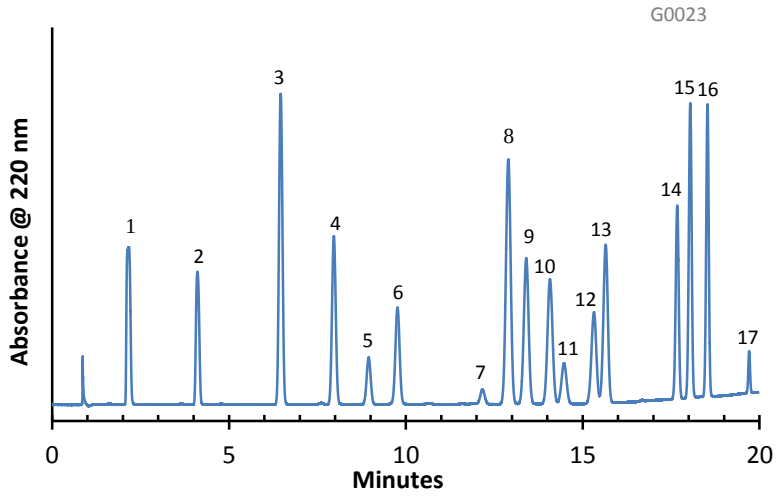
HALO® | Fused-Core® Particle Technology

Application Note: 031-EX

Separation of 17 Explosives on HALO C18, 2.7 µm Column



PEAK IDENTITIES:

1. HMX
2. RDX
3. 1,3,5-Trinitrobenzene
4. 1,3-Dinitrobenzene
5. 3,5-Dinitroaniline
6. Nitrobenzene
7. Nitroglycerin
8. Tetryl
9. 2,4,6-Trinitrotoluene
10. 2-Amino-4,6-Dinitrotoluene
11. 4-Amino-2,6-Dinitrotoluene
12. 2,4-Dinitrotoluene
13. 2,6-Dinitrotoluene
14. 2-Nitrotoluene
15. 4-Nitrotoluene
16. 3-Nitrotoluene
17. PETN (pentaerythritol tetranitrate)

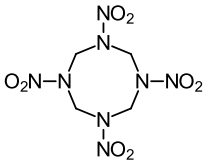
TEST CONDITIONS:

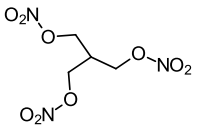
Column: 4.6 x 150 mm, HALO C18, 2.7 µm
Part Number: 92814-702
Mobile Phase: A= water, B= Methanol
Gradient:

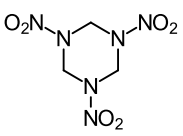
Time	%B
0.0	25
14.0	35
20.0	62

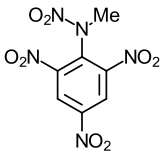
Flow Rate: 1.5 mL/min.
Pressure: 366 bar to start, maximum: 405 bar
Temperature: 43°C
Detection: UV 220 nm, VWD
Injection Volume: 40 µL
Sample Solvent: 50/50: Water/methanol
Response Time: 0.02 sec.
Data rate: 25 Hz
Flow Cell: 2.5 µL semi-micro
LC System: Shimadzu Prominence UFLC XR
ECV: ~14 µL

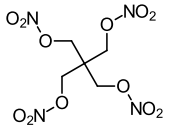
STRUCTURES:


HMX


Nitroglycerin


RDX


Tetryl


Pentaerythritol Tetranitrate

The determination of explosives in the environment is outlined in EPA method 8330B and under the conditions recommended, requires two column phases to determine 17 compounds. However, all 17 explosive compounds can be separated on a HALO C18, 2.7 µm column in less than 20 minutes using a water/methanol gradient.

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FOR MORE INFORMATION OR TO PLACE AN ORDER, CONTACT:

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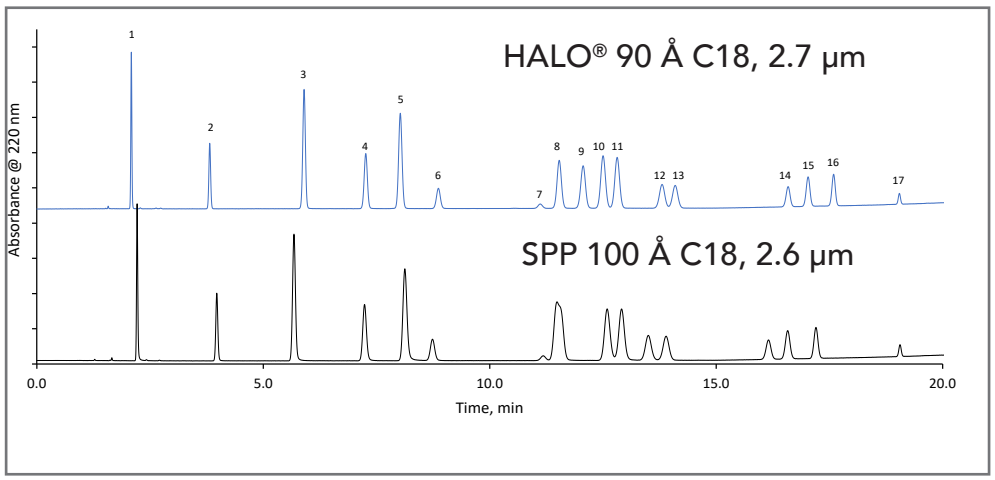
INDUSTRIAL

HPLC Separation of Explosives: Comparison of HALO® to a Competitor SPP Column

238-EX



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16. 3-Nitrotoluene
17. PETN (pentaerythritol tetranitrate)

TEST CONDITIONS:

Column: HALO 90 Å C18, 2.7 µm, 4.6 x 150 mm
Part Number: 92814-702
Competitor Column: SPP 100 Å C18, 2.6 µm, 4.6 x 150 mm
Mobile Phase A: Water
Mobile Phase B: Methanol

Gradient:	**Time**	**%B**
	0.0	25
	14.0	35
	20.0	62

Flow Rate: 1.5 mL/min
Initial HALO® Back Pressure: 441 bar
Initial Competitor Back Pressure: 490 bar
Temperature: 43°C
Detection: 220 nm
Injection Volume: 0.2 µL
Sample Solvent: Methanol
Data Rate: 100 Hz
LC System: Shimadzu Nexera X2

The determination of explosives in the environment is outlined in EPA method 8330B. 17 explosive compounds are separated on a HALO 90 Å C18 column in less than 20 minutes using a water/methanol gradient. These compounds are either used in the manufacture of explosives or propellants.The impurities or degradation of these compounds could be found in water, soil, or sediment samples. Baseline resolution is maintained on the HALO® column while there are peak coelutions with a similar superficially porous particle column.

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PERFORMANCE YOU CAN RELY ON

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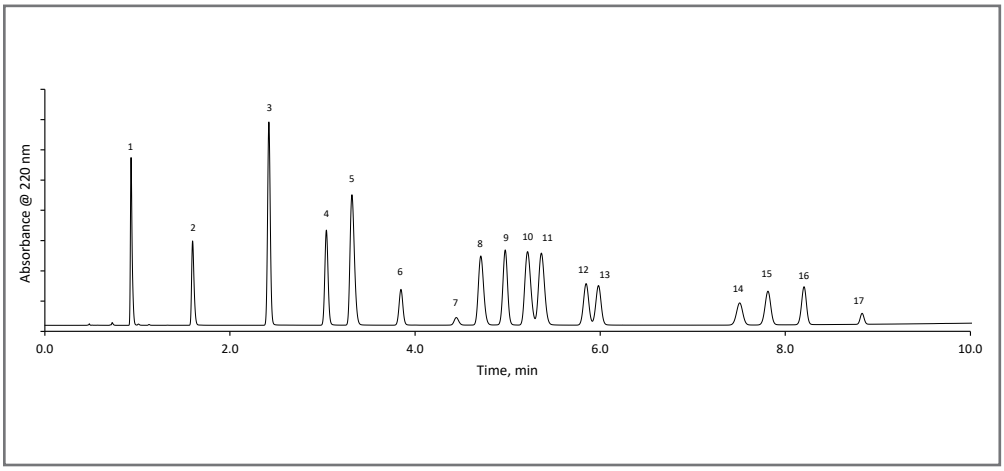
UHPLC Separation of Explosives on 2 µm HALO® C18

239-EX



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17. PETN (pentaerythritol tetranitrate)

TEST CONDITIONS:

Column: HALO 90 Å C18, 2 µm, 3.0 x 100 mm
Part Number: 91813-602
Mobile Phase A: Water
Mobile Phase B: Methanol
Gradient:

Time	%B
0.0	25
6.9	35
9.9	62

Flow Rate: 0.85 mL/min
Initial Back Pressure: 571 bar
Temperature: 43°C
Detection: 220 nm
Injection Volume: 0.2 µL
Sample Solvent: Methanol
Data Rate: 100 Hz
LC System: Shimadzu Nexera X2

The determination of explosives in the environment is outlined in EPA method 8330B. 17 explosive compounds are separated on a HALO 90 Å 2 µm C18 column in less than 10 minutes using a water/methanol gradient. These compounds are either used in the manufacture of explosives or propellants.The impurities or degradation of these compounds could be found in water, soil, or sediment samples.

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