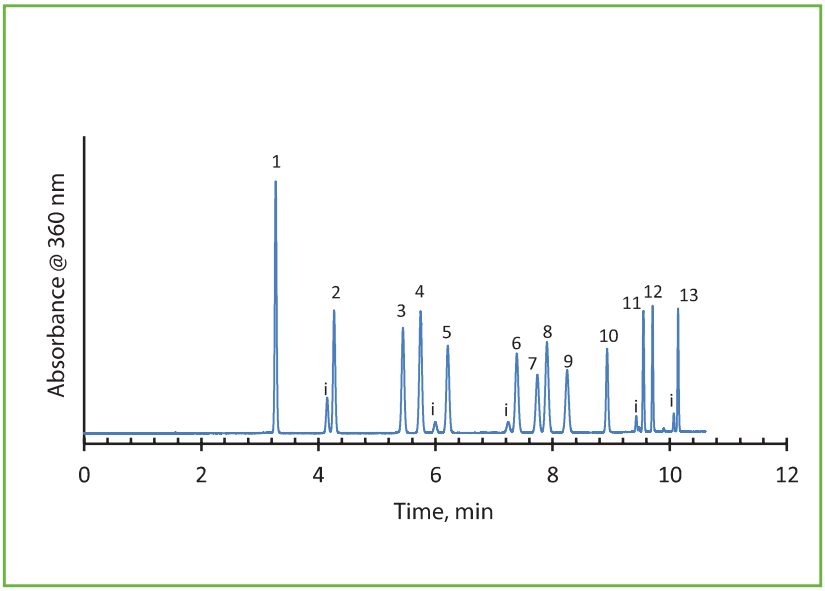
Separation of Carbonyl Compounds as Dinitrophenylhydrazone Derivatives on HALO® C18, 2.7 µm

Application Note 90-DNPH



PEAK IDENTITIES:

1. Formaldehyde-2,4-DNPH
2. Acetaldehyde-2,4-DNPH
3. Acetone-2,4-DNPH
4. Acrolein-2,4-DNPH
5. Propionaldehyde-2,4-DNPH
6. Crotonaldehyde-2,4-DNPH
7. 2-Butanone-2,4-DNPH
8. Methacrolein-2,4-DNPH
9. Butyraldehyde-2,4-DNPH
10. Benzaldehyde-2,4-DNPH
11. Valeraldehyde-2,4-DNPH
12. m-Tolualdehyde-2,4-DNPH
13. Hexaldehyde-2,4-DNPH

2,4-DNPH = 2,4-Dinitrophenylhydrazone
i = anti, syn, isomers of the respective DPNH derivatives

TEST CONDITIONS:

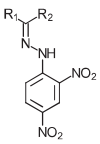
Column: HALO 90 Å C18, 2.7 µm, 4.6 x 150 mm
Part Number: 92814-702
Mobile Phase: 55/45 - A/B
A: Water
B: Acetonitrile/THF (80/20)
Gradient:

Time (min)	% B
0.0	45
7.5	58
9.0	80
12.0	80

Flow Rate: 1.5 mL/min
Pressure: 355 bar
Temperature: 30 °C
Detection: UV 360 nm, VWD
Injection Volume: 0.3 µL
Sample Solvent: Acetonitrile
Response Time: 0.02 sec
Flow Cell: 2.5 µL semi-micro
LC System: Shimadzu Prominence UFLC XR
Extra Column Volume: ~14 µL

This separation is based on modified EPA methods 8315 and 554 and achieves baseline resolution of the sample components by the use of a small particle size packing and a mobile phase containing both acetonitrile and tetrahydrofuran (THF). The addition of THF is necessary to achieve this resolution. As a result, peak elution order is also changed.

STRUCTURES:



General -2,4-DNPH structure

Peak	R 1	R 2
1	-H	-H
2	-H	—CH_3
3	—CH_3	—CH_3
4	-H	CH_2, H
5	-H	CH_3
6	-H	H, CH_3
7	—CH_3	CH_3
8	-H	CH_2, CH_3
9	-H	CH_3
10	-H	
11	-H	CH_3
12	-H	CH_3
13	-H	$(CH_2)_4$, CH_3