

# Unleash the Power of Fast GC PAH Analysis

**Zebron™**  
GC Columns

## ZB-PAH-EU

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

## ZB-PAH-SeleCT

- Enhanced Resolution for Chrysene and Triphenylene (PAH Interferences)
- Increased Benzo[b,k]fluoranthene Separation



**phenomenex®**  
...breaking with tradition™

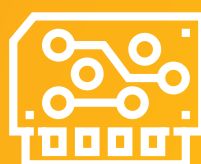
[www.phenomenex.com/GCPAH](http://www.phenomenex.com/GCPAH)



# ZB-PAH-EU and ZB-PAH-SeleCT

Designed to move conventional PAH testing to the exceptional, Zebtron™ GC columns come to life through a coupling of innovative spirit and technical excellence. The Zebtron ZB-PAH-EU and ZB-PAH-SeleCT offer unparalleled performance through the power of targeted selectivity when analyzing Polycyclic Aromatic Hydrocarbons (PAHs).

Learn more at [www.phenomenex.com/GCPAH](http://www.phenomenex.com/GCPAH)



**Complete Resolution for PAH Isomers**  
Accurately quantitate EU 15+1 and EPA 610 PAHs using the Zebtron ZB-PAH-EU GC column  
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**Up to 70% Faster PAH Analysis**  
Optimize the productivity of your lab with decreased run times  
p. 5



**Better Combination of Resolution and Speed**  
Learn how Zebtron outperforms popular GC columns for the separation of EU 15+1 and EPA 610 PAHs  
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**Able to Resolve Chrysene and Triphenylene**  
Unique selectivity designed for resolution of PAH isomers and interferences  
p. 12

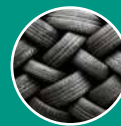


**Shorter Run Time and Better Sensitivity**  
Comparison of ZB-PAH-SeleCT vs. popular GC PAH column  
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## GC-MS Applications

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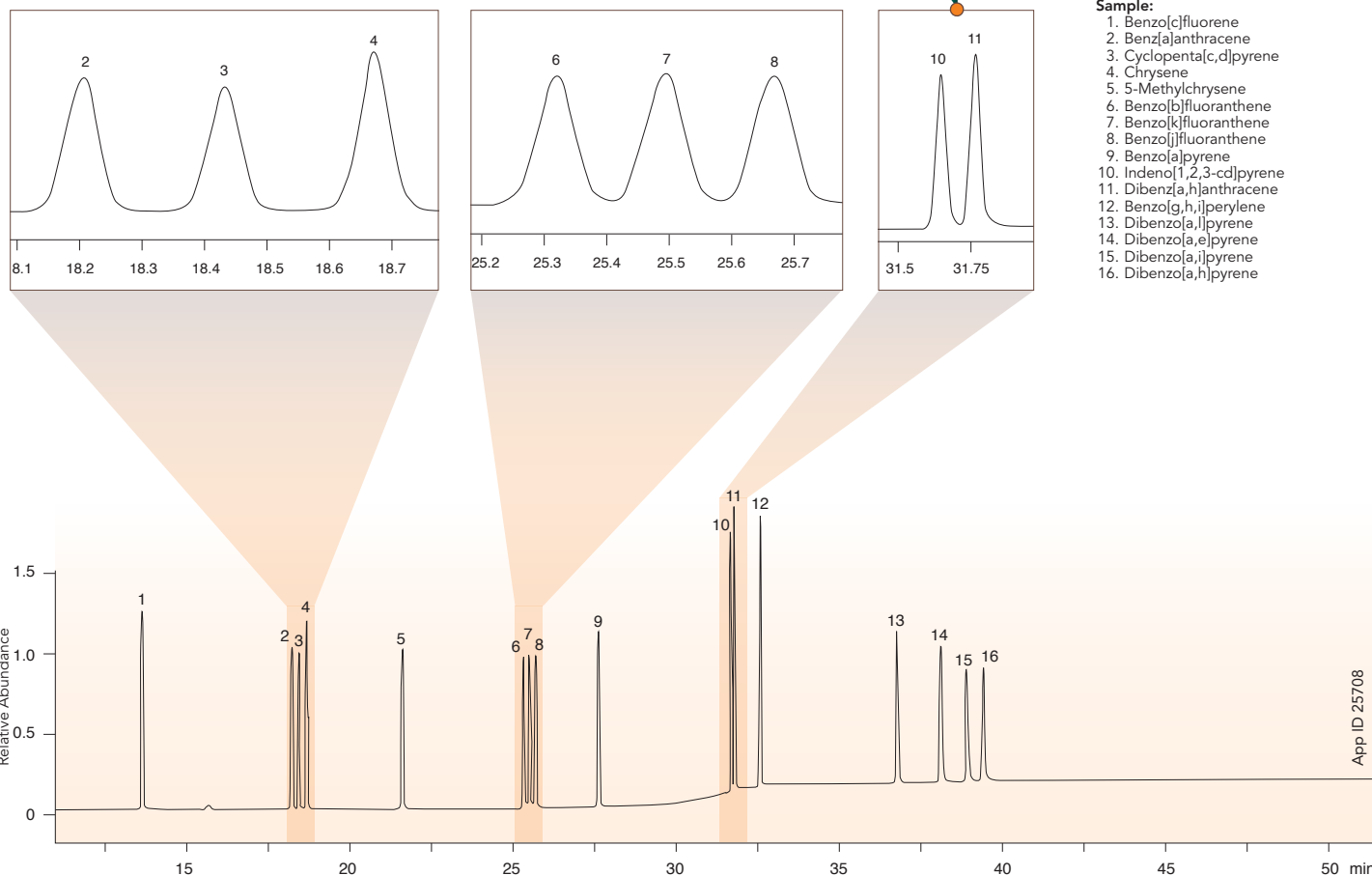
# Complete Resolution of EU 15+1 and EPA 610 PAHs

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



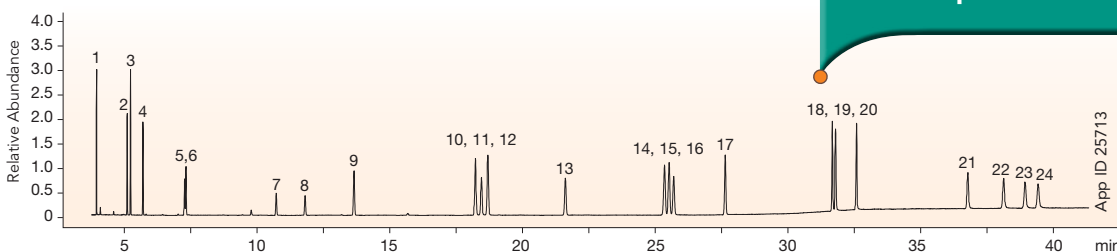
## Analysis of EU 15+1 PAHs

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

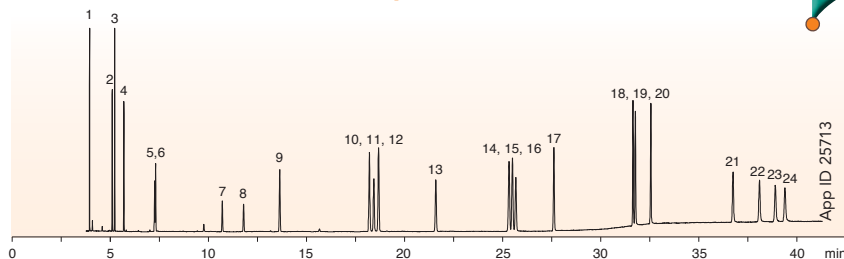
# Up to 70% Faster GC Analysis

Zebtron ZB-PAH-EU will allow you to gain back your precious analysis time! You can easily optimize your column dimensions for greater speed and lab productivity.



## Fast Analysis of EU 15+1 and EPA 610 PAHs using Zebtron ZB-PAH-EU

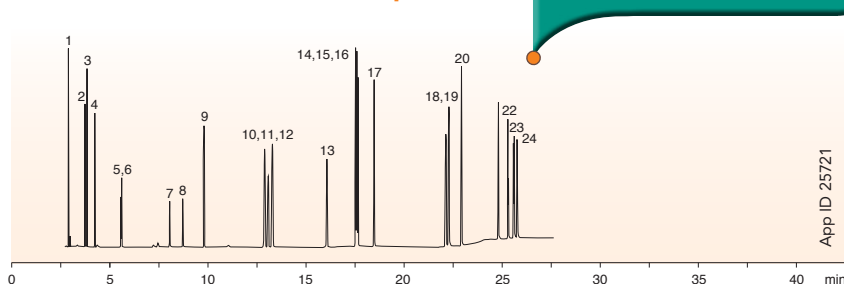
### 30 meter x 0.25 mm x 0.20 μm



**40 min PAH Analysis**

**Column:** Zebtron ZB-PAH-EU  
**Dimensions:** 30 meter x 0.25 mm x 0.20 μm  
**Part No.:** [ZH-G043-10](#)  
**Injection:** Split 5:1 @ 330°C, 1 μL  
**Recommended Liner:** Zebtron 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

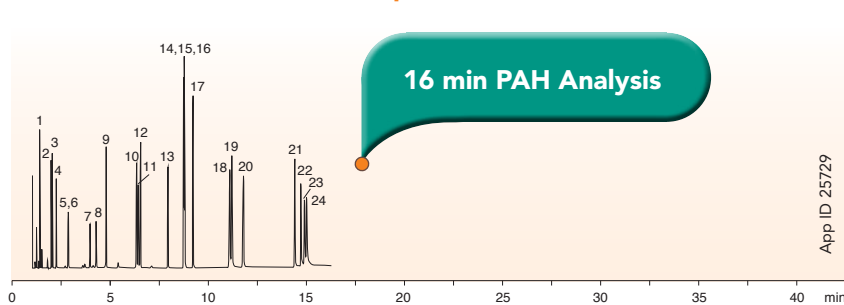
### 20 meter x 0.18 mm x 0.14 μm



**26 min PAH Analysis**

**Column:** Zebtron ZB-PAH-EU  
**Dimensions:** 20 meter x 0.18 mm x 0.14 μm  
**Part No.:** [7FD-G043-47](#)  
**Injection:** Split 5:1 @ 330°C, 1 μL  
**Recommended Liner:** Zebtron PLUS Single Taper Z-Liner  
**Liner Part No.:** [AG2-4B13-05](#) (for Shimadzu 2010 GC)  
**Carrier Gas:** Helium @ 1.75 mL/min (constant flow)  
**Oven Program:** 70°C for 0.8 min to 180°C @ 70°C/min to 230°C @ 7°C/min for 6 min to 280°C @ 40°C/min for 5 min to 335°C @ 25°C/min for 5 min  
**Detector:** MSD, 100-500 m/z  
**Transfer line Temperature:** 300°C  
**Source Temperature:** 300°C

### 10 meter x 0.10 mm x 0.08 μm



**16 min PAH Analysis**

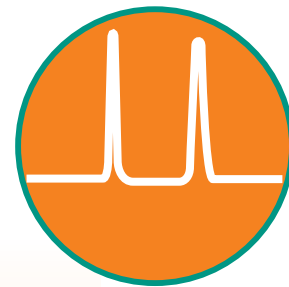
**Column:** Zebtron ZB-PAH-EU  
**Dimensions:** 10 meter x 0.10 mm x 0.08 μm  
**Part No.:** [7CB-G043-59](#)  
**Injection:** Split 15:1 @ 320°C, 1 μL  
**Recommended Liner:** Zebtron PLUS Single Taper Z-Liner  
**Liner Part No.:** [AG2-4B13-05](#) (for Shimadzu 2010 GC)  
**Carrier Gas:** Helium @ 0.88 mL/min (constant flow)  
**Oven Program:** 70°C for 0.4 min to 180°C @ 140°C/min to 230°C @ 14°C/min for 3 min to 280°C @ 85°C/min for 5 min to 330°C @ 40°C/min for 5 min  
**Detector:** MSD, 100-500 m/z  
**Transfer line Temperature:** 300°C  
**Source Temperature:** 300°C

**Sample for all applications:**

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

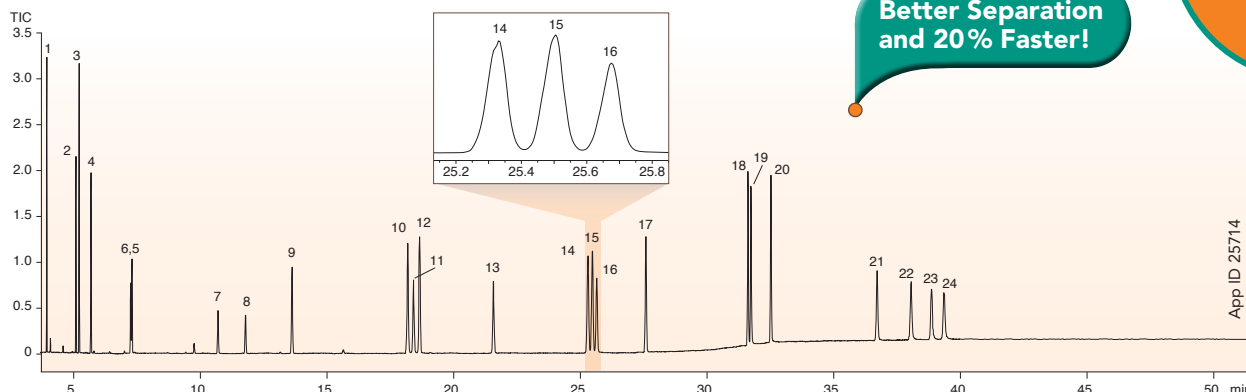
# Better Combination of Resolution and Speed

Zebtron outperforms popular GC columns for the separation of EU 15+1 and EPA 610 PAHs.



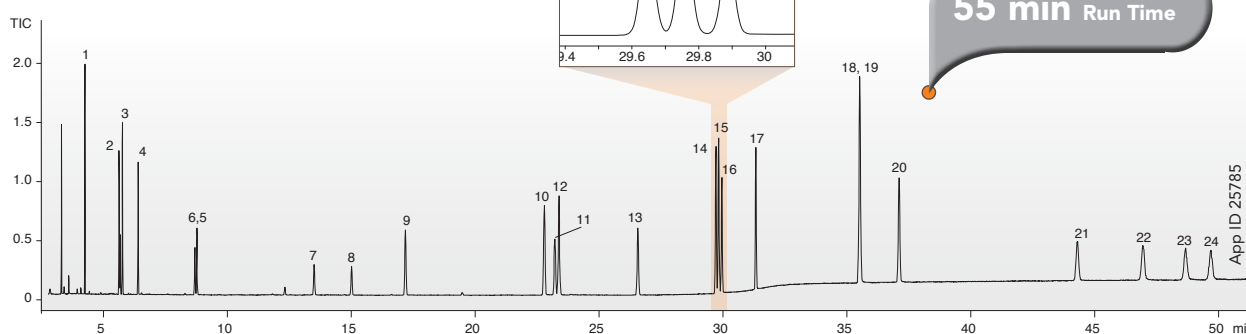
## Zebtron ZB-PAH-EU

30 meter x 0.25 mm x 0.20 μm



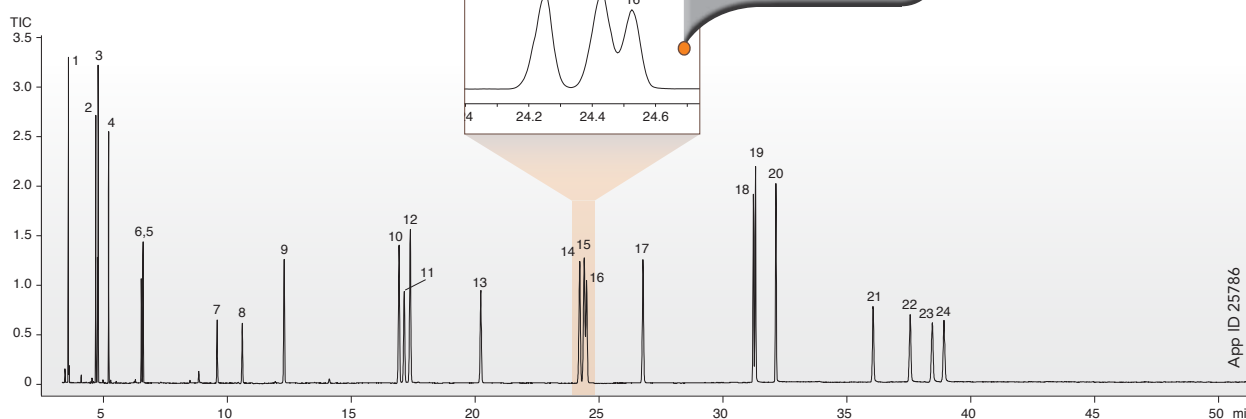
## Popular Brand A

30 meter x 0.25 mm x 0.25 μm



## Popular Brand R

30 meter x 0.25 mm x 0.10 μm



### GC-MS conditions for all columns:

Column: As Indicated

Dimension: As indicated

Injection: Split 5:1 @ 330°C, 1 μL

Recommended Liner: Zebtron 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
2. Acenaphthylene
3. Acenaphthene
4. Fluorene
5. Phenanthrene
6. Anthracene
7. Fluoranthene
8. Pyrene

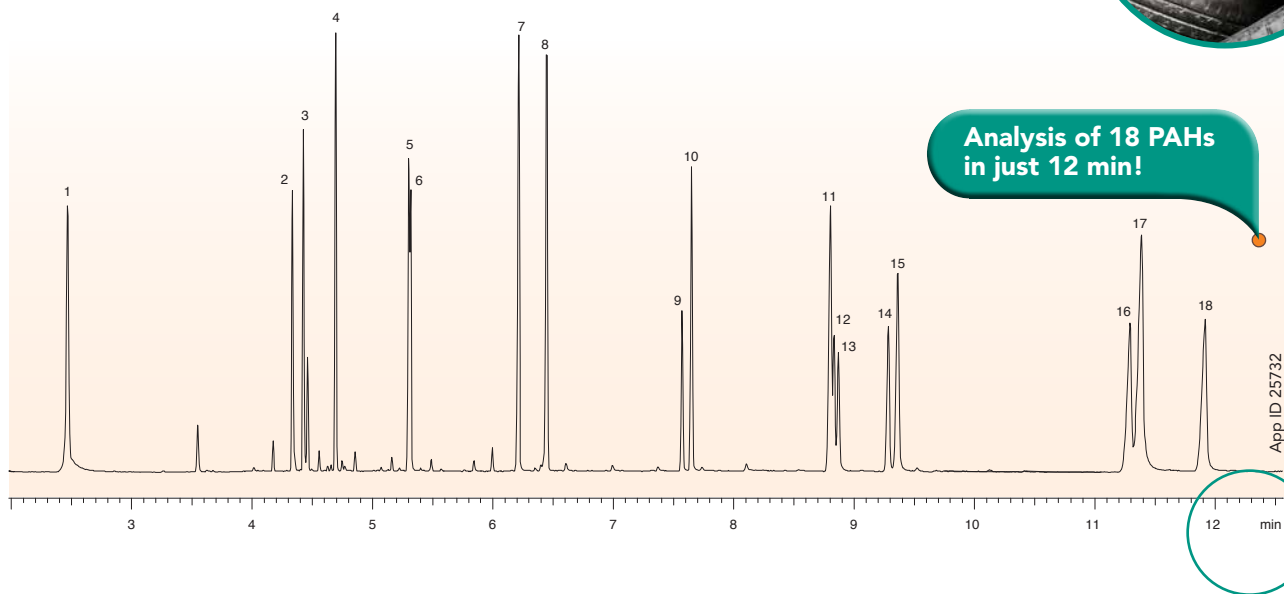
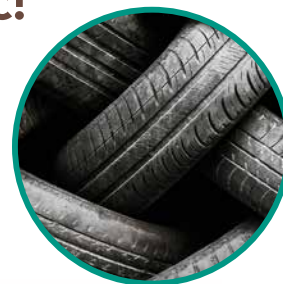
9. Benzo[c]fluorene
10. Benz[a]anthracene
11. Cyclopenta[c,d]pyrene
12. Chrysene
13. 5-Methylchrysene
14. Benzo[b]fluoranthene
15. Benzo[k]fluoranthene
16. Benzo[j]fluoranthene

17. Benzo[a]pyrene
18. Indeno[1,2,3-cd]pyrene
19. Dibenzo[a,h]anthracene
20. Benzo[g,h,i]perylene
21. Dibenzo[a,i]pyrene
22. Dibenzo[a,e]pyrene
23. Dibenzo[a,l]pyrene
24. Dibenzo[a,h]pyrene

Comparative separations may not be representative of all applications.

# GC-MS Analysis of PAHs in Rubber and Plastic!

Zebtron ZB-PAH-EU GC column separates the 18 PAH isomers within 12 minutes, resolving all critical pairs while demonstrating consistent column inertness.



**Column:** Zebtron ZB-PAH-EU  
**Dimensions:** 10 meter x 0.10 mm x 0.08 μm  
**Part No.:** [7CB-G043-59](#)  
**Injection:** Split 5:1 @ 320°C, 1 μL  
**Recommended Liner:** Zebtron PLUS Single Taper Z-Liner™  
**Liner Part No.:** [AG2-4B13-05](#) (for Shimadzu® 2010 GC System)  
**Carrier Gas:** Helium @ 0.68 mL/min (constant flow)  
**Oven Program:** 100°C for 3.0 min to 200°C @ 60°C/min to 270°C @ 22°C/min to 300°C @ 4.5°C/min to 330°C @ 80°C/min for 0.5 min  
**Detector:** MSD, 50-500 m/z  
**Transfer line Temperature:** 300°C  
**Source Temperature:** 330°C

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

The high temperature limits of the ZB-PAH-EU (340/360°C) is extremely helpful for easy bakeout of dirty matrices and allows for eluting heavy PAHs!



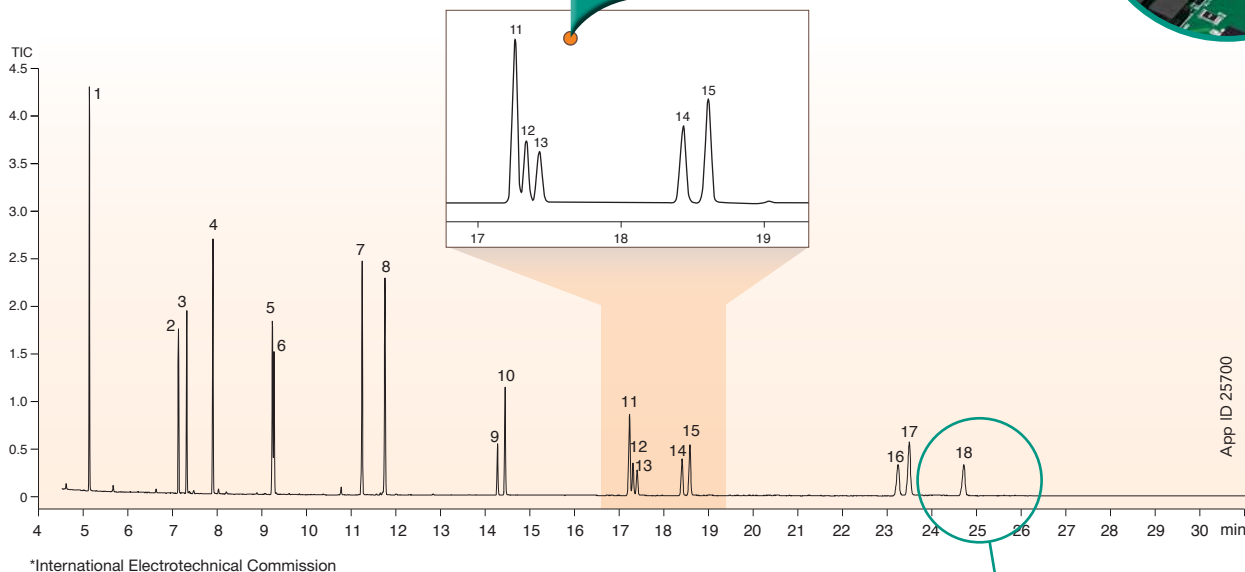
# FAST GC-MS Test Method for PAHs in Electronic Components



## Zebtron ZB-PAH-EU

20 meter x 0.18 mm x 0.14 μm

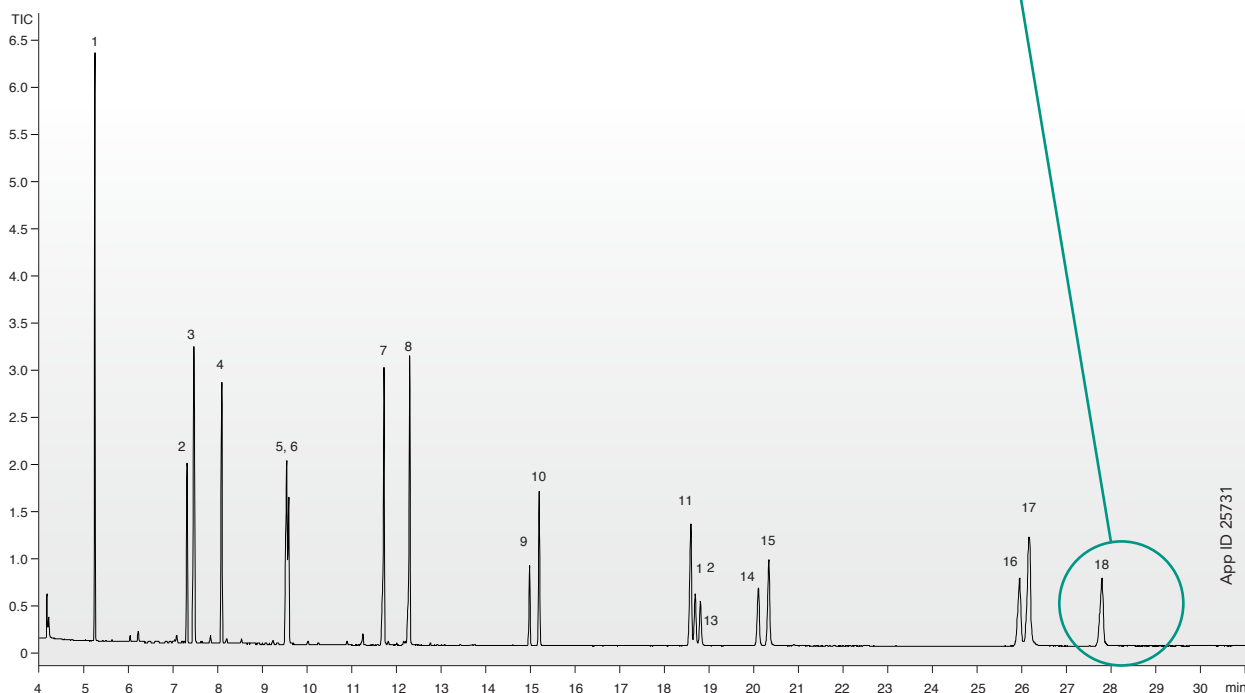
Great Separation for Critical IEC PAH Pairs



## Popular Brand A

20 meter x 0.18 mm x 0.14 μm

Improved Run Time vs. Popular Product



**GC conditions for both columns:**

- Column: As indicated
- Dimensions: 20 meter x 0.18 mm x 0.14 μm
- Injection: Splitless 0.5 minutes @ 290°C, 1 μL
- Recommended Liner: Zebtron PLUS Single Taper Z-Liner™
- Liner Part No.: [AG2-3B03-05](#) (for Shimadzu® 2010 GC System)
- Carrier Gas: Helium @ 1.75 mL/min (constant flow)
- Oven Program: 50°C for 1 min to 200°C @ 20°C/min to 260°C @ 10°C/min to 290°C @ 2°C/min (hold 1 min) to 330°C @ 40°C/min (hold 1 min)
- Detector: MSD
- Source Temperature: 300°C
- Transfer-line Temperature: 300°C
- Sample: PAH Sample Standard Mix (Part No. [AE-00025-10ML](#), AccuStandard)

**Sample:**

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

Comparative separations may not be representative of all applications.



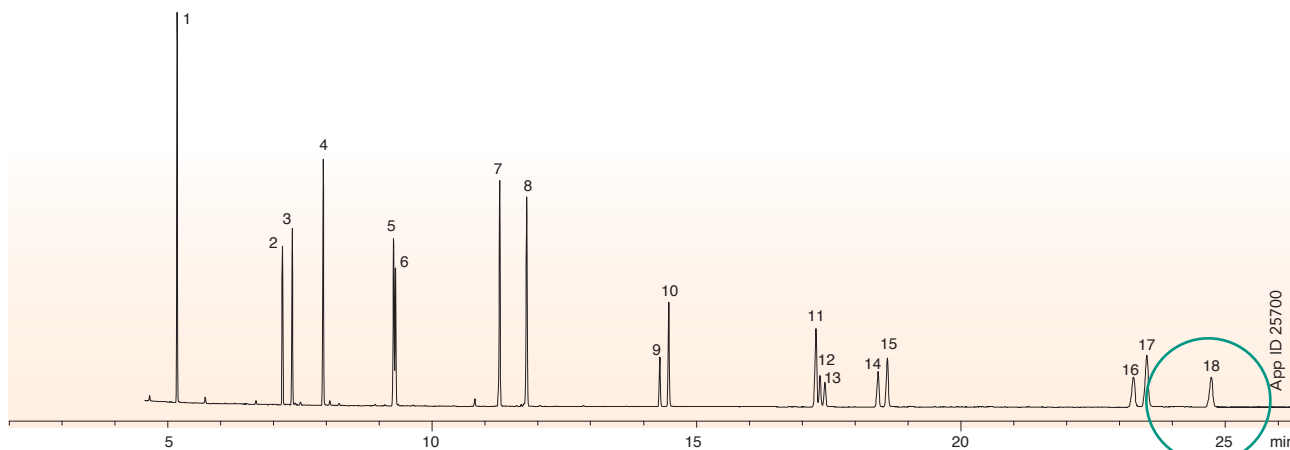
# Even *FASTER* GC-MS Test Method for PAHs in Electronic Components



Optimize and increase the speed of PAH analysis in electronic components by choosing a 10 meter Zebtron ZB-PAH-EU GC column.

## Zebtron ZB-PAH-EU

20 meter x 0.18 mm x 0.14 μm

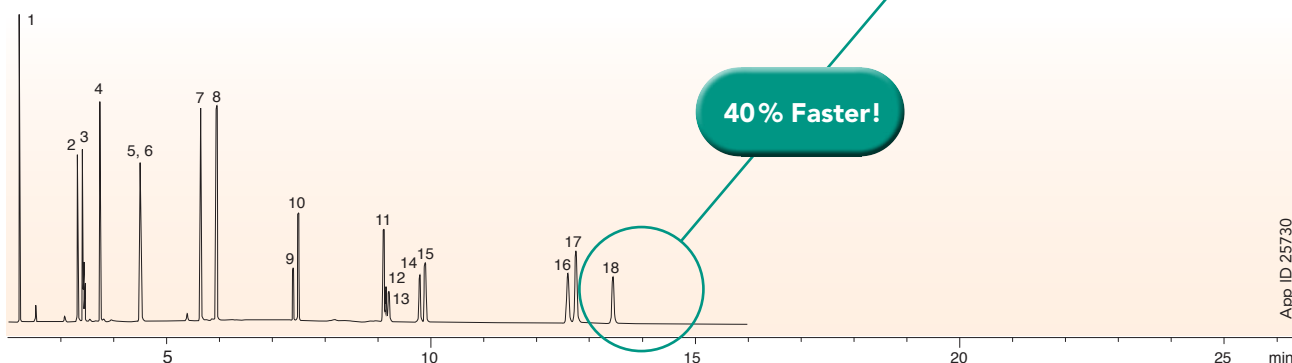


Column: Zebtron ZB-PAH-EU  
 Dimensions: 20 meter x 0.18 mm x 0.14 μm  
 Part No.: [7FD-G043-47](#)  
 Injection: Splitless (hold 0.5 min) @ 290°C, 1 μL  
 Recommended Liner: Zebtron PLUS Single Taper Z- Liner™  
 Liner Part No.: [AG2-3B03-05](#) (for Shimadzu® 2010 GC System)  
 Carrier Gas: Helium @ 0.8 mL/min (constant flow)

Oven Program: 50°C for 1 min, to 200°C @ 20°C/min to 260°C @ 10°C (hold for 1 min) to 290°C @ 2°C/min (hold 1 min) to 330°C @ 40°C/min (hold 1 min)  
 Detector: MSD, 50-500 m/z  
 Source Temperature: 300°C  
 Transfer-line Temperature: 300°C  
 Sample: PAH Sample Standard Mix (Part No. [AE-00025-10ML](#), AccuStandard)

## Zebtron ZB-PAH-EU

10 meter x 0.10 mm x 0.08 μm



Column: Zebtron ZB-PAH-EU  
 Dimensions: 10 meter x 0.10 mm x 0.08 μm  
 Part No.: [7CB-G043-59](#)  
 Injection: Splitless (hold 0.5 min) @ 290°C, 0.5 μL  
 Recommended Liner: Zebtron PLUS Single Taper Z- Liner™  
 Liner Part No.: [AG2-3B03-05](#) (for Shimadzu® 2010 GC System)  
 Carrier Gas: Helium @ 0.8 mL/min (constant flow)  
 Oven Program: 50°C for 0.5 min to 200°C @ 38°C/min to 260°C @ 18°C/min to 290°C @ 3°C/min (hold 0.5 min) to 330°C @ 80°C/min (hold 0.5 min)  
 Detector: MSD, 50-500 m/z  
 Source Temperature: 300°C  
 Transfer-line Temperature: 300°C  
 Sample: PAH Sample Standard Mix (Part No. [AE-00025-10ML](#), AccuStandard)

**Sample for both columns:**

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

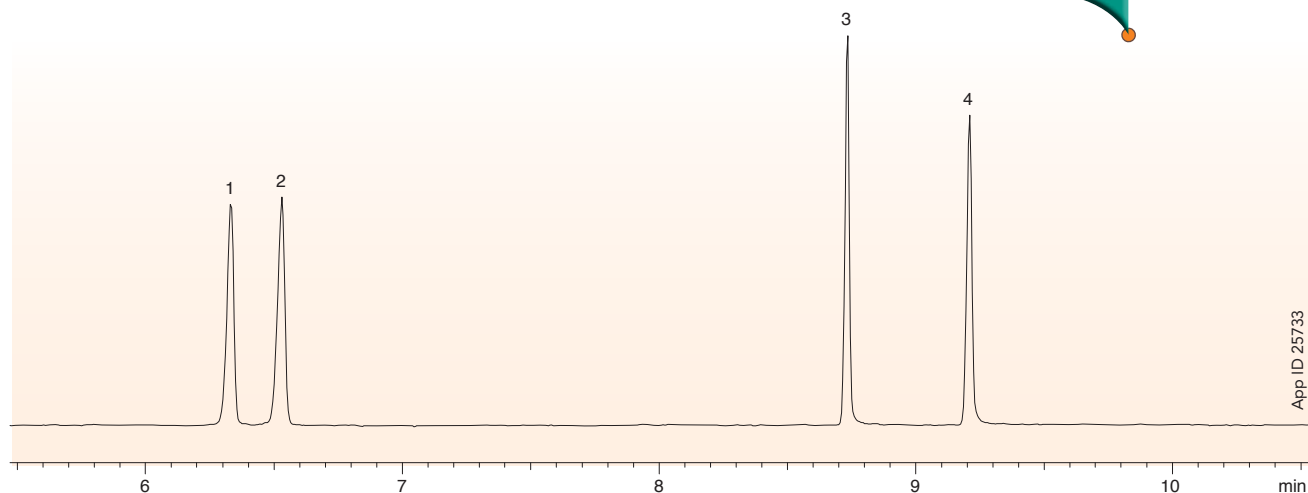
# Fast and Accurate GC-MS Test Method for Measuring PAHs in Food

Zebtron ZB-PAH-EU is an excellent solution for separating the four most common PAH markers within the European Food Safety Authority EFSA PAH4 for food analysis.



## Super Fast Analysis of Food PAHs Using ZB-PAH-EU

Separation of EFSA PAH4 in less than 10 min!



App ID 25733

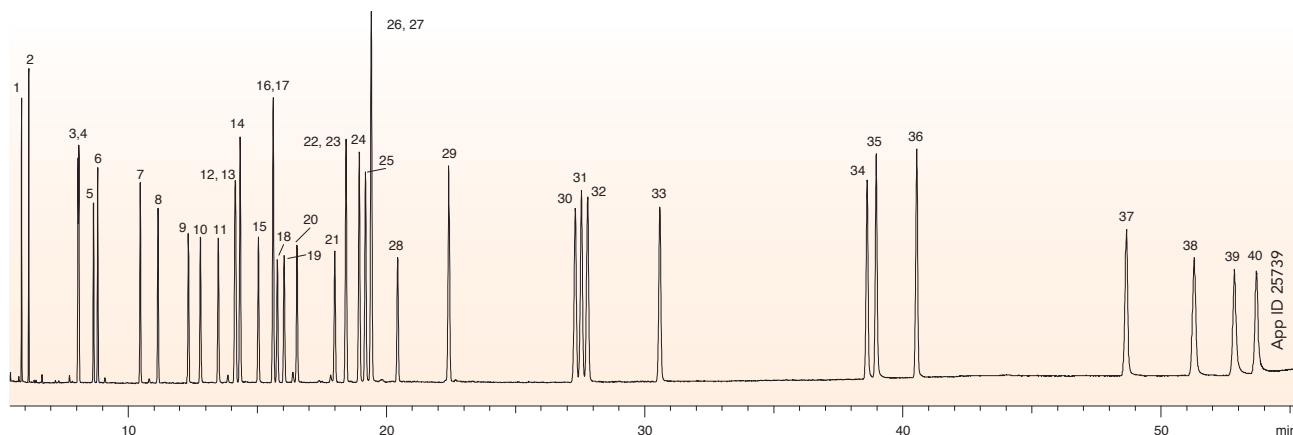
**Column:** Zebtron ZB-PAH-EU  
**Dimensions:** 10 meter x 0.10 mm x 0.08 μm  
**Part No.:** [ZCB-G043-59](#)  
**Injection:** Split 15:1 @ 320°C, 1 μL  
**Recommended Liner:** Zebtron PLUS Single Taper Z-Liner™  
**Liner Part No.:** [AG2-4B13-05](#) (for Shimadzu® 2010 GC System)  
**Carrier Gas:** Helium @ 0.88 mL/min (constant flow)  
**Oven Program:** 70°C for 0.4 min to 180°C @ 140°C/min to 230°C @ 14°C/min for 3 min to 280°C @ 85°C/min for 5 min 330°C @ 40°C/min for 5 min  
**Detector:** MSD, 100-500 m/z  
**Transfer line Temperature:** 300°C  
**Source Temperature:** 300°C  
**Sample:** 10 ppm EFSA PAH4 Standard in Toluene  
 1. Benz[a]anthracene  
 2. Chrysene  
 3. Benzo[b]fluoranthene  
 4. Benzo[a]pyrene

# One Column Solution for PAH, PCB, and Terphenyl Analysis!

The unique selectivity of Zebron ZB-PAH-EU will allow for successful separation of PAHs and polychlorinated biphenyls (PCBs) in one run, resolving false positives and inaccurate results while simplifying data processing.



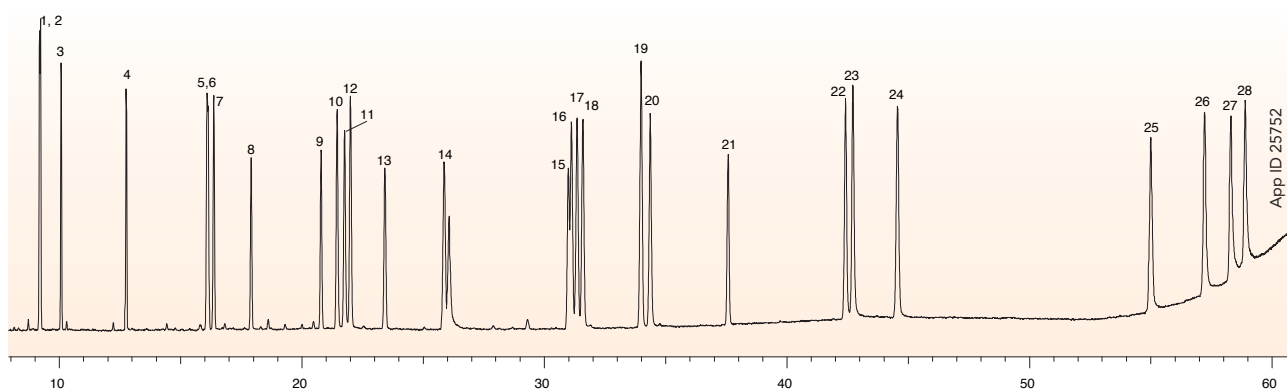
## PAH and PCB analysis using ZB-PAH-EU



<p><b>Column:</b> Zebron ZB-PAH-EU  <b>Dimension:</b> 30 meter x 0.25 mm x 0.20 μm  <b>Part No.:</b> <a href="#">7HG-G043-10</a>  <b>Injection:</b> Splitless for 0.5 min @ 320 °C, 1 μL  <b>Recommended Liner:</b> Zebron PLUS Single Taper Z-Liner™  <b>Liner Part No.:</b> <a href="#">AG2-4B13-05</a> (for Shimadzu® 2010 GC)  <b>Carrier Gas:</b> Helium @ 1.3 mL/min (constant flow)  <b>Oven Program:</b> 45 °C for 1 min to 200 °C @ 50 °C/min to 250 °C @ 3 °C/min for 5 min to 300 °C @ 3 °C/min for 10 min to 340 °C @ 5 °C/min for 0 min  <b>Detector:</b> MSD, 50-500 m/z  <b>Transfer line Temperature:</b> 300 °C  <b>Source Temperature:</b> 300 °C</p>	<p><b>Sample:</b>                  1. TCMX                  2. DCB 22                  3. PCB 31                  4. PCB 28                  5. PCB 69                  6. PCB 52                  7. PCB 70                  8. PCB101                  9. PCB 81                  10. PCB 77                  11. PCB 123                  12. PCB 153                  13. PCB 118                  14. Benzo[c]fluorene</p>	<p>15. PCB 105                  16. PCB 164                  17. PCB 163                  18. PCB 138                  19. PCB 126                  20. PCB 167                  21. PCB 156                  22. PCB 180                  23. PCB 157                  24. Benz[a]anthracene                  25. Cyclopenta[c,d]pyrene                  26. PCB 169                  27. Chrysene                  28. PCB 170</p>	<p>29. 5-Methylchrysene                  30. Benzo[b]fluoranthene                  31. Benzo[k]fluoranthene                  32. Benzo[j]fluoranthene                  33. Benzo[a]pyrene                  34. Indeno[1,2,3-cd]pyrene                  35. Dibenzo[a,h]anthracene                  36. Benzo[g,h,i]perylene                  37. Dibenzo[a,i]pyrene                  38. Dibenzo[a,e]pyrene                  39. Dibenzo[a,i]pyrene                  40. Dibenzo[a,h]pyrene</p>
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Improve your lab's productivity by successfully combining adequate separation of isomers and different compound classes.

## PAH, PCB, and Terphenyl analysis using ZB-PAH-EU



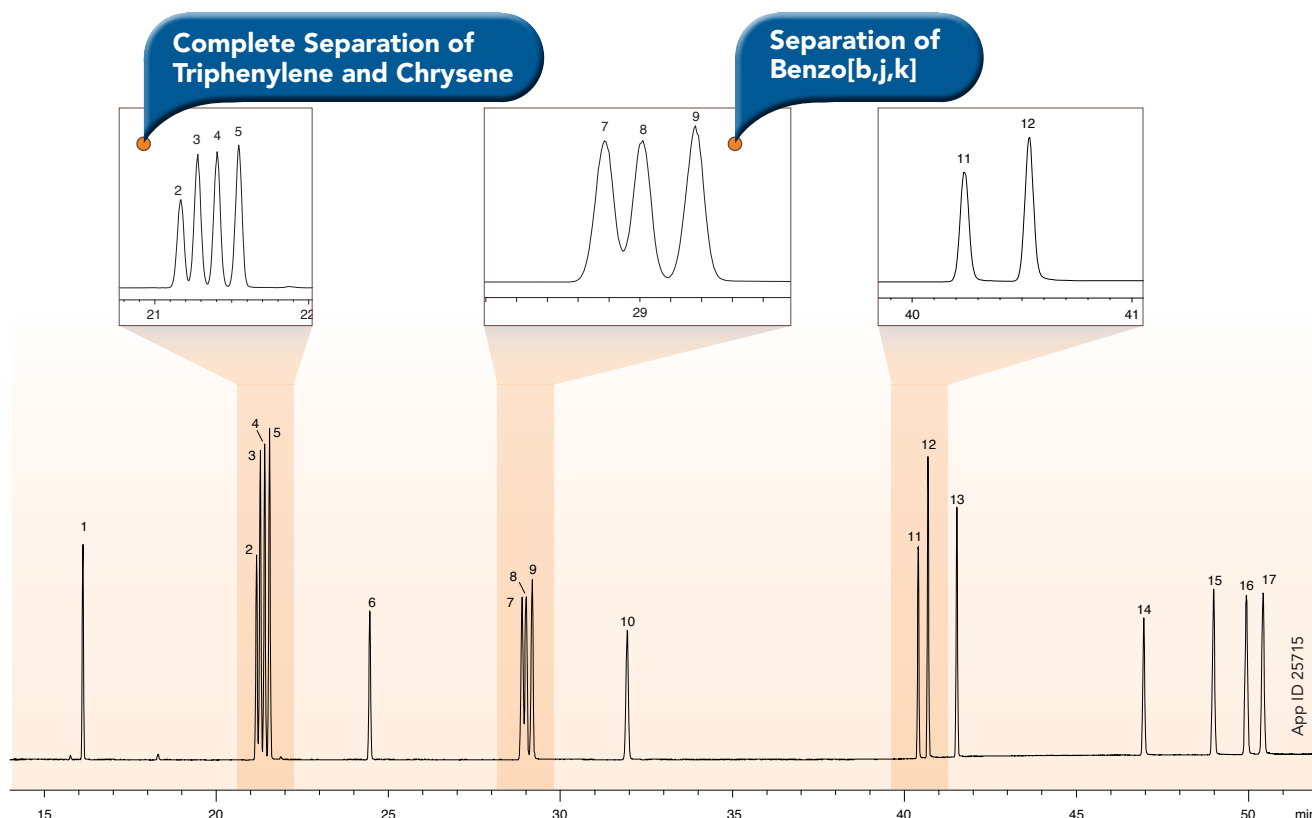
<p><b>Column:</b> Zebron ZB-PAH-EU  <b>Dimension:</b> 30 meter x 0.25 mm x 0.20 μm  <b>Part No.:</b> <a href="#">7HG-G043-10</a>  <b>Injection:</b> Split 2:1 @ 320 °C, 1 μL  <b>Recommended Liner:</b> Zebron PLUS Single Taper Z-Liner  <b>Liner Part No.:</b> <a href="#">AG2-4B13-05</a> (for Shimadzu 2010 GC)  <b>Carrier Gas:</b> Helium @ 72.8 kPa (constant pressure)  <b>Oven Program:</b> 45 °C for 1 min to 200 °C @ 50 °C/min to 250 °C @ 3 °C/min for 5 min to 300 °C @ 3 °C/min for 10 min to 340 °C @ 5 °C/min for 0 min  <b>Detector:</b> MSD, 100-500 m/z  <b>Transfer line Temperature:</b> 300 °C  <b>Source Temperature:</b> 300 °C</p>	<p><b>Sample:</b>                  1. PCB 31                  2. PCB 28                  3. PCB-52                  4. PCB 101                  5. PCB 153                  6. PCB118                  7. Benzo[c]fluorene                  8. PCB138                  9. PCB180                  10. Benz[a]anthracene                  11. Cyclopenta[c,d]pyrene                  12. Chrysene                  13. Trichlorotriphenyl                  14. 5-Methylchrysene                  15. Tetrachloroterphenyl</p>	<p>16. Benzo[b]fluoranthene                  17. Benzo[k]fluoranthene                  18. Benzo[j]fluoranthene                  19. Benzo[e]pyrene                  20. Benzo[a]pyrene                  21. Pentachloroterphenyl                  22. Indeno[1,2,3-cd]pyrene                  23. Dibenzo[a,h]anthracene                  24. Benzo[g,h,i]perylene                  25. Dibenzo[a,i]pyrene                  26. Dibenzo[a,e]pyrene                  27. Dibenzo[a,i]pyrene                  28. Dibenzo[a,h]pyrene</p>
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# Excellent Resolution of Chrysene and Triphenylene

We designed the Zebtron ZB-PAH-SeleCT 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 Zebtron ZB-PAH-SeleCT GC column



**Column:** Zebtron ZB-PAH-SeleCT  
**Dimensions:** 40 meter x 0.18 mm x 0.14 μm  
**Part No.:** [7PD-G044-47](#)  
**Injection:** Split 30:1 @ 320°C, 1 μL  
**Liner Part No.:** [AG2-4B13-05](#) (for Shimadzu® 2010 GC)  
**Recommended Liner:** Zebtron PLUS Single Taper Z-Liner™  
**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

# Shorter Run Time and Better Sensitivity

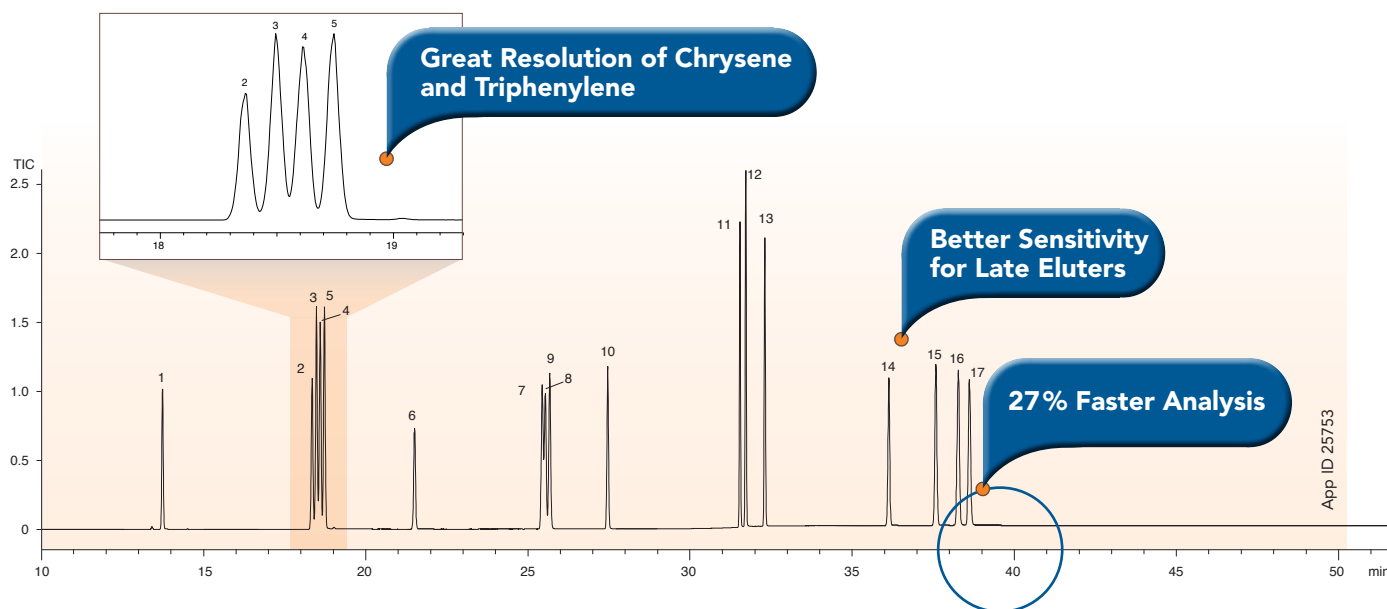
Comparison of ZB-PAH-Select vs. Popular GC PAH column



## Analysis of EU 15+1 and Triphenylene PAHs

### Zebtron ZB-PAH-SeleCT

30 meter x 0.25 mm x 0.20 μm



App ID 25753

**GC-MS conditions for both applications:**

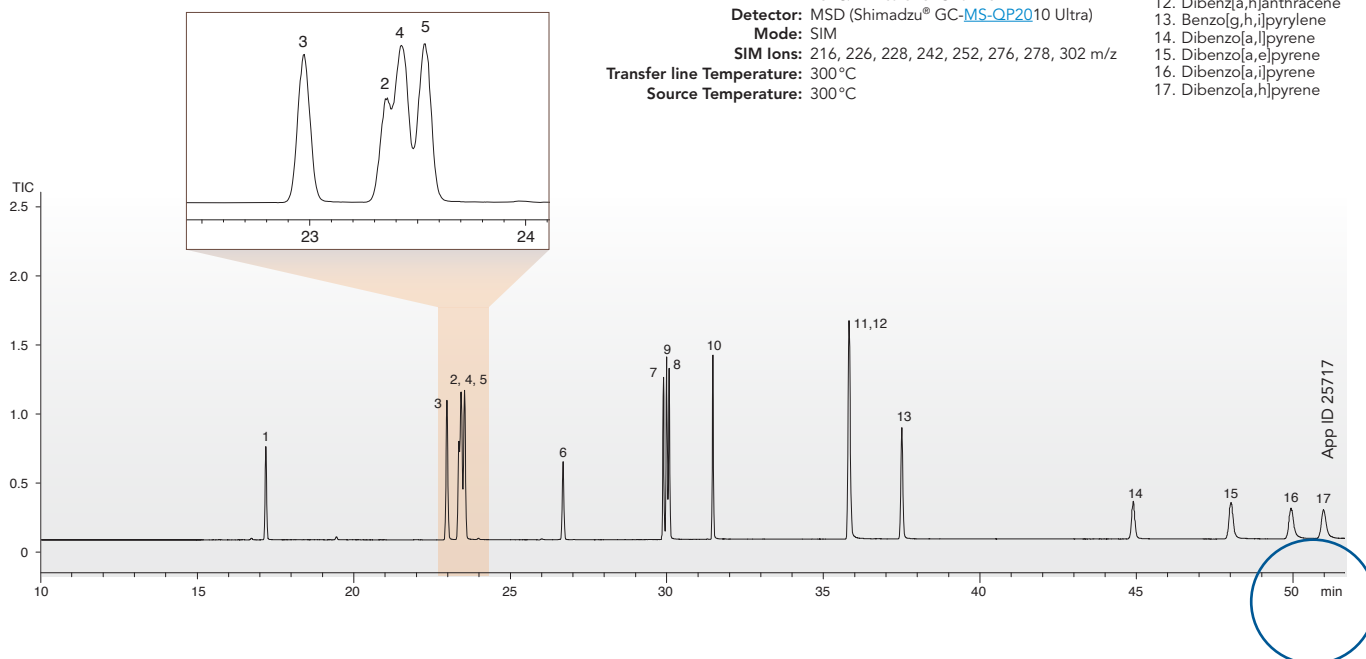
- Column:** As Indicated
- Dimensions:** As Indicated
- Part No.:** [7HG-G044-10](#) (Zebtron ZB-PAH-SeleCT)
- Injection:** Split 15:1 @ 320°C, 1 μL
- Recommended Liner:** Zebtron PLUS Single Taper Z-Liner™
- Liner Part No.:** [AG2-4B13-05](#)
- Carrier Gas:** Helium @ 23.7 psi (constant pressure)
- Oven Program:** 45°C for 0.8 min to 200°C @ 45°C/min to 266°C @ 3°C/min for 0 min to 320°C @ 10°C/min to 320°C for 20 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]pyrene
14. Dibenzo[a,l]pyrene
15. Dibenzo[a,e]pyrene
16. Dibenzo[a,i]pyrene
17. Dibenzo[a,h]pyrene

### Popular Brand A

30 meter x 0.25 mm x 0.15 μm



App ID 25717

Comparative separations may not be representative of all applications.

# The Complete Guide for GC Resources

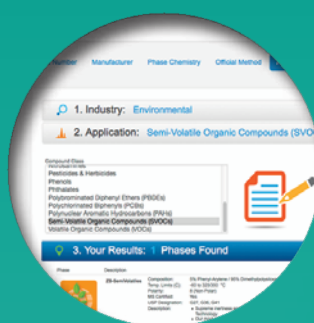
Stop Searching. Start Finding.

## Find Your GC Column

### Find It The Way You Want

Choose from 5 easy categories to find the right GC column for your method:

- Part Number
- Column Manufacturer
- Phase Chemistry
- Official Method
- Application

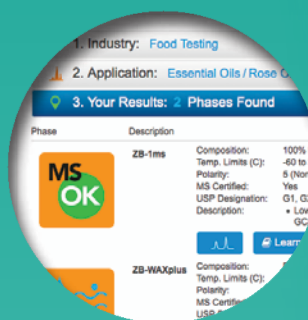


### Column Selection, Simplified

Choose a category, choose your criteria, get a recommendation instantly. Simple as that.

### Get More Than Just Results

Get applications and column overviews with your results – and save them for easy viewing.



[www.phenomenex.com/findGC](http://www.phenomenex.com/findGC)

## Find Your GC Liner

We've made it easier than ever to find your ideal GC liner.



Search by:

Application

Injection Type

GC System

Your Current Liner Part Number



[www.phenomenex.com/findLiner](http://www.phenomenex.com/findLiner)

## Find Your Accessories

Need inlet seals, septa, or syringes? Explore hundreds of available parts online at



[www.phenomenex.com/GCAccessories](http://www.phenomenex.com/GCAccessories)



### Want More Tips?

Download a FREE copy of the complete GC Troubleshooting Guide online at

[www.phenomenex.com/troubleGC](http://www.phenomenex.com/troubleGC)

## Zebron™ Gas Management Filters

### No Diffusion and No Leaks with Dual Wall Housing!

More protection and less contamination with an inner glass wall and better safety with a plastic outer wall.

### Higher Capacity

The higher capacity of Zebron gas management filters means less need for replacement and an increase in system uptime, saving you time and money.

### Easy Filter Installation in Under 20 Seconds!

Avoid system downtime by attaching a new filter to your gas line in seconds!

### Never Disrupt Your Instrument!

The integrated one way valve on the Zebron gas management base units allow for quick and easy filter changes without disrupting the instrument.



### Easily Know When to Replace Your Filter!

1

#### Color Change

The indicator on each Zebron gas management filter will display when it is time to change your filter.\*

2

#### Electronic Indicator

The optional electronic indicator will alert you with an audible warning on when to change your filter based on typical usage.

### Got LC-MS?

Zebron LC-MS gas filters are now available!  
(See page 18 for ordering information.)

### Universal Compatibility

No need to change your existing connecting unit. Simply remove the old filter, replace the O-ring, click a new filter in, and tighten the connection with the ring nut! (Part No.: [AG6-1060](#)).

\*Hydrocarbon filters do not include a color indicator



## Zebtron™ Gas Management Traps

### Click-on Trap

#### Never Disrupt Your Instrument!

Attach a new filter in under 10 seconds. Once the connecting unit is installed, you will be able to change traps as often as needed without interrupting the instrument.

### Know When to Replace

The optional electronic indicator displays when scheduled replacement or maintenance is due.

### High Pressure Durability

The Click-on trap is completely made out of stainless steel and can withstand high pressures. The seals at each end of the trap will only be punctured when the Click-on connector is locked in place.

### Secure Wall Mount

These wall mounting clamps will EASILY help attach a Zebtron gas trap to a wall or surface.



### Click-On Connection

The Click-on trap connectors allow inline cartridges to be exchanged without introducing contaminants. Spring loaded check valves seal when a filter is removed and open only when a new filter has been locked in place.



## Zebron Gas Management Filters

Part No.	Description	Unit
<a href="#">AG6-1040</a>	Gas Filter Universal	ea
<a href="#">AG6-1070</a>	Gas Filter Universal (Helium)	ea
<a href="#">AG6-1010</a>	Gas Filter Oxygen	ea
<a href="#">AG6-1020</a>	Gas Filter Moisture	ea
<a href="#">AG6-1030</a>	Gas Filter Hydrocarbon	ea
<a href="#">AG6-1050</a>	Gas Filter Hydrocarbon/Moisture for LC-MS	2/pk
<a href="#">AG6-1060</a>	Ring Nut for Gas Filter	ea



## Zebron Gas Management Traps

Part No.	Description	Unit
<a href="#">AG6-3140</a>	Click-on Universal Trap	ea
<a href="#">AG6-3110</a>	Click-on Oxygen Trap	ea
<a href="#">AG6-3120</a>	Click-on Moisture Trap	ea
<a href="#">AG6-3130</a>	Click-on Hydrocarbon Trap	ea
<a href="#">AG6-3150</a>	Click-on Carbon Dioxide Trap	ea



## Zebron Connecting Units

Part No.	Description	Unit
<a href="#">AG6-2101</a>	1-position Connecting Unit 1/4 in. Brass	ea
<a href="#">AG6-2102</a>	2-position Connecting Unit 1/4 in. Brass	ea
<a href="#">AG6-2103</a>	4-position Connecting Unit 1/4 in. Brass	ea
<a href="#">AG6-2201</a>	1-position Connecting Unit 1/8 in. Brass	ea
<a href="#">AG6-2202</a>	2-position Connecting Unit 1/8 in. Brass	ea
<a href="#">AG6-2203</a>	4-position Connecting Unit 1/8 in. Brass	ea
<a href="#">AG6-2204</a>	High flow 2-position Connecting Unit for LC-MS	ea
<a href="#">AG6-2205</a>	Particle Filter for LC-MS	ea
<a href="#">AG6-2206</a>	O-ring Replacement for Gas Filter Baseplate	20/pk

Part No.	Description	Unit
<a href="#">AG6-2301</a>	1-position Connecting Unit 1/4 in. Stainless Steel	ea
<a href="#">AG6-2302</a>	2-position Connecting Unit 1/4 in. Stainless Steel	ea
<a href="#">AG6-2303</a>	4-position Connecting Unit 1/4 in. Stainless Steel	ea
<a href="#">AG6-2304</a>	1-position Connecting Unit 1/8 in. Stainless Steel	ea
<a href="#">AG6-2305</a>	2-position Connecting Unit 1/8 in. Stainless Steel	ea
<a href="#">AG6-2306</a>	4-position Connecting Unit 1/8 in. Stainless Steel	ea

## Zebron Base Electronic Indicator and Other Accessories

Part No.	Description	Unit
<a href="#">AG6-3160</a>	1/8 in. Brass Click-on Connector Set	2/pk
<a href="#">AG6-3170</a>	1/4 in. Brass Click-on Connector Set	2/pk
<a href="#">AG6-3180</a>	Wall-mounting Clamp Set for Gas Traps	2/pk
<a href="#">AG6-4150</a>	1/8 in. Stainless Steel Click-on Connector Set	2/pk
<a href="#">AG6-4160</a>	1/4 in. Stainless Steel Click-on Connector Set	2/pk
<a href="#">AG6-3190</a>	O-ring Replacement Set for Gas Trap	20/pk
<a href="#">AG6-4110</a>	Electronic Indicator for Gas Trap	ea
<a href="#">AG6-4120</a>	Electronic Indicator for Gas Filter	ea
<a href="#">AG6-4130</a>	Electronic Indicator for LC-MS Filter	ea



### First time ordering Zebron Click-on Gas Traps?

Be sure to order the **brass or stainless steel connector** with your first trap.



# Ordering Information

## 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	<a href="#">7CB-G043-59</a>
20	0.18	0.14	40 to 340/360	<a href="#">7FD-G043-47</a>
30	0.25	0.20	40 to 340/360	<a href="#">7HG-G043-10</a>
60	0.25	0.20	40 to 340/360	<a href="#">7KG-G043-10</a>

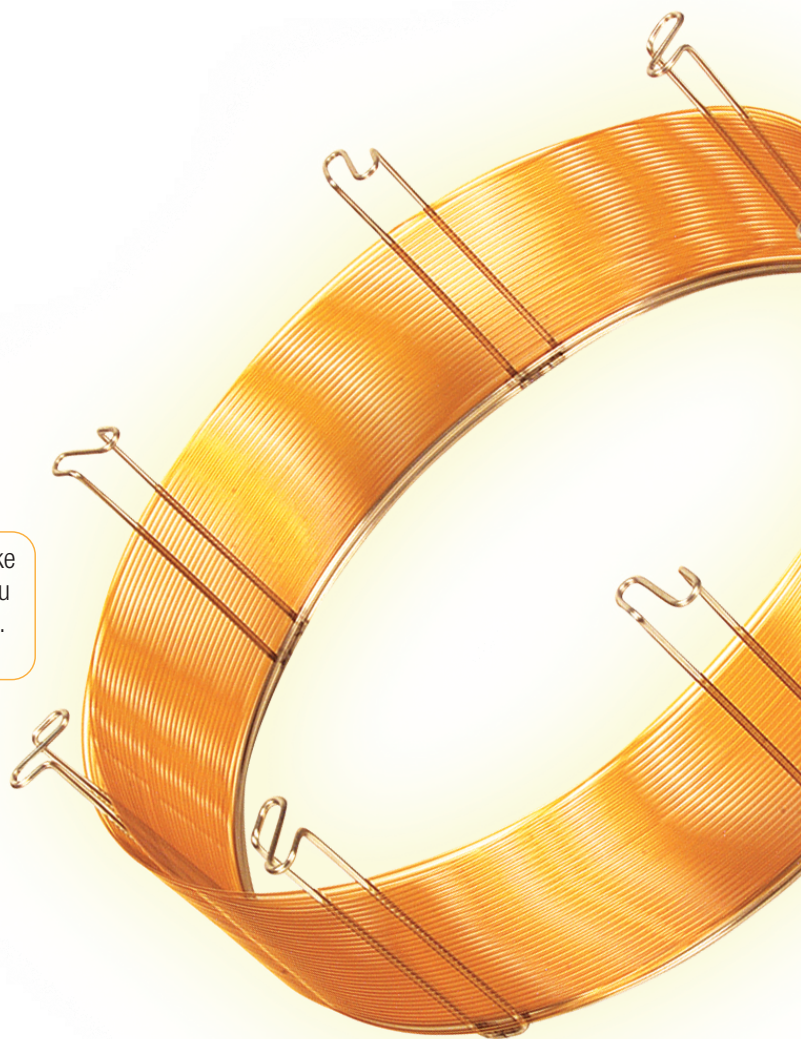
## Zebron ZB-PAH-SeleCT GC Column

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

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# PAH

**Zebron™**  
GC Columns

## Unleash the Power of Fast GC PAH Analysis with Zebron ZB-PAH-EU & ZB-PAH-SeleCT!



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auinfo@phenomenex.com

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anfrage@phenomenex.com

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t: +32 (0)2 511 8666 (Dutch)  
beinfo@phenomenex.com

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