



The professional concept of innovative SPE phases

The CHROMABOND® HR-Xpert family comprises 5 polymer-based RP and mixed-mode ion exchange phases:

- CHROMABOND® HR-X hydrophobic PS/DVB copolymer
- CHROMABOND® HR-XC strong mixed-mode cation exchanger
- CHROMABOND® HR-XA strong mixed-mode anion exchanger
- CHROMABOND® HR-XCW weak mixed-mode cation exchanger
- CHROMABOND® HR-XAW weak mixed-mode anion exchanger

State-of-the-art spherical polymer

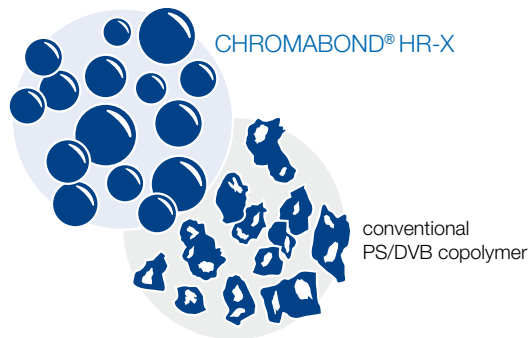
- Two particle sizes (45 µm and 85 µm) adequate for different sample volumes and matrices
- Broad spectrum of application with special suitability for the enrichment of pharmaceuticals from biological matrices
- Ideal flow properties due to low content of particulate matter

Optimized pore structure and high specific surface

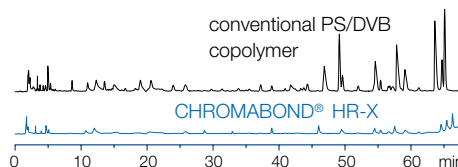
- High loadability and outstanding elution properties
- Low solvent consumption
- Rapid, economical analysis

High-purity adsorber material

- Allows highest reproducibility with extremely low blind values
- Reliable analysis at ultra trace level
- No method adaptation for new batches necessary



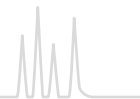
Adsorbent blind values:



The HR-Xpert concept guarantees

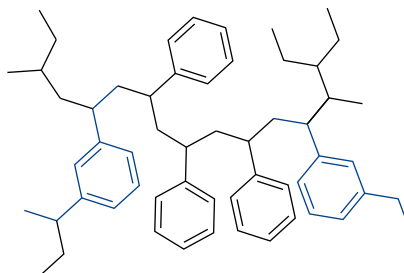
- RP and mixed-mode SPE phases with distinct ion exchange and reversed phase properties: excellent enrichment of neutral, acidic and basic compounds
- Modern, spherical support polymer with optimized pore structure and high surface: good reproducibility, reliable and cost-efficient analysis
- Possibility for more aggressive washing procedures for matrix removal: cleaner samples and protection of your HPLC and GC instruments
- Quantification of analytes also from heavily contaminated samples: lower limits of detection also for critical matrices

CHROMABOND® HR-Xpert is the perfect combination for all tasks in sample preparation.

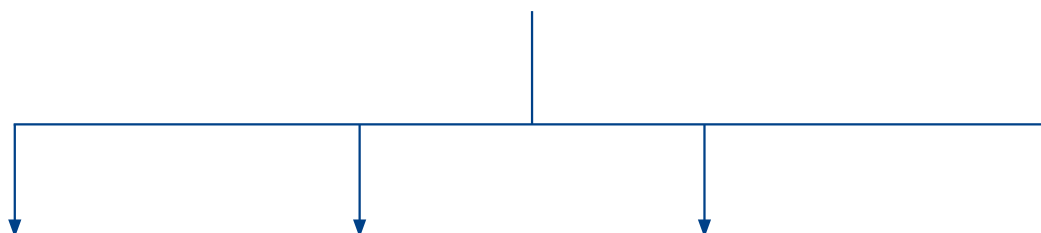


Chemical structures of the phases

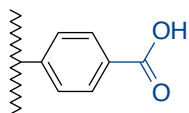
CHROMABOND® HR-X



hydrophobic polystyrene-divinylbenzene copolymer
spherical base material for efficient enrichment
and ideal flow behavior

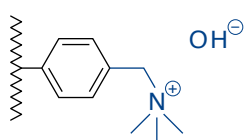


CHROMABOND® HR-XCW



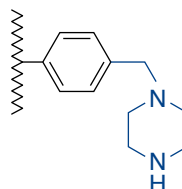
weak acidic
cation exchanger

CHROMABOND® HR-XA



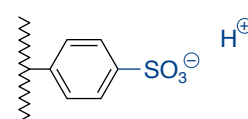
strong basic
anion exchanger

CHROMABOND® HR-XAW



weak basic
anion exchanger

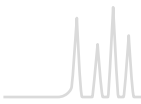
CHROMABOND® HR-XC



strong acidic
cation exchanger

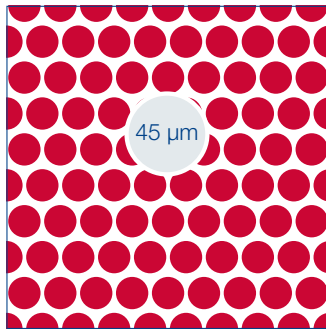
Similar phases

CHROMABOND® HR-X:	Oasis® HLB, Strata™-X, Nexus, ENVI-Chrom P
CHROMABOND® HR-XC:	Oasis® MCX, Strata™-X-C, HyperSep™ Retain™-CX, StyreScreen® DBX
CHROMABOND® HR-XA:	Oasis® MAX, Strata™-X-A, HyperSep™ Retain™-AX, StyreScreen® QAX
CHROMABOND® HR-XCW:	Oasis® WCX, Strata™-X-CW
CHROMABOND® HR-XAW:	Oasis® WAX, Strata™-X-AW

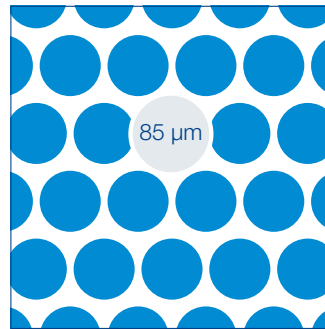


2 particle sizes - 1 goal: HR-Xpert for optimized sample preparation

For different application requirements the particle sizes complement each other perfectly.



- Ideal for:
- Smaller sample volumes
 - Smaller adsorbent weights
 - Lower elution volumes



- Recommended for:
- Large volume or viscous samples, heavy matrix load
 - Operation without vacuum possible (e.g., for volatile analytes)
 - Higher adsorbent weight without increase in back pressure

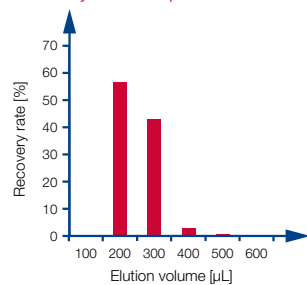
Features of 45 µm particles

- About half the radius results in 8-fold particle number per volume for approx. equal adsorbent weight
- Same specific surface for both particle sizes: considerably larger freely accessible external surface for 45 µm particles
- Denser adsorbent packing: enhanced interaction of the analyte with the adsorbent, better extraction results

Ideal elution characteristics

Method: 1 mL column with 30 mg CHROMABOND® HR-X, 1 mL standard solution (1 mg/mL hexobarbital), drying, elution in portions of 100 µL with methanol (see application 305490 at www.mn-net.com/apps)

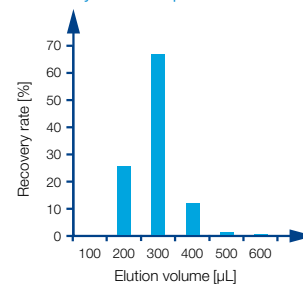
Recovery rates 45 µm



Advantages of 45 µm particles:

- Faster elution
- Lower elution volumes required

Recovery rates 85 µm



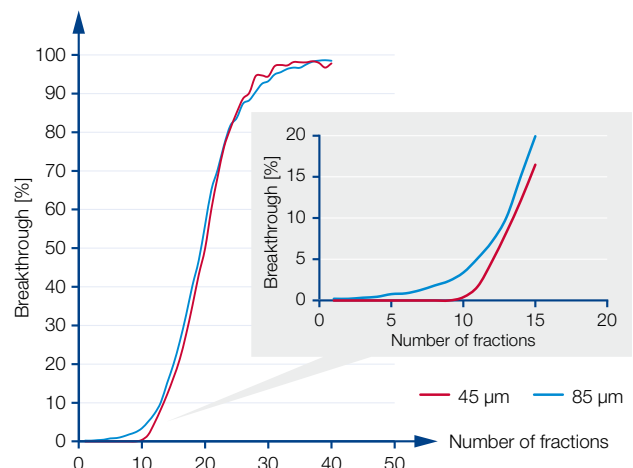
Breakthrough behavior in enrichment

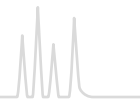
Method: 1 mL column with 15 mg CHROMABOND® HR-X, apply portions of 1 mL standard solution (250 µg/mL hexobarbital in water), collect eluates (see application 305480 at www.mn-net.com)

45 µm (red) The analyte is completely retained up to fraction 10.

85 µm (blue) Small amounts even break through with fraction 4. 45 µm particles provide better enrichment and breakthrough behavior for small adsorbent weights. When using larger adsorbent weights this effect is less pronounced, since then analytes have sufficient contact with the 85 µm adsorbent particles as well.

45 µm particles are ideal for small sample and elution volumes, while for large amounts of sample and adsorbent 85 µm particles show advantages due to better flow properties.

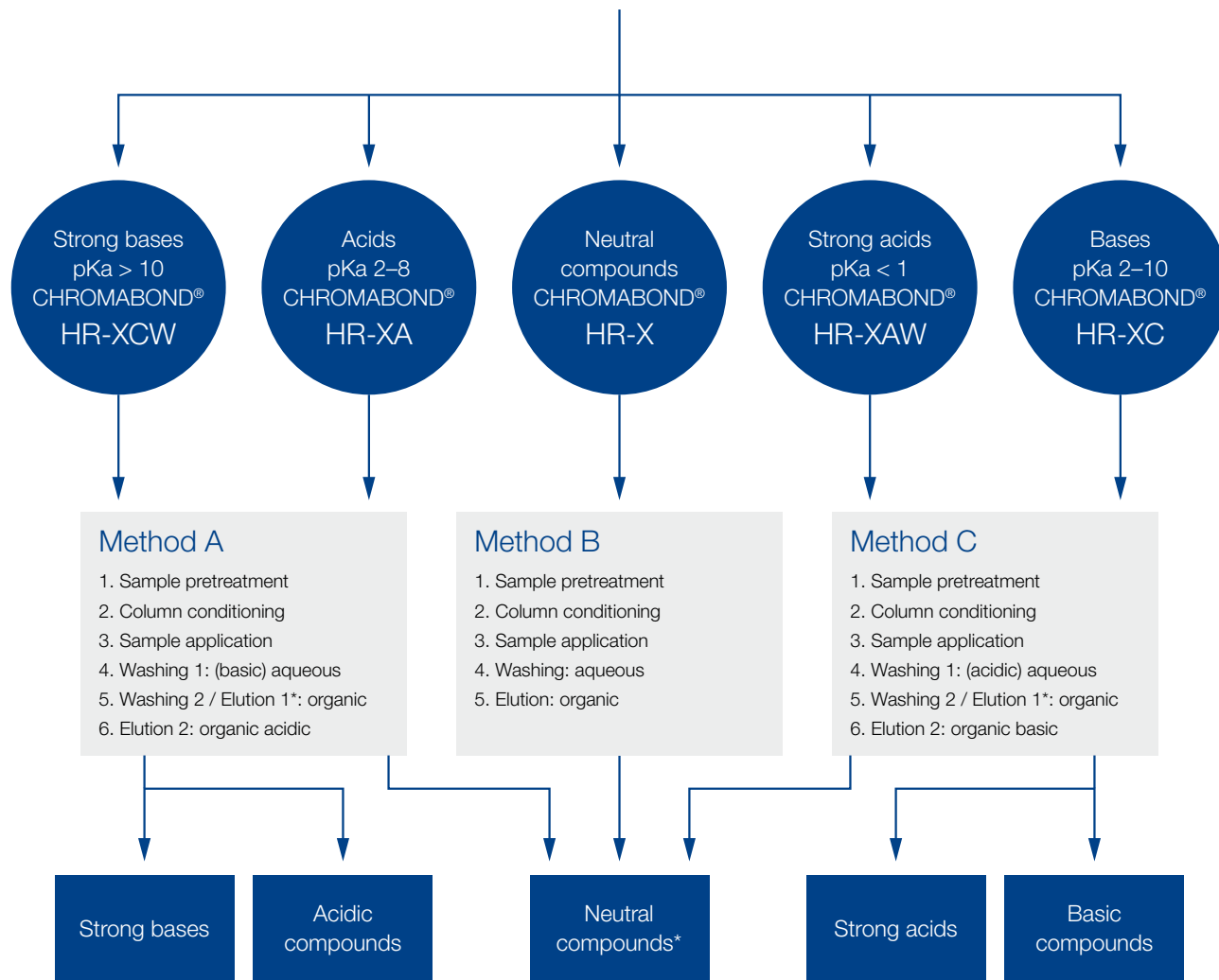




The CHROMABOND[®] HR-*Xpert* concept for neutral, acidic and basic analytes

3 paths - 1 goal: cleaner samples

Depending on the character of the analytes HR-*Xpert* offers suitable adsorbents and optimal methods for sample preparation, cleaning and concentration.



* Under organic washing and elution conditions the following compounds will be also eluted

HR-X: polar compounds such as organic acids and bases
HR-XC, HR-XCW: acidic components and impurities
HR-XA, HR-XAW: basic components and impurities



CHROMABOND® HR-X HR-X spherical, hydrophobic polystyrene-divinylbenzene adsorbent resin

★ Key features

- High-purity material with highest reproducibility and lowest blank values due to an optimized manufacturing process
- Excellent recovery rates especially for the enrichment of pharmaceuticals and active ingredients due to the spherical structure of the particles, very homogeneous surface and optimized pore structure

🔧 Technical characteristics

- Hydrophobic polystyrene-divinylbenzene copolymer, pH stability 1–14
- Spherical particles, size 45 µm and 85 µm (standard), pore size 55–60 Å, very high surface 1000 m²/g, capacity 390 mg/g (caffeine in water)

✓ Recommended application

- Pharmaceuticals / active ingredients from tablets, creams and water / waste water
- Drugs and pharmaceuticals from urine, blood, serum and plasma
- Trace analysis of pesticides, herbicides, phenols, PAHs and PCBs from water

Drugs from water

MN Appl. No. 304240

Column type:
CHROMABOND® HR-X, 3 mL, 200 mg
REF 730931

Sample: 1 µg/mL each in water

Column conditioning: 5 mL methanol, 5 mL dist. water

Sample application:

slowly aspirate 500 mL water (pH 3) through the column

Column washing: 5 mL water

Elution: after drying 3 x 2 mL acetonitrile

Further analysis: HPLC on NUCLEODUR® C₁₈ Gravity, 5 µm; see MN Appl. No. 121690

Recovery rates [%]

Compound	HR-X	Strata™ X
Ketoprofen	98	92
Ibuprofen	91	93
Pentobarbital	99	95
Meclofenamic acid	92	93
Protriptyline	63	45
Nortriptyline	53	39

Pesticides from water

MN Appl. No. 304250 / 304260

Column type:
CHROMABOND® HR-X, 3 mL, 200 mg
REF 730931

Sample pretreatment: samples are spiked with 500 ng of each pesticide in 1000 mL water, adjusted to pH 2 with HCl or pH 7

Column conditioning:

10 mL methanol, 10 mL dist. water

Sample application:

slowly pass 1000 mL spiked water sample through the column with the aid of a tubing adapter (REF 730243)

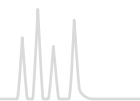
Elution: after drying 5 mL methanol – THF (1:1, v/v)

Further analysis: HPLC

Recovery rates [%]

Compound	HR-X pH 2	Compound	HR-X pH 7
Metamitron	86	Desisopropylatrazine	90
Quinmerac	90	2,4-Dichlorobenzamide	95
Chloridazon	93	Desethylatrazine	89
Picloram	83	Hexazinone	95
Metribuzin	84	Bromacil	103
Cyanazine	83	Simazine	91
Metabenzthiazuron	94	Desethylterbuthylazine	89
Chlortoluron	91	Atrazine	88
Isoproturon	89	Metalaxyl	97
Diuron	91	Metazachlor	93
Dimethenamid-P	89	Propazine	88
Linuron	94	Terbuthylazine	86
Epoxyconazole	85	Metolachlor	97
Penconazole	90		
Alachlor	93		
Propiconazole-1	89		
Flufenacet	91		
Diflufenicam	58		
Triallate	42		

For further applications on CHROMABOND® phases visit our online application database at www.mn-net.com/apps



Standard protocol for CHROMABOND® HR-X

MN Appl. No. 304310



Column type:
CHROMABOND® HR-X, 3 mL, 200 mg
REF 730931

Sample pretreatment: if necessary, adjust pH value

Column conditioning: 5 mL methanol

Equilibration: 5 mL water

Sample application: slowly aspirate the sample through the column

Column washing: 5 mL water – methanol (95:5, v/v)

Elution: after drying 3 x 2 mL methanol

Further analysis: if necessary, evaporate and redissolve in a suitable solvent; HPLC or GC

Highest reproducibility Barbiturates from serum

MN Appl. No. 304290



Column type:
CHROMABOND® HR-X, 3 mL, 200 mg
REF 730931

Sample: 100 ng/mL each in serum

Column conditioning: 5 mL methanol, 5 mL dist. water

Sample application: 1 mL spiked serum

Column washing: 5 mL water

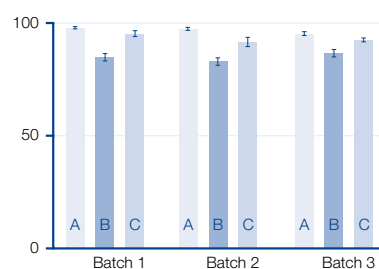
Elution: after drying 3 x 2 mL methanol

Further analysis: HPLC on NUCLEODUR® 100-5 C₁₈ ec, see MN Appl. No. 117820

- Within each batch
- From batch to batch

Compounds:

- A phenobarbital
- B pentobarbital
- C hexobarbital



Ordering information

Volume	Adsorbent weight →				500 mg	1 g	Pack of
	30 mg	60 mg	100 mg	200 mg			
CHROMABOND® HR-X polypropylene columns (85 µm)							
1 mL	730934		730935				30
3 mL		730936		730931	730937		30
6 mL				730938	730939		30
15 mL					730940	730941	20
CHROMABOND® HR-X polypropylene columns (85 µm) · BIGpacks							
3 mL				730931.250			250
6 mL				730938.250	730939.250		250
CHROMABOND® HR-X polypropylene columns (45 µm)							
1 mL	730934P45		730935P45				30
3 mL		730936P45		730931P45			30
CHROMABOND® LV-HR-X (85 µm)							
15 mL	732130	732131		732132			30
CHROMABOND® MULTI 96 HR-X							
	96 x 10 mg (45 µm)	96 x 25 mg (45 µm)	96 x 50 mg (85 µm)	96 x 100 mg (85 µm)			Pack of
	738530.010M	738530.025M	738530.050M	738530.100M			1

Glass columns, LV columns and MULTI 96 on request.

For further applications on CHROMABOND® phases visit our online application database at www.mn-net.com/apps



CHROMABOND® HR-XC strong cation exchanger

★ Key features

- High purity material, highest reproducibility and lowest blank values due to an optimized production process
- Outstanding recovery rates especially for the enrichment of basic analytes

🔧 Technical characteristics


- Strong acidic benzenesulfonic acid cation exchanger, exchange capacity 1.0 meq/g, base material polystyrene-divinylbenzene copolymer, pH stability 1–14
- Spherical particles, size 45 µm and 85 µm (standard), pore size 65–75 Å, very large specific surface 800 m²/g, pore volume 1.4 cm³/g, RP capacity 300 mg/g (caffeine in water)

✓ Recommended application

- Basic active ingredients from heavily matrix-contaminated samples like, e.g., urine, plasma, serum
- Fungicides from food
- Basic analytes like, e.g., amines
- Bases with pKa 2–10

Standard protocol for CHROMABOND® HR-XC

MN Appl. No. 304790

 **Column type:**
CHROMABOND® HR-XC, 3 mL, 200 mg
REF 730952

Sample pretreatment: adjust pH value if necessary

Column conditioning: 5 mL methanol

Equilibration: 5 mL water

Sample application: slowly aspirate sample through the column

Column washing 1: 2 mL 0.1 mol/L HCl in Wasser


Column washing 2 / Elution 1: 2 mL methanol (neutral and acidic compounds); if necessary, further washing steps

Elution 2: after drying 5 mL methanol – 5 % NH₃ (basic compounds)

Further analysis: if necessary, evaporate and redissolve in a suitable solvent; HPLC or GC

Fractionation of acidic, neutral and basic analytes from serum

MN Appl. No. 304780

 **Column type:**
CHROMABOND® HR-XC, 3 mL, 200 mg
REF 730952

Sample: 1 mL spiked matrix, acidified with 200 µL 2 % H₃PO₄

Column conditioning: 5 mL methanol, then 5 mL water

Sample application: slowly aspirate sample through the column

Column washing: 2 mL 0.1 mol/L HCl

Elution: 2.5 mL methanol (fraction A: neutral and acidic analytes); then 5 mL methanol – NH₃ 90:10, v/v (fraction B: basic analytes)

Further analysis:

for fraction A:

HPLC, e.g., on NUCLEODUR® C₁₈ Gravity, see MN Appl. No. 122230;

for fraction B:

HPLC on NUCLEODUR® C₈ Gravity, see MN Appl. No. 118520

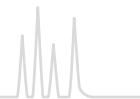
Recovery rates [%]

Compound	Fraction A: neutral and acidic analytes		Fraction B: basic analytes			
	HR-XC		Compound	HR-XC	Oasis® MCX	Strata™ X-C
Suprofen	108		Doxepin	101	68	82
Naproxen	85		Imipramine	95	71	85
Tolmetin	73		Amitriptyline	94	72	78
Phenobarbital	108		Trimipramine	92	70	81
Indomethacin	33					
Hexobarbital	80					

Ordering information

Volume	Adsorbent weight →				200 mg	500 mg	Pack of
	30 mg	60 mg	100 mg	150 mg			
CHROMABOND® HR-XC polypropylene columns (85 µm)							
1 mL	730969		730049				30
3 mL		730956			730952	730953	30
6 mL				730957		730955	30
CHROMABOND® HR-XC polypropylene columns (45 µm)							
1 mL	730969P45		730049P45				30
3 mL		730956P45			730952P45		30
Size →	S		M		L		
Minimum adsorbent weight →	50 mg		140 mg		400 mg		Pack of
CHROMAFIX® HR-XC cartridges (85 µm)							
	731755		731756		731757		50

Glass columns, LV columns and MULTI 96 on request.



CHROMABOND® HR-XA strong anion exchanger

★ Key features

- High purity material with highest reproducibility and lowest blank values due to an optimized production process
- Outstanding recovery rates especially for the enrichment of acidic analytes

🔧 Technical characteristics

- Strong basic quaternary ammonium anion exchanger, exchange capacity 0.25 meq/g, pKa ~ 18, base material polystyrene-divinylbenzene copolymer, pH stability 1–14
- Spherical particles, size 45 µm and 85 µm (standard), pore size 55–65 Å, very large specific surface 850 m²/g, pore volume 1.4 cm³/g, RP capacity 350 mg/g (caffeine in water)

✓ Recommended application

- Acidic active ingredients from heavily matrix-contaminated samples like, e.g., urine, plasma, serum
- Phenolic acids
- Acidic herbicides
- Weak / medium-strength acids with pKa 2–8

Standard protocol for CHROMABOND® HR-XA

MN Appl. No. 304970

Column type:

CHROMABOND® HR-XA, 3 mL, 200 mg

REF 730951

Sample pretreatment:

individual sample preparation with reference to analytes and matrix

Column conditioning: 5 mL methanol

Equilibration: 5 mL water

Sample application: slowly aspirate sample through the column

Column washing 1: 2 mL 0.1 mol/L NaOH in water

Column washing 2 / Elution 1: 2 mL methanol (neutral and basic compounds), if necessary, further washing steps

Elution 2: after drying 5 mL methanol – 1 to 10 % formic acid (acidic compounds)

Further analysis: if necessary, evaporate and redissolve in a suitable solvent; HPLC or GC MN Appl. No. 304970

Ordering information

Volume	Adsorbent weight →			150 mg	200 mg	500 mg	Pack of
	30 mg	60 mg	100 mg				
CHROMABOND® HR-XA polypropylene columns (85 µm)							
1 mL	730968		730727				30
3 mL		730950			730951	730954	30
6 mL				730958		730966	30
CHROMABOND® HR-XA polypropylene columns (45 µm)							
1 mL	730968P45		730727P45				30
3 mL		730950P45			730951P45		30
Size →	S		M		L		
Minimum adsorbent weight →	70 mg		180 mg		510 mg		Pack of
CHROMAFIX® HR-XA cartridges (85 µm)							
	731768		731769		731770		50

Glass columns, LV columns and MULTI 96 on request.

For further applications on CHROMABOND® phases visit our online application database at www.mn-net.com/apps



CHROMABOND® HR-XCW weak cation exchanger

★ Key features

- High purity material, highest reproducibility and lowest blank values due to an optimized production process
- Outstanding recovery rates especially for enrichment of strongly basic analytes

🔧 Technical characteristics

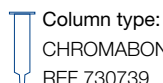
- Weak acidic carboxylic acid cation exchanger, exchange capacity >0.7 meq/g, pKa ~ 5, base material spherical PS/DVB copolymer, pH stability 1–14
- Spherical particles, size 45 µm and 85 µm (standard), pore size 50–60 Å very large specific surface 850 m²/g, pore volume 1.2–1.4 cm³/g, RP capacity 350 mg/g (caffeine in water)

✓ Recommended application

- Basic compounds like quaternary amines
- Active ingredients from heavily matrix-contaminated samples like, e.g., urine, plasma, serum
- Strong bases with pKa > 10

Standard protocol for CHROMABOND® HR-XCW

MN Appl. No. 305300



Column type:

CHROMABOND® HR-XCW, 3 mL, 200 mg

REF 730739

Sample pretreatment:

individual sample preparation with reference to analytes and matrix

Column conditioning: 5 mL methanol, 5 mL water

Sample application:

slowly aspirate sample through the column

Column washing 1: 2 mL acidified water

Column washing 2 / Elution 1: 2 mL methanol (neutral and acidic compounds), further washing steps if necessary

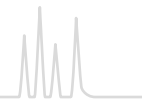
Elution 2: after drying 2 x 2 mL methanol – 1 to 5 % formic acid (strongly basic compounds)

Further analysis: if necessary, evaporate and redissolve in a suitable solvent; HPLC or GC

Ordering information

Volume	Adsorbent weight →						Pack of
	30 mg	60 mg	100 mg	150 mg	200 mg	500 mg	
CHROMABOND® HR-XCW polypropylene columns (85 µm)							
1 mL	730731		730733				30
3 mL		730735			730739	730741	30
6 mL				730737		730743	30
CHROMABOND® HR-XCW polypropylene columns (45 µm)							
1 mL	730731P45		730733P45				30
3 mL		730735P45			730739P45		30
CHROMAFIX® HR-XCW cartridges (85 µm)							
Size →	S		M		L		
Minimum adsorbent weight →	60 mg		160 mg		450 mg		Pack of
	731774		731775		731776		50

Glass columns, LV columns and MULTI 96 on request.



CHROMABOND® HR-XAW weak anion exchanger

★ Key features

- High purity material with highest reproducibility and lowest blank values due to an optimized production process
- Outstanding recovery rates especially for enrichment of acidic analytes

🔧 Technical characteristics

- Weak basic secondary and tertiary ammonium anion exchanger, exchange capacity >0.5 meq/g, pKa ~ 6, base material spherical PS/DVB copolymer, pH stability 1–14
- Spherical particles, size 45 µm and 85 µm (standard), pore size 55–65 Å very large specific surface 850 m²/g, pore volume 1.2–1.4 cm³/g, RP capacity 350 mg/g (caffeine in water)

✓ Recommended application

- Perfluorinated surfactants
- Acidic compounds like sulfonates
- Active ingredients from heavily matrix-contaminated samples like, e.g., urine, plasma, serum
- Strong acids with pKa < 1

Standard protocol for CHROMABOND® HR-XAW

MN Appl. No. 305200

 **Column type:**
CHROMABOND® HR-XAW, 3 mL, 200 mg
REF 730748

Sample pretreatment:
individual sample preparation with reference to analytes and matrix
Column conditioning: 5 mL methanol
Equilibration: 5 mL water

Sample application:
slowly aspirate sample through the column

Column washing 1: 25 mmol/L ammonium acetate
Column washing 2 / Elution 1: 2 mL methanol (neutral and basic compounds), if necessary, further washing steps


Elution 2: after drying 2 x 2 mL methanol – 1 to 5 % ammonia (strongly acidic compounds)

Further analysis: if necessary, evaporate and redissolve in a suitable solvent; HPLC or GC

Analysis of perfluorinated surfactants from water

MN Appl. No. 305140

Application in accordance with DIN 38407-42

 **Column type:**
CHROMABOND® HR-XAW, 3 mL, 60 mg
REF 730747

Sample: 500 mL water, spiked with 1 mL standard solution (20 µg/L of each compound)

Column conditioning:
2 mL methanol + 5 % ammonia, then 2 mL methanol, finally 2 mL water

Sample application:
slowly aspirate sample through the column

Column washing: 2 mL water, then 2 mL acetone – acetonitrile – formic acid (50:50:1, v/v/v), finally 2 mL methanol

Elution: 2 mL methanol with 5 % ammonia

Further analysis: evaporate to dryness in a stream of nitrogen under slight heating, and redissolve in a suitable solvent for HPLC

Recovery rates [%]

Compound	Recovery
Perfluoropropionic acid (PFPrA)	103
Perfluoropentanoic acid (PFPeA)	94
Perfluorohexanoic acid (PFHxA)	94
Perfluorooctanoic acid (PFOA)	95
Perfluorooctane sulfonate K salt (PFOS)	81
Perfluorododecanoic acid (PFDoDA)	82

Ordering information

Volume	Adsorbent weight →			150 mg	200 mg	500 mg	Pack of
	30 mg	60 mg	100 mg				
CHROMABOND® HR-XAW polypropylene columns (85 µm)							
1 mL	730728		730729				30
3 mL		730747			730748	730744	30
6 mL				730749		730745	30
CHROMABOND® HR-XAW polypropylene columns (45 µm)							
1 mL	730728P45		730729P45				30
3 mL		730747P45			730748P45		30
Size →	S		M		L		
Minimum adsorbent weight →	50 mg		120 mg		360 mg		Pack of
CHROMAFIX® HR-XAW cartridges (85 µm)							
	731771		731772		731773		50

Glass columns, LV columns and MULTI 96 on request.



CHROMABOND® Easy polar, bifunctionally modified polystyrene-divinylbenzene copolymer

★ Key features

The Easy effect:

- Without preconditioning
- Due to bifunctional modification much more hydrophilic than conventional polystyrene-divinylbenzene polymers
- Easily wettable with water

🔧 Technical characteristics

- Polar modified polystyrene-divinylbenzene copolymer with a weak anion exchanger, specific surface 650–700 m²/g, particle size 80 μm, pore size 50 Å, pH stability 1–14

✓ Recommended application

- Polar herbicides and pesticides from water (acidic, neutral, basic), polar phenols from water, polyaromatic compounds, polychlorinated biphenyls
- Drug analysis from urine, blood, serum, plasma
- Pharmaceuticals and active ingredients from tablets, creams

Recovery of pesticides

MN Appl. No. 303220

Private communication Mr. Kühn, GUB, Waldshut Tiengen, Germany

Column type:
CHROMABOND® Easy, 3 mL, 200 mg
REF 730754

Column conditioning:
1 mL water, 3 mL methanol, 1 mL water

Sample application:
aspirate the sample through the column

Elution:
3 x 1 mL acetone

Further analysis: HPLC with NUCLEOSIL® 120-5 C₁₈

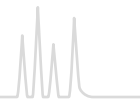
Recovery rates [%]

Compound	Recovery	Compound	Recovery
Desisopropylatrazine	90	Metalaxyl	96
2,6-Dichlorobenzamide	93	Isoproturon	94
Desethylatrazine	93	Diuron	94
Hexazinone	69	Metazachlor	97
Terbacil	65	Propazine	95
Simazine	81	Terbutylazine	93
Cyanazine	93	Linuron	96
Desethylterbutylazine	91	Metolachlor	97
Methabenzthiazuron	94	Triallate	61
Chlortoluron	91	Standard	64
Atrazine	92		

Ordering information

Volume	Adsorbent weight →				500 mg	1 g	Pack of
	30 mg	60 mg	100 mg	200 mg			
CHROMABOND® Easy polypropylene columns							
1 mL	730751		730752				30
3 mL		730753		730754	730759		30
6 mL				730755	730756		30
15 mL					730757	730758	20
CHROMABOND® Easy polypropylene columns · BIGpacks							
3 mL				730754.250			250
6 mL				730755.250			250
CHROMABOND® LV-Easy							
15 mL				732472			30
CHROMABOND® MULTI 96 Easy							
	96 x 25 mg		96 x 50 mg		96 x 100 mg		Pack of
	738520.025M		738520.050M		738520.100M		1
CHROMABOND® Easy adsorbent							
					730661		20 g

For further applications on CHROMABOND® phases visit our online application database at www.mn-net.com/apps



CHROMABOND® HR-P polystyrene-divinylbenzene adsorbent resin

★ Key features

- Very high binding capacity, up to 30 % of adsorbent weight (for comparison: silica adsorbents about 3 %)

🔧 Technical characteristics

- Highly porous polystyrene-divinylbenzene copolymer, specific surface 1200 m²/g, particle size 50–100 µm

✓ Recommended application

- Aromatic compounds, phenols from water, nitroaromatics from water, pesticides from water, PAHs from oil

Aromatic amines from water samples

MN Appl. No. 301810

Private communication M. Leß, T.C. Schmidt, Department of Chemistry, University Marburg, 1997

Compounds investigated: aromatic amines

Column type:

CHROMABOND® HR-P, 3 mL, 200 mg
REF 730108

Sample pretreatment: adjust to pH 9 using 10 mol/L NaOH

Column conditioning: 2 mL each of methanol, acetonitrile and 10⁻⁵ mol/L aqueous sodium hydroxide solution




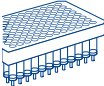

Sample application: aspirate sample through the column with about 10 mL/min

Column washing: wash with 2 mL dist. water, dry 5 min under vacuum

Elution: 3 x 1 mL methanol – acetonitrile (1:1, v/v)

For recovery rates of numerous aromatic amines please see application 301810 at www.mn-net.com/apps

Ordering information

	Volume	Adsorbent weight →			Pack of	
		100 mg	200 mg	500 mg		1 g
	CHROMABOND® HR-P polypropylene columns					
	1 mL	730280			30	
	3 mL		730108	730117	30	
	6 mL		730119	730111	730118	30
	CHROMABOND® HR-P polypropylene columns · BIGpack					
	3 mL		730108.250		250	
	CHROMABOND® HR-P glass columns					
	3 mL		730108G		30	
	6 mL			730111G	730118G	30
	CHROMABOND® LV-HR-P					
	15 mL		732108		30	
	Size →		S	M	L	
	Minimum adsorbent weight →		50 mg	130 mg	380 mg	Pack of
	CHROMAFIX® HR-P cartridges					
			731839	731840	731841	50
					96 x 100 mg	Pack of
	CHROMABOND® MULTI 96 HR-P					
					738111.100M	1
	CHROMABOND® HR-P adsorbent					
					730615	20 g

For further applications on CHROMABOND® phases visit our online application database at www.mn-net.com/apps



CHROMABOND® PS-RP / PS-OH⁻ / PS-H⁺ / PS-Mix / PS-Ag⁺ / PS-Ba²⁺ phases for RP and ion chromatography

★ Key features

- Very low degree of swelling, thus very well suited for chromatography, reliable function over the whole pH range from 0–14

🔧 Technical characteristics

- Base material high purity polystyrene-divinylbenzene copolymers (PS/DVB), pore size 100 Å, particle size 100 µm
- Different modifications for different applications from the elimination of nonpolar compounds up to the removal of specific polar components

✓ Recommended application

- Removal of interfering compounds
- Improves chromatographic separation, if the interfering components overlap with the analyte in the chromatogram
- Improves lifetime of the chromatographic column, since interfering components can irreversibly block the column packing
- Enrichment of the analytes

Properties of the individual modifications

PS-RP	hydrophobic PS/DVB copolymer	removal of organic interfering components from water
PS-OH ⁻	strong PS/DVB anion exchanger, OH ⁻ form capacity 0.6 meq/g	removal or concentration of anions from water increasing the pH value in acidic samples
PS-H ⁺	strong PS/DVB cation exchanger, H ⁺ form capacity 2.9 meq/g	removal or concentration of cations from water decreasing the pH value of basic samples
PS-Mix	mixture of PS-OH ⁻ and PS-H ⁺	desalting of water
PS-Ag ⁺	strong PS/DVB cation exchanger, Ag ⁺ form	removal of halide ions from water
PS-Ba ²⁺	strong PS/DVB cation exchanger, Ba ²⁺ form	removal of sulfate ions from water

Removal of halides from aqueous samples shown for the trace analysis of nitrate besides an excess of chloride or bromide

MN Appl. No. 301930 / 302750

Compounds investigated:

20 ppm nitrate besides 2500 ppm chloride or 500 ppm bromide

Column type:

CHROMAFIX® PS-Ag⁺ (M) 0.8 mL, min. 250 mg
REF 731865

Column conditioning: 1 mL dist. water

Sample application and Elution:

apply 4 x 1 mL sample fractions to the cartridge, discard 1st mL, collect 2nd, 3rd and 4th mL separately

Further analysis: HPLC with column 250 x 4 mm NUCLEOSIL® Anion II; eluent 2 mmol/L potassium hydrogen phthalate pH 6, 2 mL/min; detection: indirect UV, 280 nm (see applications 110440 and 110450 at www.mn-net.com/apps)

Ordering information

Phases	Adsorbent weight → 3 mL / 200 mg	3 mL / 500 mg	6mL / 500 mg	6 mL / 900 mg	Pack of		
CHROMABOND® PS polypropylene columns							
PS-RP	730765	730692	730693		30		
PS-OH ⁻	730396	730344	730378		30		
PS-H ⁺	730690	730376	730377		30		
PS-Mix		730394		730310	30		
CHROMAFIX® PS cartridges							
Phases	Size S	Minimum adsorbent weight →	Size M	Minimum adsorbent weight →	Size L	Minimum adsorbent weight →	Pack of
PS-RP	731877	60 mg	731875	160 mg			50
PS-OH ⁻	731868	70 mg	731860	180 mg	731862	510 mg	50
PS-H ⁺	731867	90 mg	731861	220 mg	731863	620 mg	50
PS-Mix	731909	70 mg					50
PS-Ag ⁺	731866	100 mg	731865	250 mg			50
PS-Ba ²⁺	731871	100 mg	731870	250 mg			50