



# Nitriles, C<sub>1</sub> – C<sub>4</sub>, hydrocarbons, C<sub>1</sub> – C<sub>5</sub>

## Application Note

Energy & Fuels

### Authors

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### Introduction

Gas chromatography with an Agilent PoraPLOT Q column separates 39 C<sub>1</sub> to C<sub>4</sub> nitriles and C<sub>1</sub> to C<sub>5</sub> hydrocarbons in 60 minutes.



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## Conditions

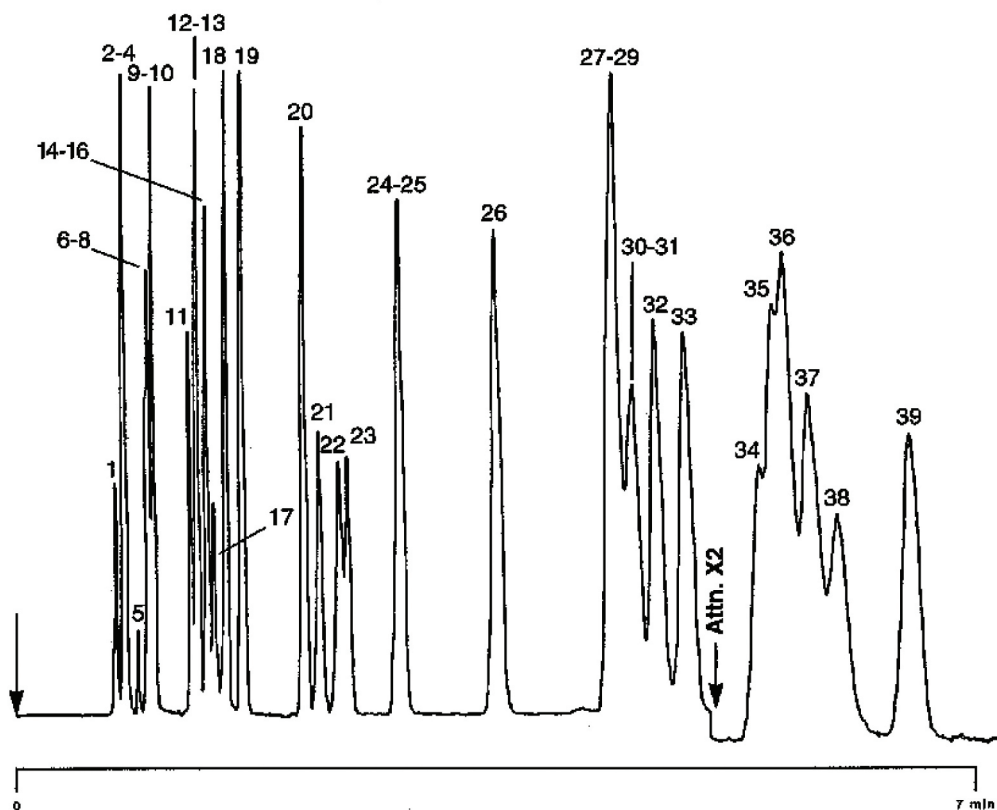
Technique : GC-capillary  
Column : Agilent PoraPLOT Q, 0.32 mm x 10 m fused silica  
PLOT PoraPLOT Q (df = 10 µm) (Part no. CP7550)  
Temperature : a) 160 °C,  
b) 100 °C,  
c) 40 °C (2 min) → 115 °C, 20 °C/min  
Carrier Gas : H<sub>2</sub>, 2 mL/min  
Injector : Splitter, 1:100  
T = 250 °C  
Detector : FID  
Sample Size : 0.2 µL  
Concentration range : 1 - 3 nmol injected

Courtesy : Prof. F. Raulin and M. L. Do,  
University Paris, France

## Peak identification

a) 160 °C isothermal

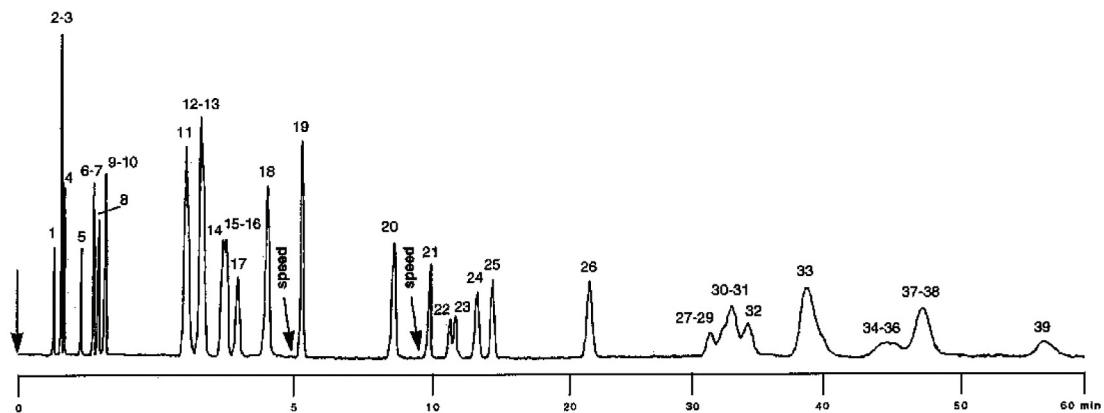
1. methane
2. ethylene
3. acetylene
4. ethane
5. cyanogen
6. propylene
7. hydrogen cyanide
8. propane
9. propadiene
10. propyne
11. isobutane
12. 1-butene
13. isobutene
14. butane
15. cis-2-butene
16. 1-butyne
17. trans-2-butene
18. cyanoacetylene
19. acetonitrile
20. acrylonitrile
21. 1-pentene
22. n-pentane
23. 2-methyl-2-butene
24. cyclopentane
25. propionitrile
26. methacrylonitrile  
(2-methyl-2-propenenitrile)
27. isobutyronitrile
28. 3-methylpentane
29. 1-hexene
30. cyanopropyne
31. trans-2-butenitrile
32. n-hexane
33. 3-butenitrile
34. benzene
35. butyronitrile
36. cis-2-butenitrile
37. cyclohexane
38. cyclohexene
39. cyclopropanecarbonitrile



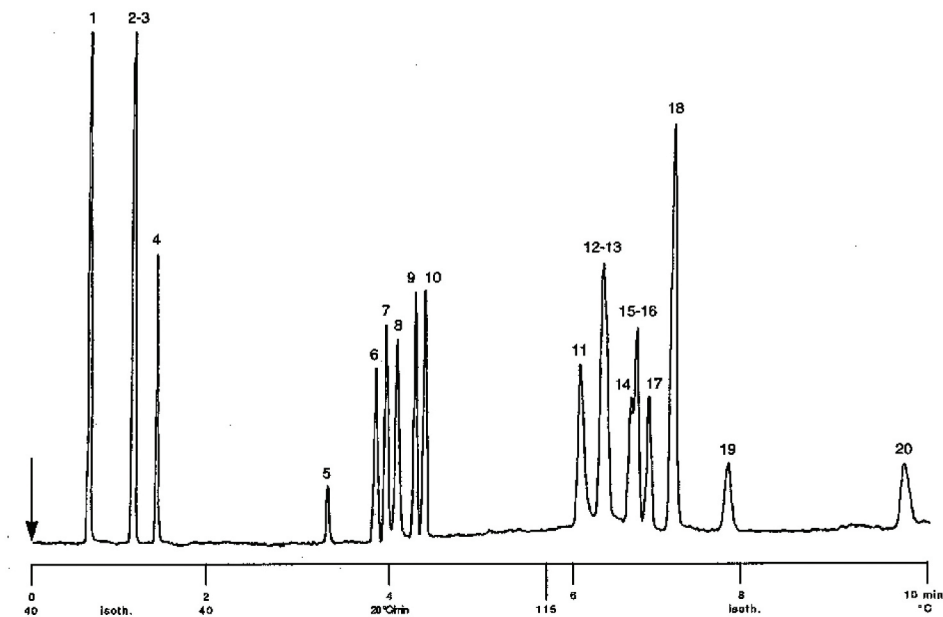
## Peak identification

- |                     |                       |                              |
|---------------------|-----------------------|------------------------------|
| 1. methane          | 15. cis-2-butene      | 28. 3-methylpentane          |
| 2. ethylene         | 16. 1-butyne          | 29. 1-hexene                 |
| 3. acetylene        | 17. trans-2-butene    | 30. cyanopropyne             |
| 4. ethane           | 18. cyanoacetylene    | 31. trans-2-butenitrile      |
| 5. cyanogen         | 19. acetonitrile      | 32. n-hexane                 |
| 6. propylene        | 20. acrylonitrile     | 33. 3-butenitrile            |
| 7. hydrogen cyanide | 21. 1-pentene         | 34. benzene                  |
| 8. propane          | 22. n-pentane         | 35. butyronitrile            |
| 9. propadiene       | 23. 2-methyl-2-butene | 36. cis-2-butenitrile        |
| 10. propyne         | 24. cyclopentane      | 37. cyclohexane              |
| 11. isobutane       | 25. propionitrile     | 38. cyclohexene              |
| 12. 1-butene        | 26. methacrylonitrile | 39. cyclopropanecarbonitrile |
| 13. isobutene       | 27. isobutyronitrile  |                              |
| 14. butane          |                       |                              |

b) 100 °C isothermal



c) 40 °C (2 min) → 115 °C, 20 °C/min



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This information is subject to change without notice.

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