Chromatography

MACHEREY-NAGEL

NUCLEODUR®
C_{18} Gravity-SB

Providing distinct polar selectivity in HPLC

- Hydrophobic C18 phase with polar selectivity
- Excellent performance under highly aqueous conditions
- Suitable for LC/MS

Distribútor pre SR:
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MN Since 1911

NUCLEODUR® C_{18} Gravity-SB

Key features

- Hydrophobic C18 phase with distinct polar selectivity, ideal for method development, better retention of early eluting substances
- Excellent performance under highly aqueous conditions
- Suitable for LC/MS due to low bleeding characteristics

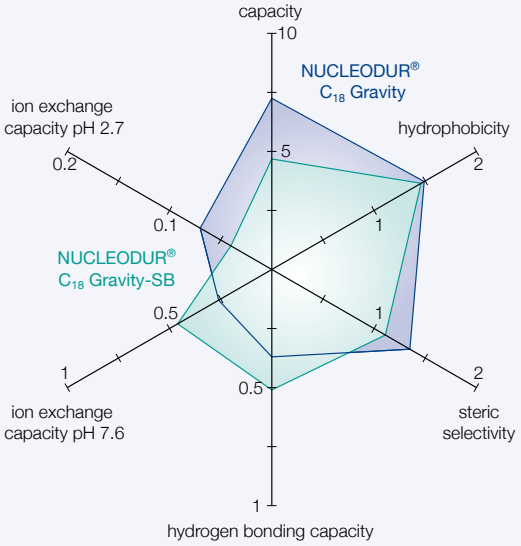
Technical characteristics

- Monomeric octadecyl silane with bulky side chains
- Pore size 110 Å, available particle sizes 1.8 µm, 3 µm and 5 µm
- Carbon content 13 %, pH stability 1–9, endcapped

Recommended application

- Overall sophisticated analytical separations, especially for polar
- Compounds, e.g., antibiotics, water-soluble vitamins, organic acids

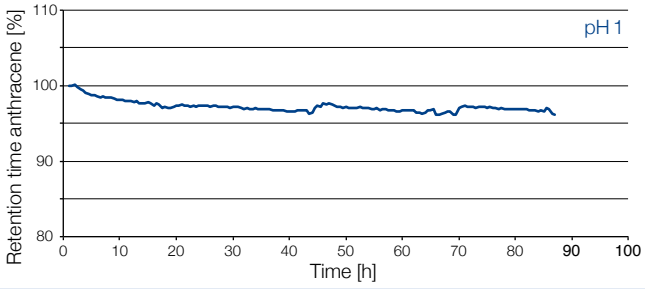
USP L1



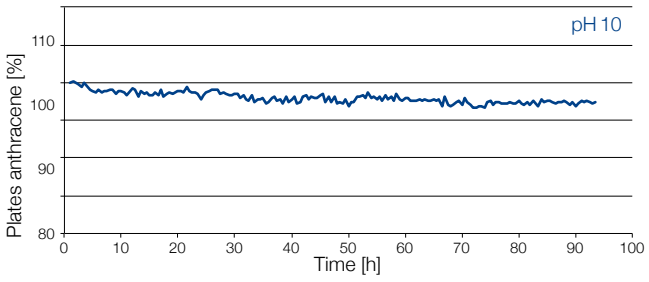
Stability of NUCLEODUR® C_{18} Gravity-SB at extreme pH

MN Appl. No. 127280 / 127290

Column:	EC 50/2 NUCLEODUR® C_{18} Gravity-SB, 5 µm
Eluent:	1 % TFA in water – 1 % TFA in methanol (30:70, v/v)
Flow rate:	0.33 mL/min, temperature: 60 °C
Detection:	UV, 254 nm, injection: 2 µL (0.05 mg/mL)



Column:	EC 50/2 NUCLEODUR® C_{18} Gravity-SB, 3 µm
Eluent:	50 mmol/L NH_4Ac – methanol (30:70, v/v)
Flow rate:	0.33 mL/min, temperature: 50 °C
Detection:	UV, 254 nm, injection: 2 µL (0.05 mg/mL)

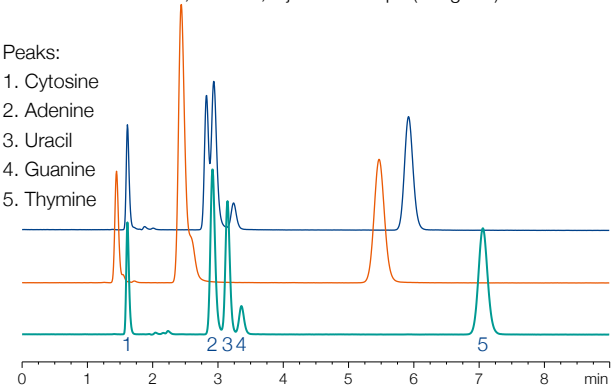


Comparing of selectivity for nucleobases

MN Appl. No. 127270

Columns:	EC 150/4.6 mm NUCLEODUR® C_{18} Gravity-SB, 5 µm NUCLEODUR® C_{18} Gravity, 5 µm NUCLEODUR® C_{18} Pyramid, 5 µm
Eluent:	25 mmol/L KH_2PO_4, pH 3 – methanol (95:5, v/v)
Flow rate:	1.0 mL/min, Temperature: 20 °C
Detection:	UV, 220 nm, Injection: 2.5 µL (1 mg/mL)

Peaks:
1. Cytosine
2. Adenine
3. Uracil
4. Guanine
5. Thymine

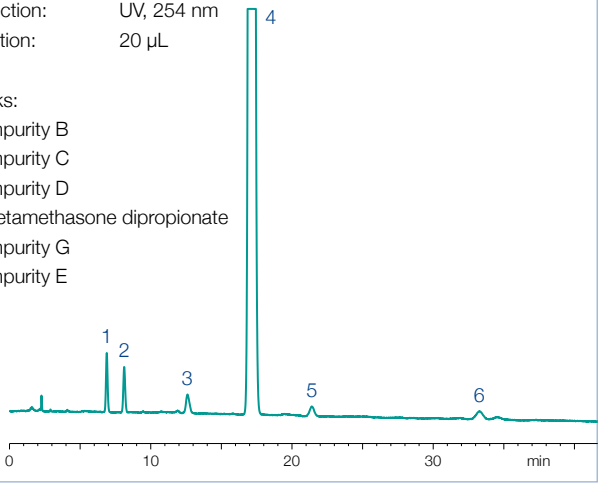


Purity control of betamethasone dipropionate (Ph. Eur.)

MN Appl. No. 127310

Column:	EC 250/4.6 NUCLEODUR® C_{18} Gravity-SB, 5 µm
Eluent:	Acetonitrile – water (60:40, v/v)
Flow rate:	1 mL/min
Temperature:	22 °C
Detection:	UV, 254 nm
Injection:	20 µL

Peaks:
1. Impurity B
2. Impurity C
3. Impurity D
4. Betamethasone dipropionate
5. Impurity G
6. Impurity E



NUCLEODUR® C_{18} Gravity-SB

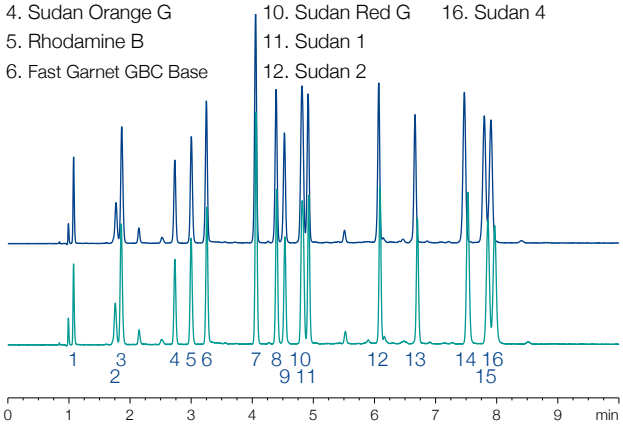
Stability at 70 °C (dyes)

MN Appl. No. 127300

Column:	EC 150/3 NUCLEODUR® C_{18} Gravity-SB, 3 µm 1st injection, 500th injection
Eluent:	A) 10 mmol/L NH_4Ac pH 4.5; B) methanol; 65–95 % B in 5 min, 95 % B for 10 min
Flow rate:	0.8 mL/min
Temperature:	70 °C
Detection:	UV, 432 nm
Injection:	2 µL, 500 injections

Peaks:

1. 4-Nitroaniline
2. Orange 2
3. Metanil Yellow
4. Sudan Orange G
5. Rhodamine B
6. Fast Garnet GBC Base
7. Sudan Yellow
8. Para Red
9. Toluidine Red
10. Sudan Red G
11. Sudan 1
12. Sudan 2
13. Sudan 3
14. Sudan Red 7B
15. Sudan Red B
16. Sudan 4



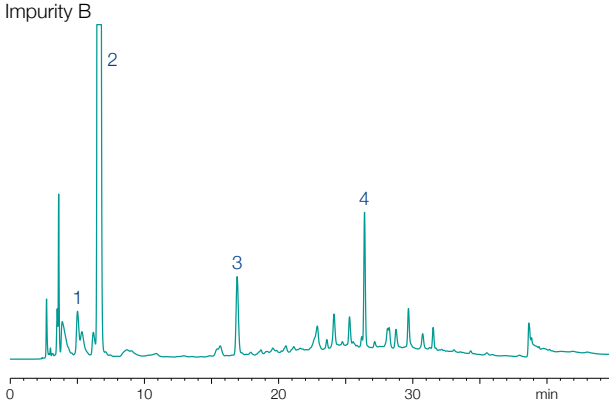
Purity control of cefepime dihydrochloride (Ph. Eur.)

MN Appl. No. 127320

Column:	EC 250/4.6 NUCLEODUR® C_{18} Gravity-SB, 5 µm
Eluent:	A) 5 mmol/L KH_2PO_4 pH 5 – acetonitrile (90:10, v/v); B) 5 mmol/L KH_2PO_4 pH 5 – acetonitrile (50:50, v/v); 0 % B (10 min) to 50 % B in 20 min, 50 % B (5 min) to 100 % B in 1 min (9 min 100 % B)
Flow rate:	1 mL/min
Temperature:	22 °C
Detection:	UV, 254 nm
Injection:	10 µL

Peaks:

1. Impurity F
2. Cefepime
3. Impurity A
4. Impurity B



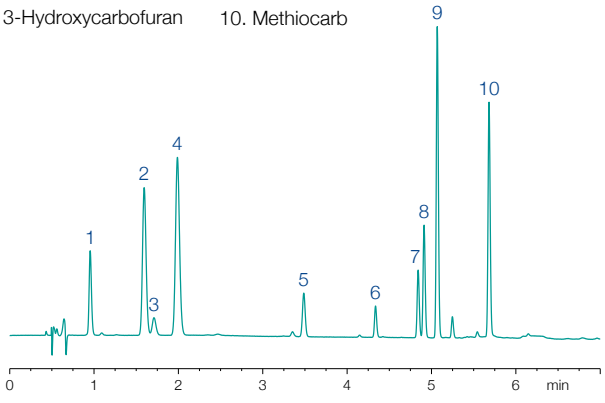
Carbamates (EPA 531.1)

MN Appl. No. 127360

Column:	EC 100/3 NUCLEODUR® C_{18} Gravity-SB, 3 µm
Eluent:	A) acetonitrile; B) 5 mmol/L ammonium formate 15 % A (1 min) to 75 % A in 4 min, to 85 % A in 2 min
Flow rate:	1.0 mL/min
Temperature:	20 °C
Detection:	UV, 230 nm
Injection:	1 µL (0.25 mg/mL)

Peaks:

1. Aldicarb sulfoxide
2. Aldicarb sulfone
3. Oxamyl
4. Methomyl
5. 3-Hydroxycarbofuran
6. Aldicarb
7. Propoxur
8. Carbofuran
9. Carbaryl
10. Methiocarb



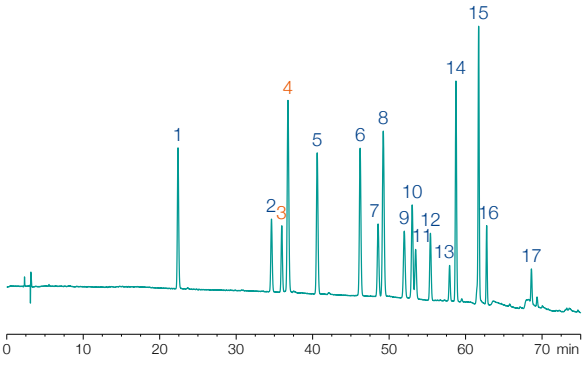
Pesticide mix (Ehrenstorfer, 17 components)

MN Appl. No. 127330

Column:	EC 250/4.6 NUCLEODUR® C_{18} Gravity-SB, 3 µm
Eluent:	A) Acetonitrile B) 5 mmol/L NH_4Ac; 10–37.5 % A in 50 min, 37.5–75 % A in 25 min
Flow rate:	1.1 mL/min
Temperature:	35 °C
Detection:	UV, 230 nm
Injection:	3 µL

Peaks:

1. Desethylatrazine
2. Metoxuron
3. Hexazinone
4. Simazine
5. Cyanazine
6. Methabenzthiazuron
7. Chlortoluron
8. Atrazine
9. Monolinuron
10. Isoproturon
11. Diuron
12. Metobromuron
13. Metazachlor
14. Sebuthylazin
15. Terbuthylazine
16. Linuron
17. Metolachlor



NUCLEODUR® C_{18} Gravity-SB

Ordering information

Eluent in column acetonitrile – water

Length	30 mm	50 mm	75 mm	100 mm	125 mm	150 mm	250 mm
NUCLEODUR® C_{18} Gravity-SB, 1.8 µm particle size 1.8 µm · UHPLC							
EC columns (pack of 1 column)		particle size 1.8 µm					
2 mm ID	760591.20	760593.20	760595.20	760596.20		760598.20	
3 mm ID	760591.30	760593.30		760596.30			
4 mm ID	760591.40	760593.40		760596.40			
4.6 mm ID	760591.46	760593.46		760596.46			
EC guard columns*		4 x 2 mm: 761990.20			4 x 3 mm: 761990.30		
NUCLEODUR® C_{18} Gravity-SB, 3 µm particle size 3 µm							
EC columns (pack of 1 column)							
2 mm ID		760603.20		760606.20	760607.20	760608.20	760609.20
3 mm ID		760603.30		760606.30	760607.30	760608.30	760609.30
4 mm ID		760603.40		760606.40	760607.40	760608.40	760609.40
4.6 mm ID		760603.46	760605.46	760606.46	760607.46	760608.46	760609.46
EC guard columns*		4 x 2 mm: 761991.20			4 x 3 mm: 761991.30		
NUCLEODUR® C_{18} Gravity-SB, 5 µm particle size 5 µm							
EC columns (pack of 1 column)							
2 mm ID		760613.20		760616.20	760617.20	760618.20	760619.20
3 mm ID		760613.30		760616.30	760617.30	760618.30	760619.30
4 mm ID		760613.40		760616.40	760617.40	760618.40	760619.40
4.6 mm ID		760613.46	760615.46	760616.46	760617.46	760618.46	760619.46
EC guard columns*		4 x 2 mm: 761992.20			4 x 3 mm: 761992.30		
NUCLEODUR® C_{18} Gravity-SB, 5 µm particle size 5 µm							
VarioPrep columns (pack of 1 column)							
10 mm ID		762350.100			762351.100		762353.100
21 mm ID		762350.210			762351.210		762353.210
32 mm ID							762353.320
40 mm ID						762352.400	762353.400
VP guard columns**		10 x 8 mm: 762354.80		10 x 16 mm: 762354.160		15 x 32 mm: 762355.320	

Guard column systems

Guard columns for EC columns with ID		2 mm	3 mm	4 mm	4.6 mm
* EC guard columns (pack of)	EC	4 / 2 (3)	4 / 3 (3)	4 / 3 (3)	4 / 3 (3)
Column Protection System guard column holder		718966	718966	718966	718966
Guard columns for VarioPrep columns with ID		**8, 10 mm**	**16, 21 mm**	**32, 40 mm**	
**VP guard columns (pack of)	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

www.mn-net.com

MACHEREY-NAGEL

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