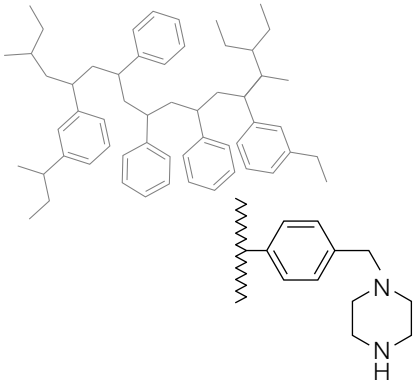
Modern polymeric CHROMABOND® SPE phases

CHROMABOND® HR-XAW

Technical data

Weak anion exchanger based on polystyrene-divinylbenzene copolymer (PS / DVB)

SPE mode:	Ion exchange and reversed phase (mixed-mode)
Interactions:	Ionic, hydrophobic and π–π
Particle shape:	Spherical
pH stability:	1–14
Particle size:	85 µm and 45 µm
Pore size:	55–65 Å
Specific surface:	850 m^2/g
RP capacity:	350 mg/g (caffeine in water)
Exchange capacity:	> 0.5 meq/g, pKa ~ 6



Recommended application

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

Good to know

A possible replacement for:

- Oasis® WAX
- Strata™-X-AW

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 in reference to the compounds and matrix.

Conditioning:	5 mL methanol, then 5 mL water (do not let the column run dry!)
Sample aspiration:	The sample is passed through the column by vacuum or pressure (max. 1000 mL sample volume)
Washing 1:	25 mM ammonium acetate in water
Washing 2: / Elution 1:	2 mL methanol (elution of neutral and basic compounds)
Drying:	With nitrogen or air
Elution 2:	2 x 2 mL 1–5 % ammonia in methanol (elution of strongly acidic compounds)

Acidic methanol (formic acid) can be used alternatively for elution 2. Here an interruption of the interactions with the anion exchanger results by a protonation of the analyte.

Further analysis:

Evaporation and reconstitution (if necessary); HPLC or GC

These conditions are a starting point for SPE method development. Further optimisation may be required to improve results.

GC columns

For more information on our high performance GC capillary columns, please visit *www.mn-net.com/optima*.

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Applications

Polyfluorinated compounds (PFCs) from fresh and sea water

MN Appl. No. 306730

Chromatographic conditions

Columns: CHROMABOND® HR-XAW / 85 µm / 3 mL / 60 mg

MN REF: 730747

Pretreatment: 50 mL water sample spiked with PFC standard mixture (β = 0.5 ng for each analyt in 50 mL water), adjusted to pH value 7–8

Conditioning: 2 mL 0.1 % ammonium hydroxide in methanol, 2 mL methanol, 2 mL water

Aspiration: Pretreated sample solution is passed through the column at a flow of 5–10 mL/min

Washing: 2 mL water, 2 mL 1.0 % formic acid in acetone / acetonitrile (50:50, v/v), 2 mL methanol

Drying: No drying

Elution: 2.4 mL 0.1 % ammonium hydroxide in methanol

Solvent change: Evaporate eluate to dryness at 40 °C under a stream of nitrogen and reconstitute in 0.5 mL water / methanol (40:60, v/v)

Did you know?

Properties of PFCs:

- Persistent in the environment
- Water-, dirt- and fat-repellent; resistant against aggressive chemicals
- Often toxic; many PFCs are bioaccumulative
- Thermally and chemically stable

Daily use of PFCs:

- Fire-fighting foam
- Paper finishing
- Fibre coating
- Textile coating, e.g., seat covers, carpets, outdoor clothing
- Cookware
- Food packaging, e.g., pizza cartons, paper cups
- Building material, e.g., water resistant lacquer

Recovery rates:

Matrix	Water		Seawater	
Analyte	Recovery [%]	RSD [%, n = 3]	Recovery [%]	RSD [%, n = 3]
PFPeA	98	2.9	84	1.6
PFHxA	96	1.7	91	1.3
PFHpA	106	2.9	82	2.4
PFOA	99	2.3	86	2.5
PFNA	114	2.7	93	2.0
PFDA	110	2.6	90	2.3
PFUdA	96	5.3	85	3.5
PFDoA	84	1.6	76	2.1
PFTrDA	75	2.9	70	2.6
PFTeDA	66	4.3	74	4.0
L-PFBS	96	1.6	91	0.7
PFHxS	100	1.6	84	0.8
L-PFHpS	104	1.8	90	3.2
PFOS	103	2.0	84	2.3
L-PFDS	72	4.8	75	3.4
FOSA*	0	–	0	–
N-MeFOSAA*	3	–	0	–
N-EtFOSAA*	2	–	0	–
4:2 FTS	96	1.3	46	2.0
6:2 FTS	108	2.4	53	0.8
8:2 FTS	105	5.2	63	4.5
PFBA**	356	3.6	65	1.8
M_4-PFBA**	139	4.0	64	1.4
M_4-PFOA	101	3.7	89	2.8
M_2-PFHxA	95	2.2	84	0.5
M_4-PFHxS	96	2.2	84	1.7
M_5-PFNA	107	3.5	90	1.8
M_4-PFOS	101	2.4	82	1.2
M_2-PFDA	103	3.6	87	3.3
M_2-PFDoA	79	3.3	75	2.1
M_2-PFUdA	90	3.3	82	2.3

* Due to the organic washing steps, these analytes were eluted into waste.

** In accordance to the properties of the analyte molecules, a not satisfying S/N ratio is received resulting in an improper integration for calculating the recovery rate.

Note: An LC-MS/MS method for determination of polyfluorinated compounds is shown in MN Appl. No 128900