

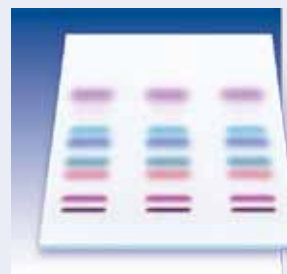
Columns and supplies catalog



HPLC



GC



TLC



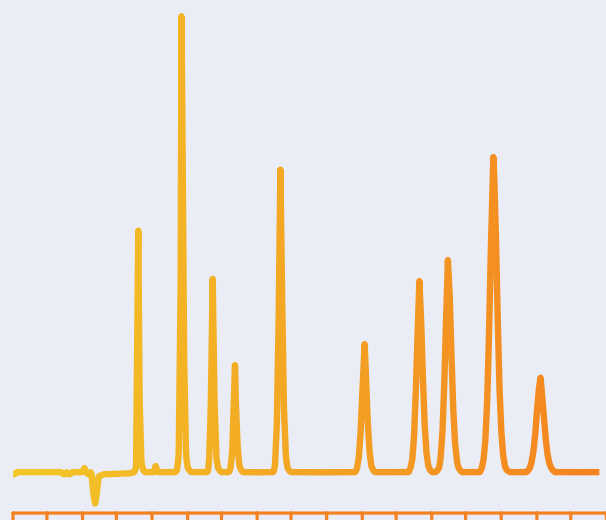
SPE and Flash



Syringe filters



Vials and caps



... we Meet your Needs

Since 1911 MACHEREY-NAGEL has represented high quality, innovation and reliability in chemical and biomolecular analysis. Friendly expert advice for our highly valued customers as well as outstanding product quality have been the cornerstones of our corporate success for more than 100 years. CEO C. Wagner, the great-granddaughter of the company's founder, has been managing the enterprise since 2000.

Our product ranges:



Filtration



Rapid Tests



Water Analysis



Chromatography



Bioanalysis

**Dedicated from the very first:
Milestones of Chromatography at MACHEREY-NAGEL**



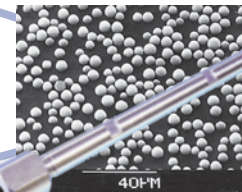
1952:
MN launches the first products for paper chromatography. In the same year, Martin and Synge receive the Nobel Prize in Chemistry for the development of partition chromatography.



1961:
MACHEREY-NAGEL becomes one of the pioneers in TLC.



1970:
Expansion of the product range by column chromatography



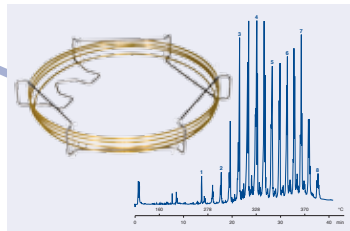
1974:
NUCLEOSIL® · one of the first spherical HPLC silicas leads to our core competence in silica technology



1982:
first fused silica capillary columns for GC



1987:
CHROMABOND® columns for SPE



1994:
OPTIMA® capillary columns for optimum GC separations



2002:
NUCLEODUR® high purity spherical silica for HPLC

2011:
NUCLEOSHELL® core shell silica for highest efficiency in HPLC

Chromatography

Solid Phase Extraction and Flash chromatography



CHROMABOND® phases and accessories for SPE 1-52
 High-throughput SPE and Flash chromatography 53-64

Sample clarification



CHROMAFIL® syringe filters 66-76

Vials and closures



Vials and closures 77-103
 Autosampler compatibility 103-108

Liquid chromatography



Columns for HPLC 110-197
 Packings for liquid chromatography 198-206

Thin layer chromatography



Plates, kits and adsorbents for TLC 208-234

Gas chromatography



Capillary columns for GC 236-281
 Reagents for GC 282-291
 Accessories for GC 293-297

Appendices

Product and subject index, index of reference numbers, trademarks, USP lists 298-327



New products for sample preparation

Sample preparation

CHROMABOND® HR-Xpert

your way to cleaner samples by SPE

The professional concept of innovative RP and mixed-mode ion exchange phases for SPE

- CHROMABOND® HR-X · hydrophobic PS/DVB copolymer
- CHROMABOND® HR-XC and HR-XCW strong and weak mixed-mode cation exchangers
- CHROMABOND® HR-XA and HR-XAW strong and weak mixed-mode anion exchangers
- Now available in 2 particle sizes:
 - standard particle size 85 µm
 - particle size 45 µm for smaller sample volumes, lower adsorbent weight and smaller elution volumes

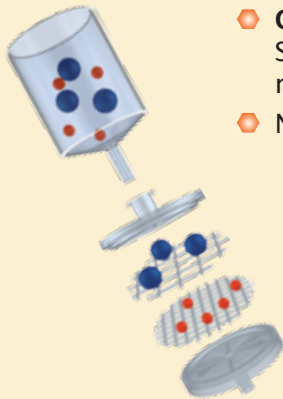
... Order your free samples today!
info@mn-net.com

Page 10



New CHROMAFIL® filters

for optimum filtration results



- CHROMAFIL® Combi filters
 - Syringe filters with a coarse glass fiber prefilter recommended for solution with a high particle load
- New dimensions and pore sizes for Nylon, cellulose acetate and PTFE filters

Page 68

Vials and closures

completely revised product range



- Large selection of
 - Crimp neck vials, crimp closures, crimping tools
 - Screw neck vials and screw closures
 - Special vials and closures
- High quality products at an equitable price performance ration

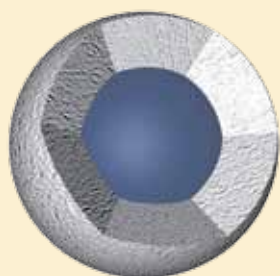
Page 77

We look forward to sharing our expertise with you:
vials@mn-net.com



NUCLEOSHELL® core-shell silica

for rapid, efficient HPLC



- ◆ Solid core of silicon dioxide, homogeneous shell of porous silica
- ◆ Highest efficiency compared to totally porous materials
- ◆ Pore size 90 Å; particle size 2.7 μm (core 1.7 μm); specific surface 130 m²/g
- ◆ Lower back pressure enables use on conventional LC systems
- ◆ Pressure stability 600 bar

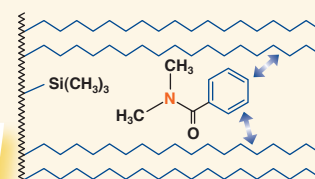
Page
144

NUCLEOSHELL® RP 18

nonpolar high density phase

- ◆ **Key features:**
 - Suitable for LC/MS and HPLC at pH extremes (pH 1–11)
 - Superior base deactivation, ideal for method development
- ◆ **Recommended application:**
Overall sophisticated analytical separations, e.g., analgesics, anti-inflammatory drugs, antidepressants; herbicides; phytopharmaceuticals; immunosuppressants
USP L1

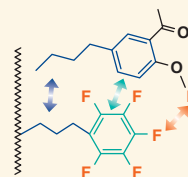
Page
148



NUCLEOSHELL® PFP

hydrophobic pentafluorophenyl phase

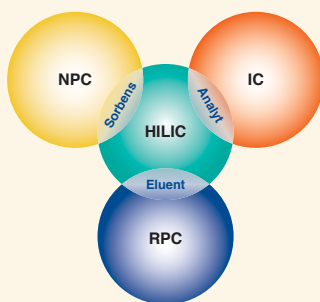
- ◆ **Key features:**
 - Hydrophobic phase with alternative selectivity in comparison to classical C₁₈ modifications
 - Separation principle based on 4 retention mechanisms (polar interactions (H bonds), dipole-dipole interactions, π-π interactions, hydrophobic interactions)
- ◆ **Recommended application:**
Aromatic and unsaturated compounds, phenols, halogenated compounds, isomers, polar compounds like pharmaceuticals, antibiotics; high retention of basic compounds
USP L43



Page
150

NUCLEOSHELL® HILIC

zwitterionic phase



- ◆ **Key features:**
 - Ideal for reproducible and stable chromatography of highly polar analytes
 - Very short column equilibration times
- ◆ **Recommended application:**
Hydrophilic compounds such as organic polar acids and bases, polar natural compounds, nucleosides, oligonucleotides, amino acids, peptides, water soluble vitamins

Page
152

HPLC



New products for HPLC

HPLC

NUCLEODUR® PolarTec

RP phase with embedded polar group



Key features:

- Excellent base deactivation
- Suitable for LC/MS and stable in 100% aqueous mobile phases
- Pronounced steric selectivity

Recommended application:

Exceptional selectivity for phenols and nitrogen containing compounds, polar compounds like basic pharmaceuticals, organic acids, pesticides, amino acids, water soluble vitamins, etc.

USP L1 and L60

Page
124

NUCLEODUR® PFP

hydrophobic pentafluorophenyl phase



Key features:

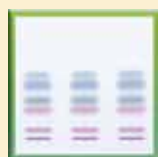
- Hydrophobic phase with alternative selectivity in comparison to classical C₁₈ modifications
- Separation principle based on 4 retention mechanisms (polar interactions (H bonds), dipole-dipole interactions, π - π interactions, hydrophobic interactions)
- Suitable for LC/MS due to low bleeding characteristics

Recommended application:

Aromatic and unsaturated compounds, phenols, halogenated compounds, isomers, polar compounds like pharmaceuticals, antibiotics; high retention of basic compounds

USP L43

Page
136



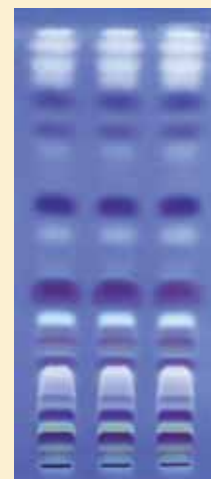
ALUGRAM® Xtra

optimized TLC silica layers on aluminium

- ◆ Outstanding wettability for precise colorization results, even with 100% aqueous derivatization and visualization reagents
- ◆ Excellent separation efficiency and reproducibility from lot to lot
- ◆ Easy and reliable cutting due to an optimized binder system, no flaking of silica; now available as
 - ALUGRAM® Xtra SIL G with unmodified standard silica
 - ALUGRAM® Xtra Nano-SIL with unmodified HPTLC silica
 - ALUGRAM® Xtra SILGUR standard silica with concentrating zone
 - ALUGRAM® Xtra Nano-SILGUR HPTLC with concentrating zone



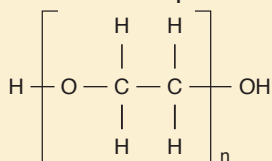
Pages
214-218



OPTIMA WAXplus® OPTIMA® FFAPplus

optimized polar phases for GC

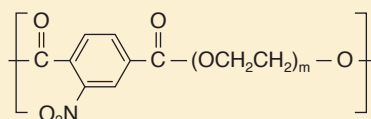
- ◆ WAXplus
- ◆ Polar phase with improved cross-linking for reduced column bleeding and better temperature stability



- ◆ Good solvent stability, extended column lifetime, better performance in the MS in comparison to conventional Wax phases
- ◆ Recommended application: broad ranges of analyses, e.g., for solvents and alcohols, suitable for aqueous samples
- ◆ USP G16

Page
261

- ◆ FFAPplus
- ◆ Polar polyethylene glycol phase with nitroterephthalic acid modification and innovative cross-linking



- ◆ Good solvent stability, extended column lifetime, better performance in the MS in comparison to conventional Wax phases, suitable for aqueous samples
- ◆ Recommended application: FAMES, allows determination of free carboxylic acids without derivatization
- ◆ USP G35 / close equivalent to G25

Page
263