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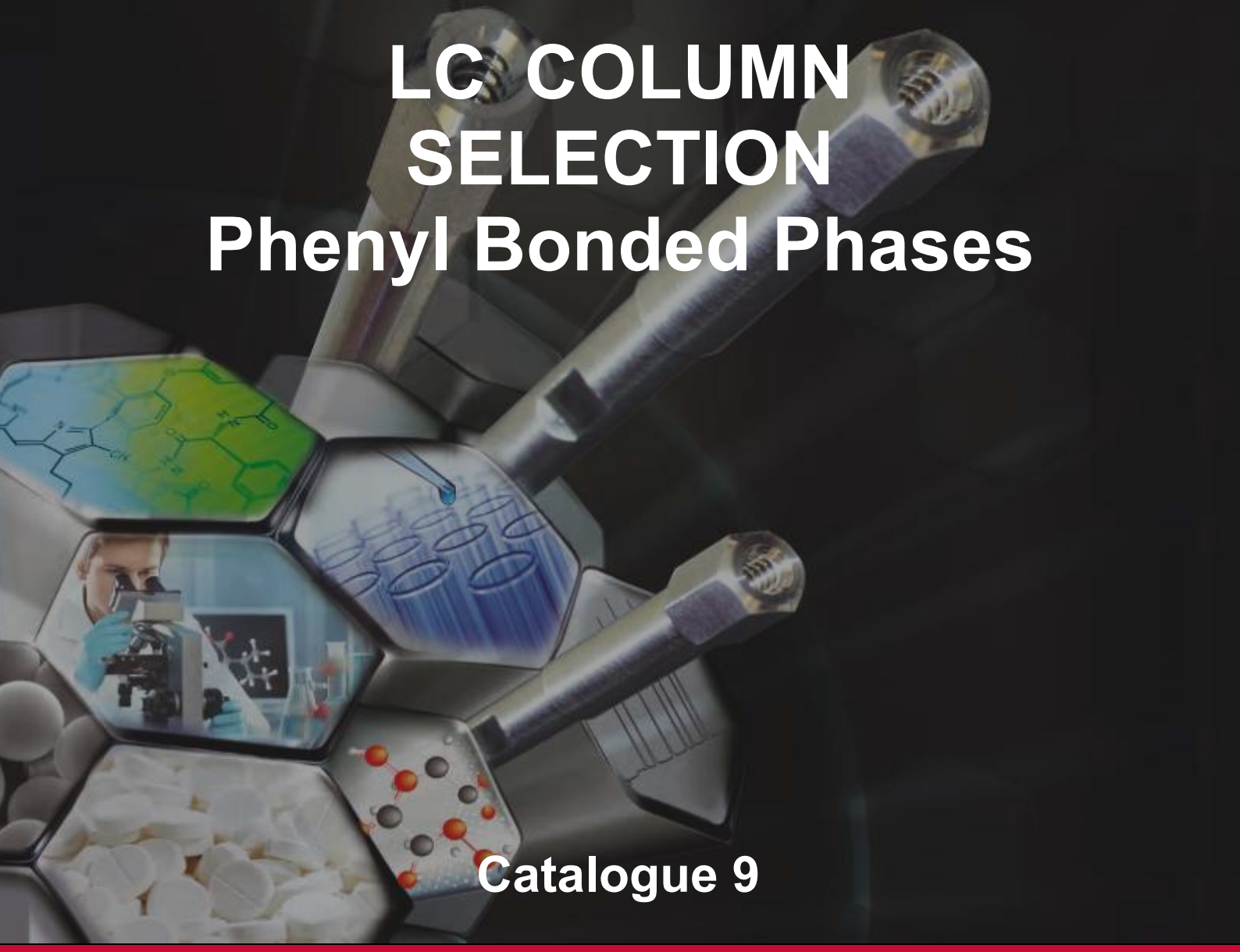
Chromatography Columns and Supplies

LC COLUMN SELECTION
Phenyl Bonded Phases



Catalogue 9

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PHENYL BONDED PHASES

Phenyl bonded silica phases offer an alternative reversed-phase selectivity to alkyl bonded phases. They show lower hydrophobic retention than their C18 counterparts, with similar retention characteristics to C8-bonded phases. Phenyl stationary phases interact with compounds containing aromatic groups or unsaturated bonds through the involvement of π-π interactions. For aromatic solutes containing an electronegative atom or group (e.g. F, NO_2), the degree of π-π interactions with the phenyl phase will increase.

Due to the rigid nature of the phenyl ring, solute shape can also influence selectivity.

Traditional phenyl phases tend to be less stable than the corresponding C8 or C18 reversed-phases. Additionally, the larger steric size of the phenyl group reduces surface coverage, leaving a greater number of exposed silanol sites. More recently introduced phenyl phases show greater stability. The use of a purer silica base, more effective and reproducible bonding procedures and the availability of a sterically protected phenylsilane all contribute to greater phase robustness and reduced column bleed.

Conventional phenyl phases are bonded to the silica through a propyl spacer. The incorporation of the longer chain hexyl spacer results in increased hydrophobic retention and aromatic selectivity. Phenyl bonded (mainly with propyl linker) and Phenyl-Hexyl bonded phases are listed in separate tables below.

Phenyl Bonded Phases

Phase	Manufacturer	Particle Size (µm)	Pore Size (Å)	Surface Area (m^2/g)	Page
Acclaim Phenyl-1	Thermo Scientific	3	120	300	235, 238
Accucore Phenyl-X[1]		2.6	80	130	223, 225, 227
ACE C18-AR[2]	Advanced Chromatography Technologies (ACT)	2[3], 3, 5, 10	100	300	64, 65, 74, 75
ACE Phenyl		2[3], 3, 5, 10	100	300	64, 74, 75
CAPCELL PAK UG Phenyl	Shiseido	5	120	300	79, 80
Chromegabond Alkyl Phenyl	ES Industries	3, 5, 10	60, 80, 100	475, 200, 190	102
Cogent Phenyl Hydride	MicroSolv	4	100	350	186-188
Develosil Phenyl-UG	Nomura	3, 5	140	300	95, 96
Genesis Phenyl	Grace	4	120	300	124
Hypersil GOLD Phenyl	Thermo Scientific	1.9, 3, 5	175	220	228, 230
Hypersil Phenyl		5	120	170	232
Hypersil Phenyl-2		5	120	170	232
Hypersil BDS Phenyl		3, 5	130	170	233
Inertsil Phenyl	GL Sciences	5	150	320	116, 117
Inertsil Phenyl-3		2, 3, 5	100	450	108, 112-114
InertSustain Phenyl		3, 5	100	350	5
Kromasil Phenyl	Akzo Nobel	5, 10, 16	100	320	141, 143-146
NUCLEOSIL Phenyl	Macherey-Nagel	5, 7	100, 120	350, 200	163-165
ProntoSIL Phenyl	Bischoff	3, 5	120	300	78
Syncronis Phenyl	Thermo Scientific	1.7, 3, 5	100	320	234
TSKgel Super-Phenyl	Tosoh Bioscience	2.3	110	-	247
Vydac 219MS[4]	Grace	5	300	-	119-121
Waters µBondapak Phenyl	Waters	10	125	330	265
Waters Nova-Pak Phenyl		4	60	120	265
Waters Spherisorb Phenyl		3, 5	80	220	262, 263
YMC Phenyl	YMC	3, 5	120	330	270, 272
YMC-Triart Phenyl		1.9, 3, 5	120	-	6
ZORBAX Phenyl	Agilent Technologies	5	70	330	279, 280
ZORBAX SB-Phenyl		3.5, 5	80	180	281
ZORBAX Eclipse XDB-Phenyl		3.5, 5	80	180	281

[1] Superficially porous phase [2] C18 with integral Phenyl, classed as L1 [3] As ACE Excel column [4] Diphenyl phase

Phenyl-Hexyl Bonded Phases

Phase	Manufacturer	Particle Size (µm)	Pore Size (Å)	Surface Area (m^2/g)	Page
Accucore Phenyl-Hexyl[1]	Thermo Scientific	2.6	80	130	223, 225, 227
Brownlee SPP Phenyl-Hexyl[1]	Perkin Elmer	2.7	90	150	195
Epic Phenyl-Hexyl	ES Industries	1.8, 3, 5, 10	120	350	100
HALO Phenyl-Hexyl[1]	Advanced Materials Technology	2.7	90	150	125, 126, 129
HALO-5 Phenyl-Hexyl[1]		5	90	90	125, 128, 129
Kromasil Eternity Phenyl-Hexyl	Akzo Nobel	2.5, 5	100	330	150, 151
NUCLEODUR Phenyl-Hexyl	Macherey-Nagel	1.8, 3, 5	110	340	6
NUCLEOSHELL Phenyl-Hexyl[1]		2.7	90	130	6

[1] Superficially porous phase