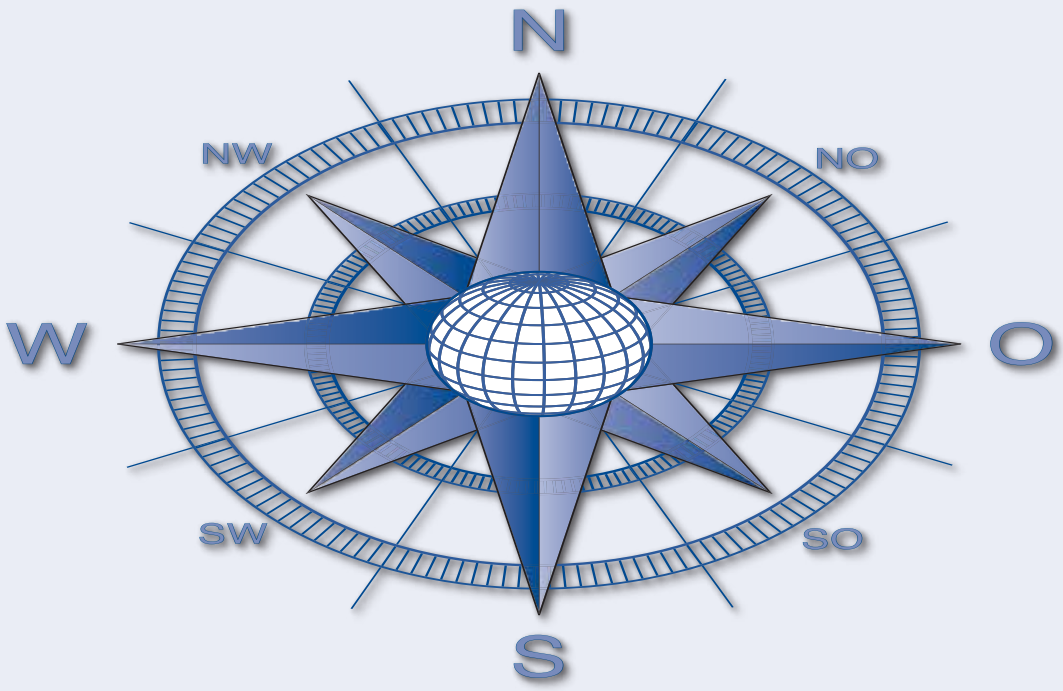
Chromatography

NUCLEODUR®
Phenyl-Hexyl

ADIS INTERNATIONAL

Highly stable phenyl-hexyl phase for HPLC

Pointing the direction for polar and aromatic compounds



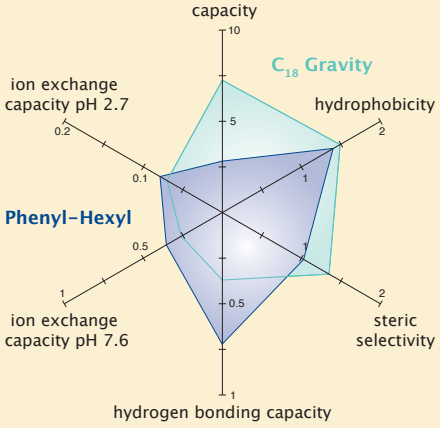
MACHEREY-NAGEL
www.mn-net.com

MN Since 1911

NUCLEODUR® Phenyl-Hexyl

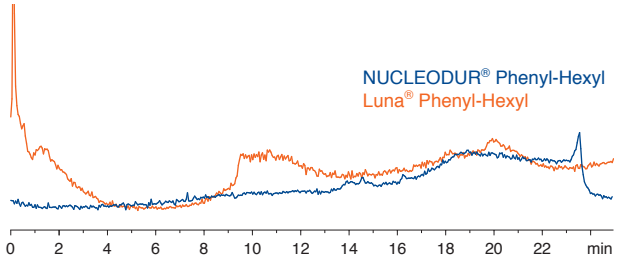
- **Key features:**
  - · Hydrophobic phase with alternative selectivity compared to classical C18 modifications
  - · Separation principle based on 2 retention mechanisms: π–π interactions and hydrophobic interactions
  - · Suitable for **LC/MS** due to low bleeding characteristics
- **Technical characteristics:**
  Phase with phenyl-hexyl modification and multi-endcapping; pore size 110 Å; particle sizes 1.8 µm, 3 µm and 5 µm; carbon content 10 %; pH stability 1–10
- **Recommended application:**
  Aromatic and unsaturated compounds, polar compounds like pharmaceuticals, antibiotics
  USP L11

Tanaka plots of NUCLEODUR® Phenyl-Hexyl



Low bleeding characteristics

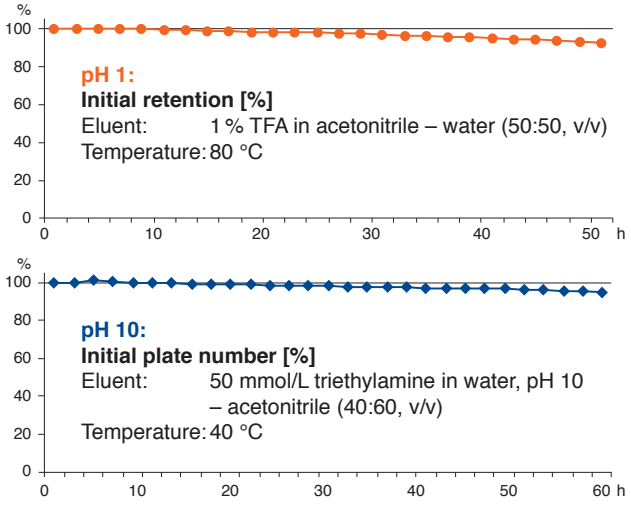
Columns: 150 x 3 mm NUCLEODUR® Phenyl-Hexyl, 5 µm
150 x 3 mm Phenomenex Luna® Phenyl-Hexyl, 5 µm
Eluent: A) acetonitrile, B) water
Gradient: 5–95 % A in 25 min
Flow rate: 0.2 mL/min
Temperature: 25 °C
Detection: ESI MS



MN Appl. No. 125850

High pH stability

Columns: 150 x 3 mm NUCLEODUR® Phenyl-Hexyl, 5 µm
Flow rate: 0.56 mL/min
Detection: ESI MS

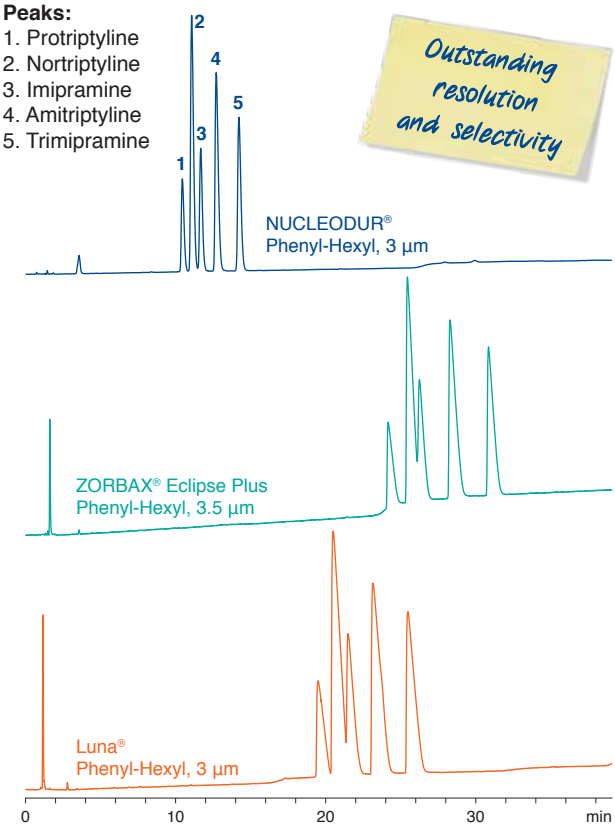


MN Appl. No. 125820 / 125830

Tricyclic antidepressants (TCA)

Columns: 150 x 3 mm
NUCLEODUR® Phenyl-Hexyl, 3 µm
Agilent ZORBAX® Eclipse Phenyl-Hexyl, 3.5 µm
Phenomenex Luna® Phenyl-Hexyl, 3 µm
Eluent: A) 0.1 % formic acid in acetonitrile
B) 0.1 % formic acid in water
20–32.5 % A in 40 min
Flow rate: 0.56 mL/min
Temperature: 40 °C
Detection: UV, 254 nm
Injection: 0.2 µL, 1.0 mg/mL per compound

Peaks:
1. Protriptyline
2. Nortriptyline
3. Imipramine
4. Amitriptyline
5. Trimipramine



Outstanding resolution and selectivity

MN Appl. No. 126020

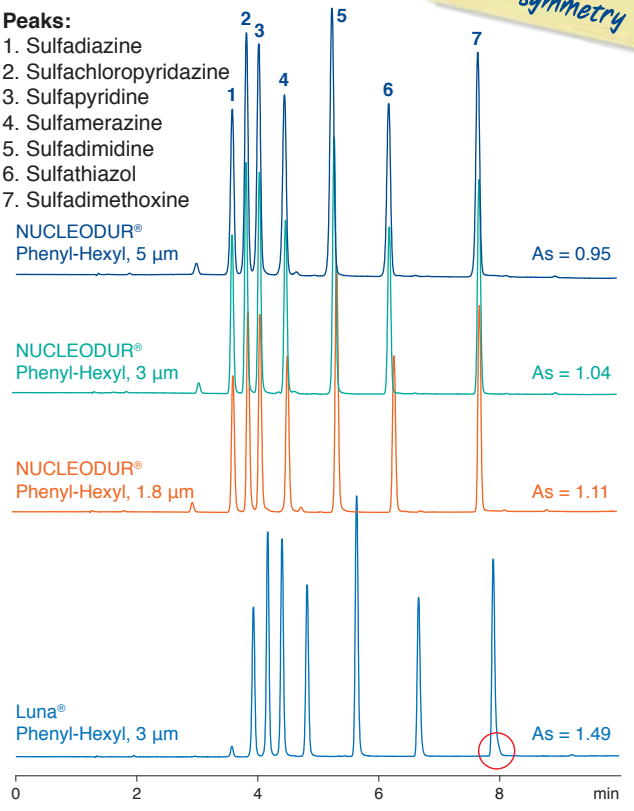
NUCLEODUR® Phenyl-Hexyl

Sulfonamide antibiotics

Columns: 150 x 3 mm NUCLEODUR® Phenyl-Hexyl, 5 µm
150 x 3 mm NUCLEODUR® Phenyl-Hexyl, 3 µm
150 x 3 mm NUCLEODUR® Phenyl-Hexyl, 1.8 µm
150 x 3 mm Luna® Phenyl-Hexyl, 3 µm
Eluent: A) methanol, B) 0,1 % formic acid in water
20–80 % A in 10 min
Flow rate: 0.56 mL/min, temperature 40 °C
Detection: UV, 254 nm
Injection: 0.5 µL, 1.0 mg/mL per compound

Excellent transferability and symmetry

Peaks:
1. Sulfadiazine
2. Sulfachloropyridazine
3. Sulfapyridine
4. Sulfamerazine
5. Sulfadimidine
6. Sulfathiazol
7. Sulfadimethoxine

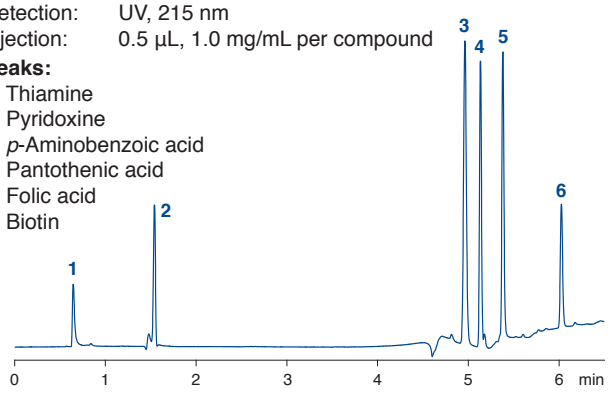


MN Appl. No. 125860 / 125870

Water-soluble vitamins

Column: 100 x 3 mm NUCLEODUR® Phenyl-Hexyl, 3 µm
Eluent: A) 0.1 % H_3PO_4 in water, B) 0.1 % H_3PO_4 in acetonitrile; 0 % B (2 min) → 60 % B in 7 min
Flow rate: 0.56 mL/min, temperature 35 °C
Detection: UV, 215 nm
Injection: 0.5 µL, 1.0 mg/mL per compound

Peaks:
1. Thiamine
2. Pyridoxine
3. *p*-Aminobenzoic acid
4. Pantothenic acid
5. Folic acid
6. Biotin

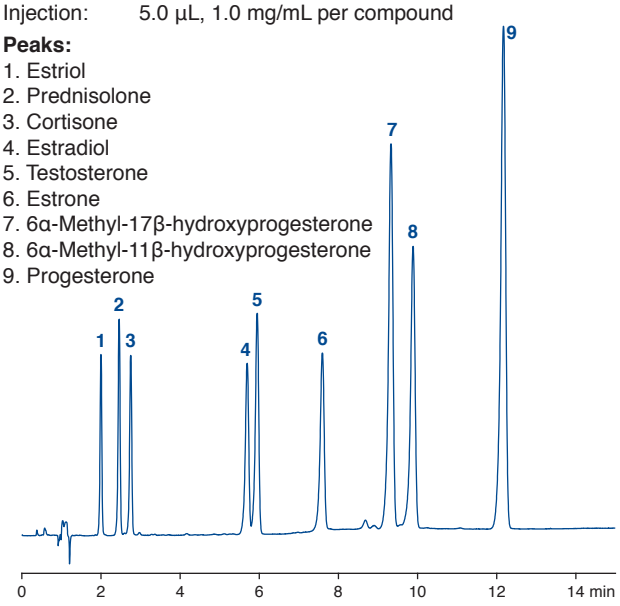


MN Appl. No. 125920

Steroids

Column: 150 x 3 mm NUCLEODUR® Phenyl-Hexyl, 3 µm
Eluent: A) acetonitrile – methanol (9:1, v/v), B) water
40–62,5 % A in 7 min
Flow rate: 0.66 mL/min, temperature 35 °C
Detection: UV, 240 nm
Injection: 5.0 µL, 1.0 mg/mL per compound

Peaks:
1. Estriol
2. Prednisolone
3. Cortisone
4. Estradiol
5. Testosterone
6. Estrone
7. 6α-Methyl-17β-hydroxyprogesterone
8. 6α-Methyl-11β-hydroxyprogesterone
9. Progesterone

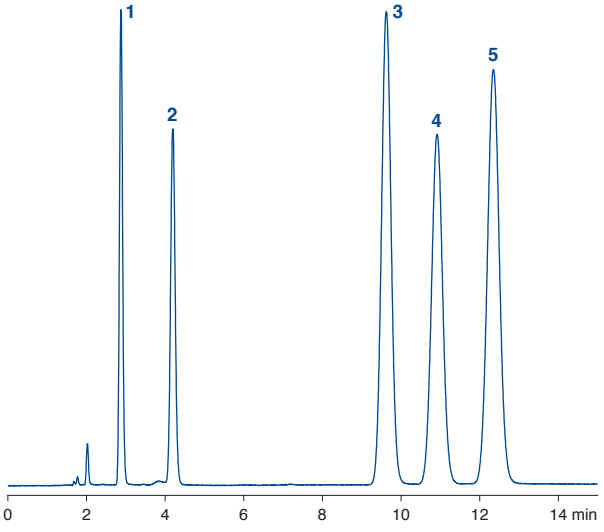


MN Appl. No. 126000

Food additives

Column: 150 x 4.6 mm NUCLEODUR® Phenyl-Hexyl, 5 µm
Eluent: methanol – 20 mmol/L KH_2PO_4 pH 2.5 (40:60, v/v)
Fluow rate: 1 mL/min, temperature 25 °C
Detection: UV, 220 nm
Injection: 2.0 µL, 1.0 mg/mL per compound

Peaks:
1. Saccharin
2. *p*-Hydroxybenzoic acid
3. Methylparaben
4. Sorbic acid
5. Dehydroacetic acid



MN Appl. No. 125970

NUCLEODUR® Phenyl-Hexyl

Ordering information

Eluent in column acetonitrile – water

Length →	30 mm	50 mm	75 mm	100 mm	125 mm	150 mm	250 mm
NUCLEODUR® Phenyl-Hexyl, 1.8 µm							particle size 1.8 µm
EC columns (pack of 1 column)							
2 mm ID	760561.20	760563.20	760565.20	760566.20		760568.20	
3 mm ID	760561.30	760563.30		760566.30			
4 mm ID	760561.40	760563.40		760566.40			
4.6 mm ID	760561.46	760563.46		760566.46			
EC guard columns*			4 x 2 mm: 761985.20		4 x 3 mm: 761985.30		
NUCLEODUR® Phenyl-Hexyl, 3 µm							particle size 3 µm
EC columns (pack of 1 column)							
2 mm ID		760573.20		760576.20	760577.20	760578.20	760579.20
3 mm ID		760573.30		760576.30	760577.30	760578.30	760579.30
4 mm ID		760573.40		760576.40	760577.40	760578.40	760579.40
4.6 mm ID		760573.46	760575.46	760576.46	760577.46	760578.46	760579.46
EC guard columns*			4 x 2 mm: 761986.20		4 x 3 mm: 761986.30		
CC guard columns**			8 x 3 mm: 761147.30		8 x 4 mm: 761147.40		
NUCLEODUR® Phenyl-Hexyl, 5 µm							particle size 5 µm
EC columns (pack of 1 column)							
2 mm ID		760583.20		760586.20	760587.20	760588.20	760589.20
3 mm ID		760583.30		760586.30	760587.30	760588.30	760589.30
4 mm ID		760583.40		760586.40	760587.40	760588.40	760589.40
4.6 mm ID		760583.46	760585.46	760586.46	760587.46	760588.46	760589.46
EC guard columns*			4 x 2 mm: 761987.20		4 x 3 mm: 761987.30		
CC guard columns**			8 x 3 mm: 761148.30		8 x 4 mm: 761148.40		
VarioPrep columns (pack of 1 column)							
10 mm ID		762230.100			762231.100		762233.100
21 mm ID		762230.210			762231.210		762233.210
32 mm ID							762233.320
40 mm ID						762232.400	762233.400
VP guard columns***		10 x 8 mm: 762234.80		10 x 16 mm: 762234.160		15 x 32 mm: 762236.320	

Guard column systems

Guard columns for EC columns with ID (pack of)		**2 mm**	**3 mm**	**4 mm**	**4,6 mm**
* EC guard columns for the **Column Protection System guard column holder (REF 718966)**	EC	4 / 2 (3)	4 / 3 (3)	4 / 3 (3)	4 / 3 (3)
** ChromCart® guard columns for the EC guard column adapter (REF 721359)	CC	8 / 3 (3)	8 / 3 (3)	8 / 4 (3)	8 / 4 (3)
Guard columns for VarioPrep columns with ID (pack of)		**8, 10 mm**	**16, 21 mm**	**32, 40 mm**	
*** VP guard columns	VP	10 / 8 (2)	10 / 16 (2)	15 / 32 (1)	
VP guard column holder		718251	718256	718253	

Column Protection System
The innovative guard column system for analytical HPLC columns

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