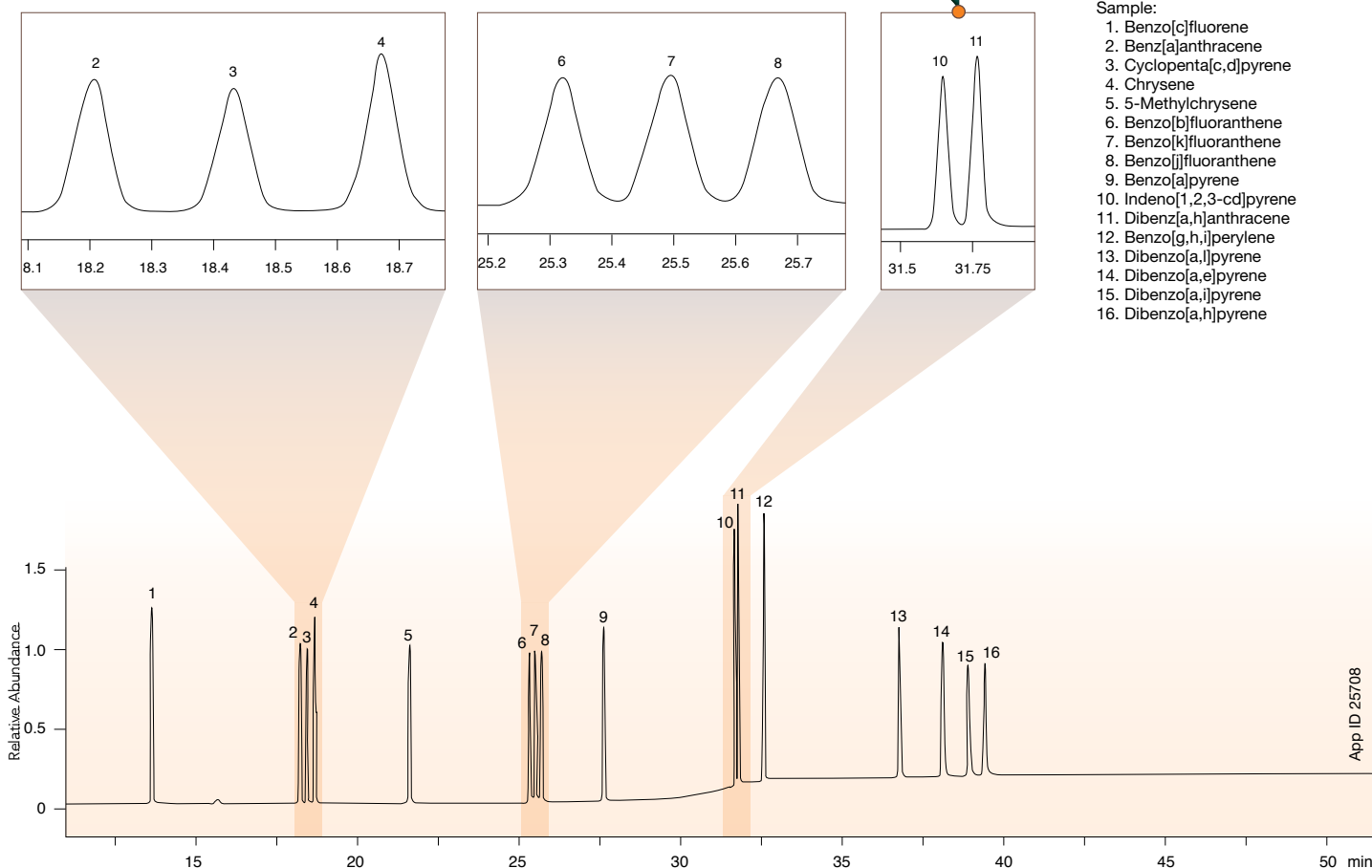
Complete Resolution of EU 15+1 and EPA 610 PAHs



Zebron ZB-PAH-EU GC column demonstrates excellent resolution and accurate quantitation of European regulated EU 15+1 and EPA 610 PAHs.

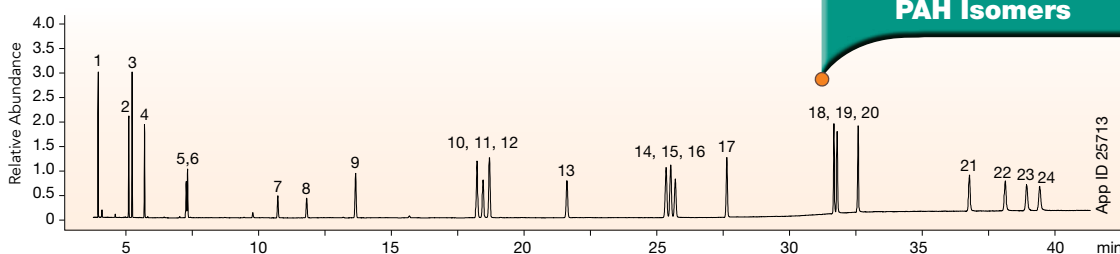
Analysis of EU 15+1 PAHs

Excellent Resolution of EU PAH Critical Pairs



Analysis of EU 15+1 and EPA 610 PAHs

Great Separation of All Key PAH Isomers



GC-MS conditions for both applications:

Column: Zebron ZB-PAH-EU
Dimensions: 30 meter x 0.25 mm x 0.20 µm
Part No.: 7HG-G043-10

Injection: Split 5:1 @ 330 °C, 1 µL

Recommended Liner: Zebron PLUS Single Taper Z-Liner™

Liner Part No.: AG2-4B13-05 (for Shimadzu® 2010 GC)

Carrier Gas: Helium @ 24 psi (constant pressure)

Oven Program: 45 °C for 0.8 min to 200 °C @ 45 °C/min to 226 °C @ 3 °C/min for 0 min to 320 °C @ 10 °C/min for 20 min

Detector: MSD, 50-500 m/z

Transfer Line Temperature: 300 °C

Source Temperature: 300 °C

Sample:

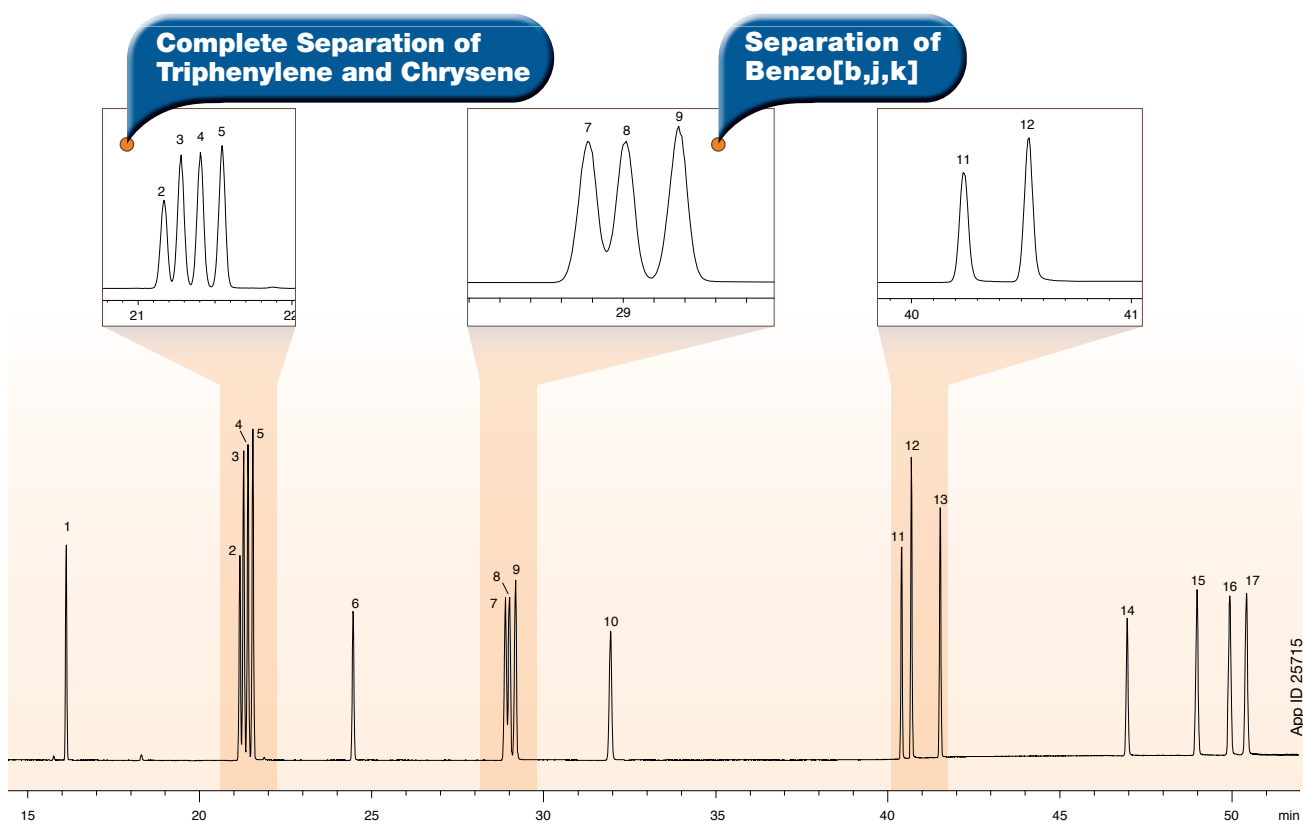
- | | | |
|-----------------------|----------------------------|----------------------------|
| 1. Naphthalene | pyrene | pyrene |
| 2. Acenaphthylene | 12. Chrysene | 19. Dibenzo[a,h]anthracene |
| 3. Acenaphthene | 13. 5-Methylchrysene | 20. Benzo[g,h,i]perylene |
| 4. Fluorene | 14. Benzo[b]fluoranthene | 21. Benzo[a,l]pyrene |
| 5. Phenanthrene | 15. Benzo[k]fluoranthene | 22. Dibenzo[a,e]pyrene |
| 6. Anthracene | 16. Benzo[j]fluoranthene | 23. Dibenzo[a,i]pyrene |
| 7. Fluoranthene | 17. Benzo[a]pyrene | 24. Dibenzo[a,h]pyrene |
| 8. Pyrene | 18. Indeno[1,2,3-cd]pyrene | |
| 9. Benzo[c]fluorene | | |
| 10. Benz[a]anthracene | | |
| 11. Cyclopenta[c,d] | | |

Excellent Resolution of Chrysene and Triphenylene

We designed the Zebron ZB-PAH-CT GC column to achieve complete resolution of Chrysene from Triphenylene along with other EU 15+1 PAH compounds. Its unique selectivity helps eliminate false positives while resolving PAH isomers, providing easy, fast, and accurate quantification of PAHs in environmental and food samples.



EU 15+1 PAH Analysis Using Zebron ZB-PAH-CT GC Column



Column: Zebron ZB-PAH-CT
Dimensions: 40 meter x 0.18 mm x 0.14 µm
Part No.: 7PD-G044-47
Injection: Split 30:1 @ 320 °C, 1 µL
Recommended Liner: Zebron PLUS Single Taper Z-Liner™
Liner Part No.: AG2-4B13-05 (for Shimadzu® 2010 GC)
Carrier Gas: Helium @ 78 psi (constant pressure)
Oven Program: 45 °C for 0.8 min to 200 °C @ 45 °C/min to 265 °C @ 3 °C/min for 5 min to 270 °C @ 1 °C/min to 320 °C @ 10 °C/min for 15 min
Detector: MSD (Shimadzu GC-MS-QP2010 Ultra)
Mode: SIM
SIM Ions: 216, 226, 228, 242, 252, 276, 278, 302 m/z
Transfer Line Temperature: 300 °C
Source Temperature: 300 °C

Sample:

1. Benzo[c]fluorene
2. Cyclopenta[c,d]pyrene
3. Benz[a]anthracene
4. Triphenylene
5. Chrysene
6. 5-Methylchrysene
7. Benzo[b]fluoranthene
8. Benzo[j]fluoranthene
9. Benzo[k]fluoranthene
10. Benzo[a]pyrene
11. Indeno[1,2,3-c,d]pyrene
12. Dibenzo[a,h]anthracene
13. Benzo[g,h,i]perylene
14. Dibenzo[a,i]pyrene
15. Dibenzo[a,e]pyrene
16. Dibenzo[a,i]pyrene
17. Dibenzo[a,h]pyrene

App ID 25715

Ordering Information

Kinetex®

3.5 µm Minibore Columns (mm)				SecurityGuard™ULTRA Cartridges (mm)
Phase	50 x 2.1	100 x 2.1	150 x 2.1	3/pk
PAH	00B-4764-AN	00D-4764-AN	00F-4764-AN	AJ0-9535 for 2.1 mm ID

3.5 µm MidBore™ (mm)		SecurityGuard ULTRA Cartridges (mm)
Phase	100 x 3.0	3/pk
PAH	00D-4764-Y0	AJ0-9534 for 3.0 mm ID

3.5 µm Analytical Columns (mm)				SecurityGuard ULTRA Cartridges (mm)
Phase	100 x 4.6	150 x 4.6	250 x 4.6	3/pk
PAH	00D-4764-E0	00F-4764-E0	00G-4764-E0	AJ0-9533 for 4.6 mm ID

*SecurityGuard ULTRA Cartridges require holder, Part No.: AJ0-9000

Zebron™ ZB-PAH-EU GC Column

Length (meter)	ID (mm)	df (µm)	Temp. Limits (°C)	Part No.
10	0.10	0.08	40 to 340/360	7CB-G043-59
20	0.18	0.14	40 to 340/360	7FD-G043-47
30	0.25	0.20	40 to 340/360	7HG-G043-10
60	0.25	0.20	40 to 340/360	7KG-G043-10

Zebron ZB-PAH-CT GC Column

Length (meter)	ID (mm)	df (µm)	Temp. Limits (°C)	Part No.
20	0.18	0.14	40 to 320/340	7FD-G044-47
30	0.25	0.20	40 to 320/340	7HG-G044-10
40	0.18	0.14	40 to 320/340	7PD-G044-47

Sample Preparation

Find part numbers, phases and sizes for our sample preparation solutions through the following links:

roQ™ QuEChERS:
www.phenomenex.com/roQ

Strata® Silica SPE
www.phenomenex.com/strata

Strata-X Polymeric SPE
www.phenomenex.com/strata-x

BE-HAPPY™
guarantee

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www.phenomenex.com/behappy