

A Direct 5ms Column Performance Comparison for Active Semi-Volatile Analysis

Products: Agilent J&W HP-5ms Ultra Inert
20 m x 0.18mm x 0.18 um GC Column

Industry: Environmental

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Application note publication number: 5990-4041EN

Publication date: May 13, 2009

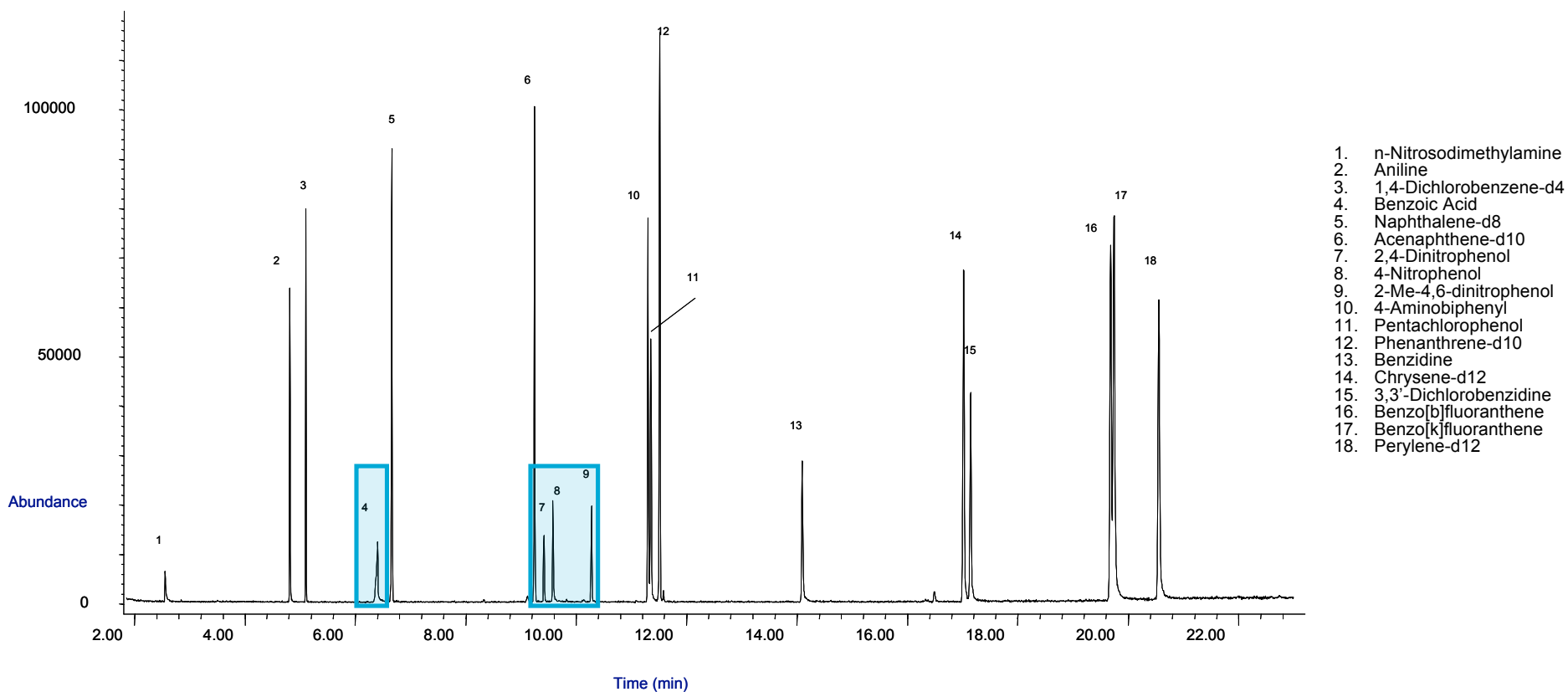
Abstract/Current situation

Why is there a need for this application?

- Semi-volatiles are active analytes that can adsorb onto active sites on the column or in the inlet
- What are the limitations of the current method?
- Inertness testing done by most manufacturers is not probative
- What is the impact on quality, productivity, costs, etc?
- Better recovery of active analytes, better peak shape and quantification, more accurate results the first time

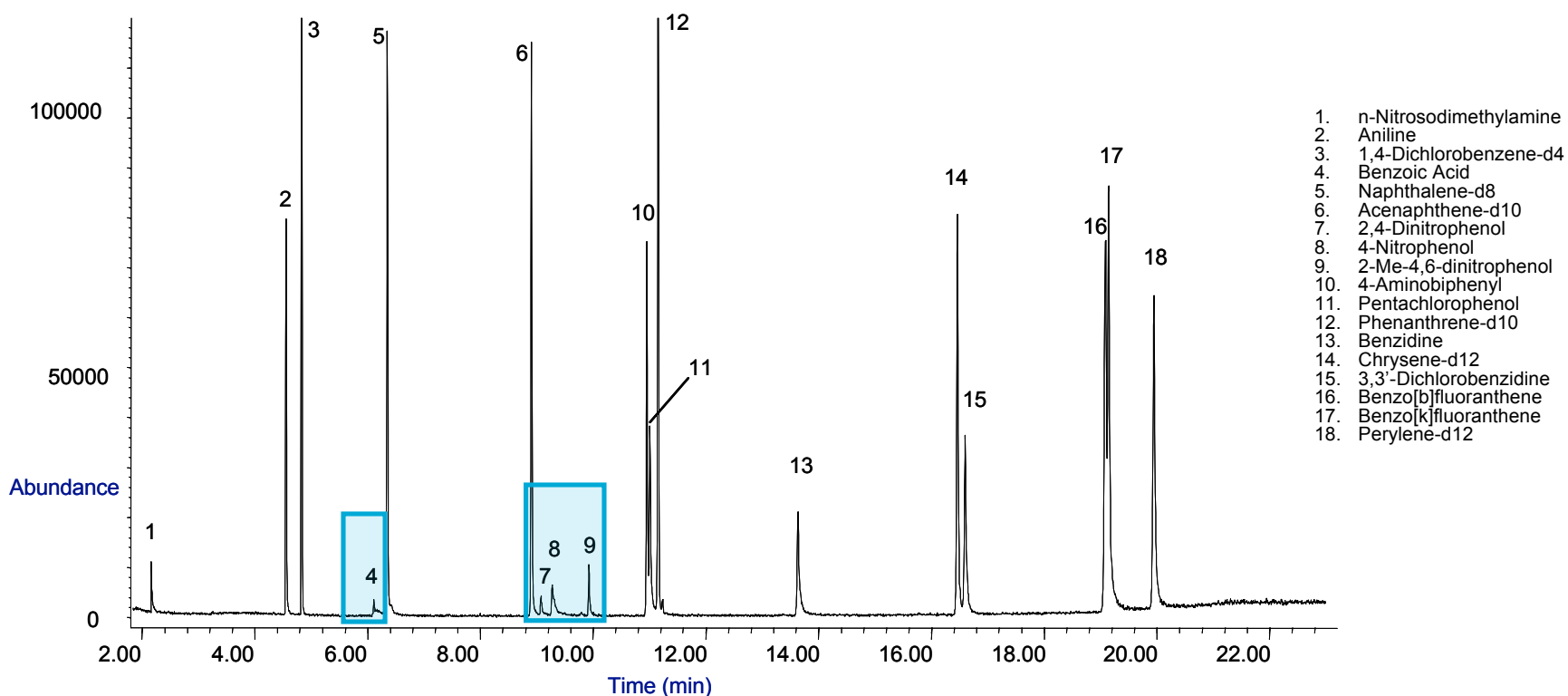
Agilent J&W HP-5ms Ultra Inert Delivers Excellent Peak Shapes for Semi-Volatile Acids

Sample: 0.5 ng on column loading of Short Mix components with ISTD
Column: Agilent J & W HP-5ms Ultra Inert 20m 0.18mm 0.18µm
Carrier: Helium 37cm/sec, Ramped flow; 0.7ml/min (0.1min) to 1.3ml/min (15ml/min²)
Oven: 35°C (2.5 min) to 80°C (40°C/min), 15°C/min to 200°C, 8°C/min to 275°C (2 min)
Injection: 0.5µl, Splitless, 280°C, purge flow 30ml/min at 0.75 min
MSD: Transfer Line 290°C, Source 300°C, Quad 180°C



Vendor R's Rxi-5ms Column Shows Poor Peaks Shapes for Semi-Volatile Acids

Sample: 0.5 ng on column loading of Short Mix Components with ISTD
Column: Rxi-5ms 20m 0.18mm 0.18µm
Carrier: Helium 37cm/sec, Ramped flow; 0.7ml/min (0.1min) to 1.3ml/min (15ml/min²)
Oven: 35°C (2.5 min) to 80°C (40°C/min), 15°C/min to 200°C, 8°C/min to 275°C (2 min)
Injection: 0.5µl, Splitless, 280°C, purge flow 30ml/min at 0.75 min
MSD: Transfer Line 290°C, Source 300°C, Quad 180°C



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Better 2,4 Dinitrophenol Relative Response Ratios for Agilent J&W DB-5ms Ultra Inert Columns

Relative Response Ratios (RRR) Data for 2,4-dinitrophenol (2,4 DNP)								
2,4 DNP ug/ul	Agilent J&W HP-5ms UI Column 1	RRR Avg. for Level	Agilent J&W HP-5ms UI Column 2	RRR Avg. for Level	Vendor R 5ms Column 3	RRR Avg. for Level	Vendor R 5ms Column 4	RRR Avg. for Level
1	0.136		0.164		0.044		0.073	
1	0.135		0.169		0.057		0.074	
1	0.136		0.162		0.051		0.078	
1	0.136	0.136	0.138	0.158	0.061	0.053	0.070	0.074
2	0.135		0.151		0.066		0.081	
2	0.134		0.156		0.060		0.078	
2	0.142		0.150		0.080		0.086	
2	0.143	0.138	0.147	0.151	0.081	0.072	0.085	0.083
5	0.161		0.165		0.095		0.116	
5	0.166		0.174		0.110		0.096	
5	0.178		0.173		0.115		0.125	
5	0.155	0.165	0.173	0.171	0.122	0.110	0.129	0.116
10	0.193		0.191		0.135		0.123	
10	0.200		0.205		0.159		0.166	
10	0.194		0.202		0.166		0.160	
10	0.207	0.199	0.204	0.201	0.162	0.155	0.177	0.156
20	0.219		0.224		0.192		0.198	
20	0.238		0.239		0.209		0.194	
20	0.248		0.243		0.245		0.187	
20	0.246	0.238	0.247	0.238	0.247	0.223	0.213	0.198
40	0.268		0.257		0.233		0.242	
40	0.274		0.270		0.246		0.239	
40	0.279		0.274		0.252		0.250	
40	0.281	0.275	0.277	0.270	0.261	0.248	0.258	0.247
Overall Average		0.192		0.198		0.144		0.146

Conclusion

- More consistent recovery of active analytes
- Faster analysis using Ultra Inert HEGC column format
- Less tailing, better integration and quantification
- Inertness verification testing really does matter for the consistent inertness performance on each column
- Accurate results for active analytes the first time

