

Chromatography

NUCLEODUR[®] C₁₈ Gravity-SB

Providing distinct
polar selectivity



MACHERY-NAGEL

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**CHROMATOGRAPHIC
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NUCLEODUR® C₁₈ 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:

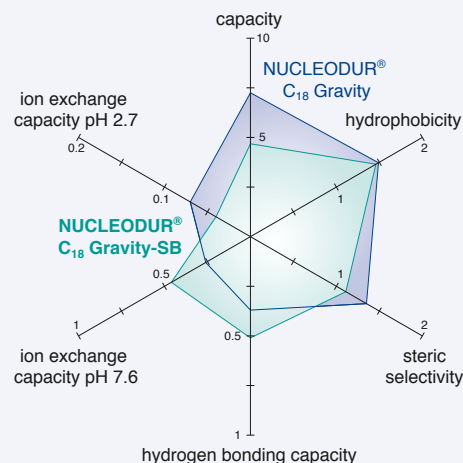
Monomeric octadecyl modification, extensive endcapping;
pore size 110 Å, available particle sizes 1.8 µm, 3 µm and 5 µm;
carbon content 13%; pH stability 1–9

Recommended application:

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

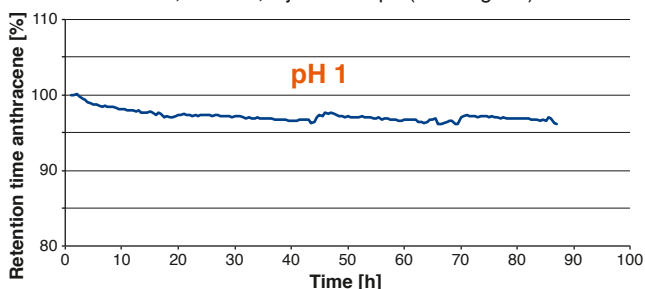
USP L1

Tanaka plots



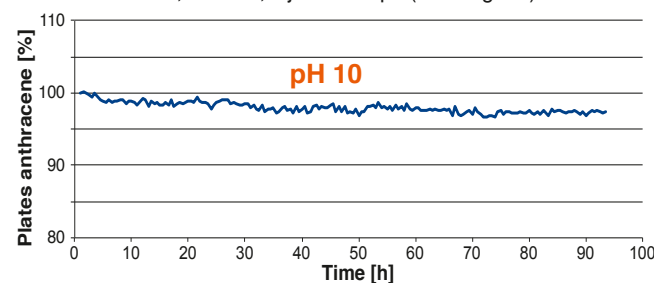
Stability of NUCLEODUR® C₁₈ Gravity-SB at extreme pH

Column: EC 50/2 NUCLEODUR® C₁₈ 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)



MN Appl. No. 127280

Column: EC 50/2 NUCLEODUR® C₁₈ Gravity-SB, 3 µm
Eluent: 50 mmol/L NH₄Ac pH 10 – 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)



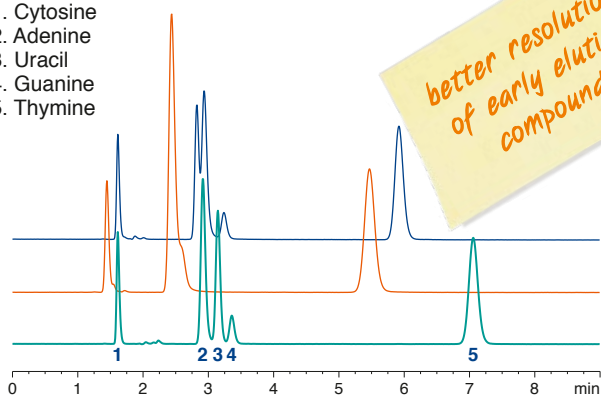
MN Appl. No. 127290

Selectivity comparison of nucleobases

Columns: EC 150/4.6 mm
NUCLEODUR® C₁₈ Gravity-SB, 5 µm
NUCLEODUR® C₁₈ Gravity, 5 µm
NUCLEODUR® C₁₈ Pyramid, 5 µm
Eluent: 25 mmol/L KH₂PO₄ 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:

- Cytosine
- Adenine
- Uracil
- Guanine
- Thymine



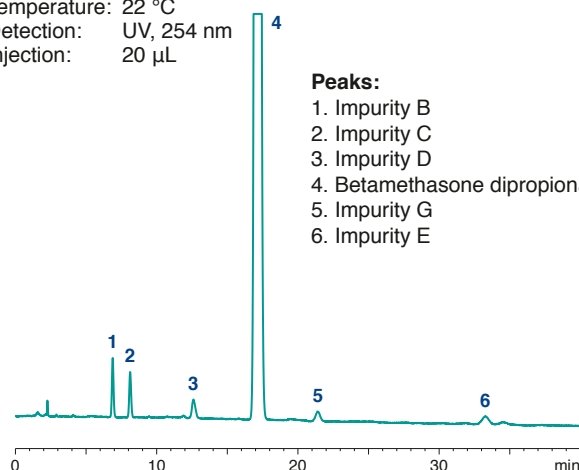
MN Appl. No. 127270

Purity control of betamethasone dipropionate (Ph. Eur.)

Column: EC 250/4.6 NUCLEODUR® C₁₈ 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:

- Impurity B
- Impurity C
- Impurity D
- Betamethasone dipropionate
- Impurity G
- Impurity E

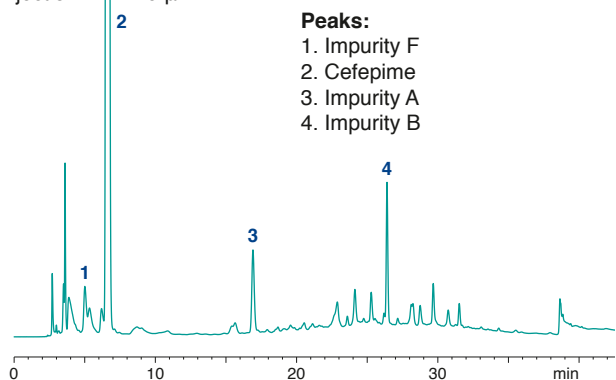


MN Appl. No. 127310

Purity control of cefepime dihydrochloride (Ph. Eur.)

Column: EC 250/4.6 NUCLEODUR® C₁₈ Gravity-SB, 5 µm
 Eluent: A) 5 mmol/L KH₂PO₄ pH 5 – acetonitrile (90:10, v/v);
 B) 5 mmol/L KH₂PO₄ 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



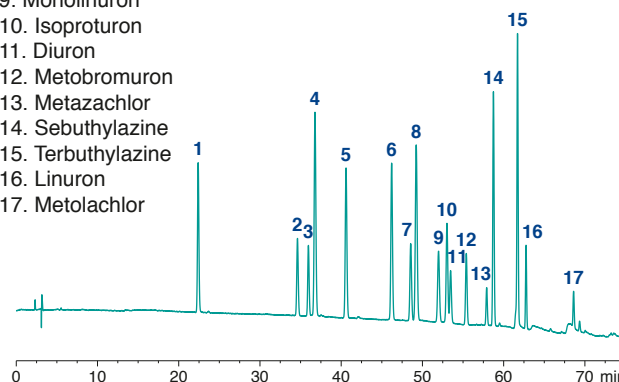
MN Appl. No. 127320

Pesticide mix (Ehrendorfer, 17 components)

Column: EC 250/4.6 NUCLEODUR® C₁₈ Gravity-SB, 3 µm
 Eluent: A) acetonitrile;
 B) 5 mmol/L NH₄Ac;
 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. Sebutylazine
 15. Terbutylazine
 16. Linuron
 17. Metolachlor

good separation of critical pair hexazinone / simazine



MN Appl. No. 127330

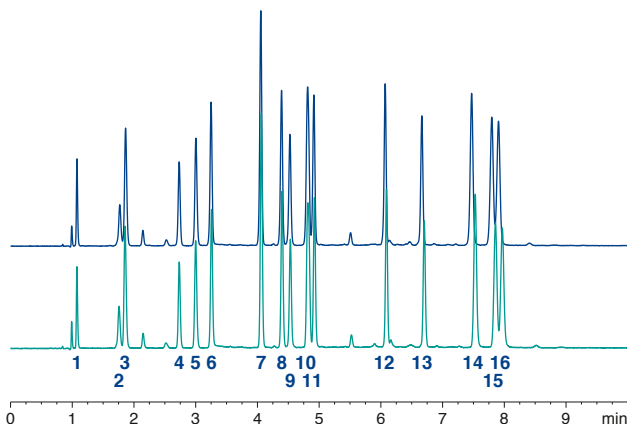
Stability at 70 °C (dyes)

Column: EC 150/3 NUCLEODUR® C₁₈ Gravity-SB, 3 µm
 1st injection, 500th injection
 Eluent: A) 10 mmol/L NH₄Ac 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

no retention shift after 500 injections at 70 °C

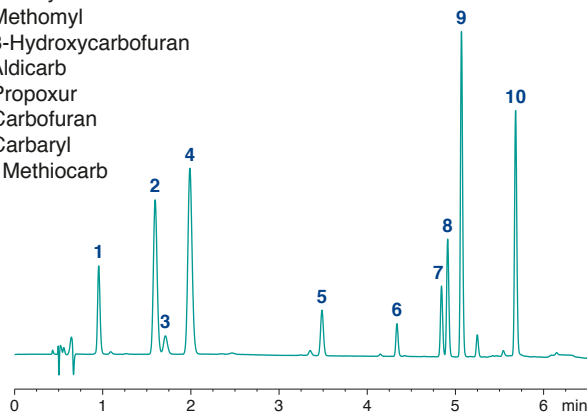


MN Appl. No. 127300

Carbamates (EPA 531.1)

Column: EC 100/3 NUCLEODUR® C₁₈ 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



MN Appl. No. 127360

— NUCLEODUR® C₁₈ 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® C₁₈ Gravity-SB, 1.8 µm							particle size 1.8 µm
EC columns (pack of 1 column)							
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® C₁₈ 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® C₁₈ 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		
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 (pack of 3)		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	4/3	4/3	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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