WATERS COLUMNS AND ANALYTICAL STANDARDS AND REAGENTS SELECTION GUIDE

Waters' comprehensive family of columns offer scientists a diverse range of selectivity and particle size choices that provide exceptional scalability within UPLC, UHPLC, HPLC, and preparative LC applications. In addition, Waters' growing family of QC Reference Materials and application-specific standards help users to effortlessly confirm column and system performance.

CORTECS UPLC, UHPLC, and HPLC Columns

	Particle/Ligand	Ligand Density	Carbon Load	Endcapped	USP Class No.	pH Range	Temperature Limits	Surface Area	Performance Standards	Application Standards
C_{18}+ **UPLC:** 1.6 µm **UHPLC:** 2.7 µm **HPLC:** 2.7 µm		2.4 µmol/m²	5.7%	Yes	L1	2–8	Low pH = 45 °C High pH = 45 °C	100 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose reversed-phase column designed to maximize efficiency. A charged-surface-silica solid-core particle enables excellent peak shape for basic compounds at low pH, especially in low concentration modifier mobile phases. Offers complementary selectivity to traditional C_{18} columns.					**Bonding**: Trifunctional C_{18}, fully endcapped, bonded to a charged surface-silica solid-core substrate.			
C_{18} **UPLC:** 1.6 µm **UHPLC:** 2.7 µm **HPLC:** 2.7 µm		2.7 µmol/m²	6.6%	Yes	L1	2–8	Low pH = 45 °C High pH = 45 °C	100 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose reversed-phase column designed to maximize efficiency. Provides balanced retention of acids, bases, and neutrals at low- and mid-range pH.					**Bonding**: Trifunctional C_{18}, fully endcapped bonded to a silica solid-core substrate.			
T3 **UPLC:** 1.6 µm **UHPLC:** 2.7 µm **HPLC:** 2.7 µm		1.6 µmol/m²	4.7%	Yes	L1	2–8	Low pH = 45 °C High pH = 45 °C	100 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Aqueous mobile phase compatible column designed to maximize efficiency. Provides balanced retention for both polar and non-polar compounds.					**Bonding**: Intermediate T3 (C_{18}) bonding and endcapping, bonded to a silica solid-core particle substrate.			
C_8 **UPLC:** 1.6 µm **UHPLC:** 2.7 µm **HPLC:** 2.7 µm		3.4 µmol/m²	4.5%	Yes	L7	2–8	Low pH = 45 °C High pH = 45 °C	100 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose column designed to maximize efficiency. Similar selectivity, but shorter retentivity when compared to typical C_{18} phases.					**Bonding**: Trifunctional C_8, fully endcapped, bonded to a silica solid-core substrate.			
Shield RP18 **UPLC:** 1.6 µm **UHPLC:** 2.7 µm **HPLC:** 2.7 µm		3.2 µmol/m²	6.4%	Yes	L1	2–8	Low pH = 45 °C High pH = 45 °C	100 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Excellent method development column designed to give maximum efficiency. Provides alternative selectivity when compared to typical C_{18} phases, especially for phenolic compounds.					**Bonding**: Monofunctional embedded polar C_{18}, fully endcapped, bonded to a silica solid-core substrate.			
Phenyl **UPLC:** 1.6 µm **UHPLC:** 2.7 µm **HPLC:** 2.7 µm		3.2 µmol/m²	5.9%	Yes	L11	2–8	Low pH = 45 °C High pH = 45 °C	100 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Excellent method development column designed to give maximum efficiency as well as alternate selectivity, particularly in regard to polyaromatic compounds.					**Bonding**: Trifunctional C_6 phenyl, fully endcapped, bonded to a silica solid-core substrate.			
HILIC **UPLC:** 1.6 µm **UHPLC:** 2.7 µm **HPLC:** 2.7 µm		N/A	Unbonded	No	L3	1–5	Low pH = 45 °C High pH = 45 °C	100 m²/g	**HILIC QC Reference Material** P/N: 186007226	**HILIC QC Reference Material** P/N: 186007226
		Performance Benefits: High efficiency column designed for retention of extremely polar, basic, water-soluble analytes.					**Bonding**: Unbonded, high-purity, silica solid-core substrate.			

ACQUITY UPLC and XBridge HPLC/UHPLC Columns

	Particle/Ligand	Ligand Density	Carbon Load	Endcapped	USP Class No.	pH Range	Temperature Limits	Surface Area	Performance Standards	Application Standards
BEH C_{18} **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5, 10 µm	MAXPEAK PREMIER	3.1 µmol/m²	18%	Yes	L1	1–12	Low pH = 80 °C High pH = 60 °C	185 m²/g	**Neutrals QC Reference Material** P/N: 186006360 **Preparative Chromatography Mix** P/N: 186006703	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose column ideally suited for method development due to extreme pH stability and applicability to the broadest range of compound classes.					**Bonding**: Trifunctional C_{18}, fully endcapped, bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
BEH C_8 **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5, 10 µm		3.2 µmol/m²	13%	Yes	L7	1–12	Low pH = 60 °C High pH = 60 °C	185 m²/g	**Neutrals QC Reference Material** P/N: 186006360 **Preparative Chromatography Mix** P/N: 186006703	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose column with shorter retentivity than a typical C_{18}, suited for method development due to extreme pH stability and applicability for the broadest range of compound classes.					**Bonding**: Trifunctional C_8, fully endcapped, bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
BEH Shield RP18 **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5, 10 µm	MAXPEAK PREMIER	3.3 µmol/m²	17%	Yes	L1	2–11	Low pH = 50 °C High pH = 45 °C	185 m²/g	**Neutrals QC Reference Material** P/N: 186006360 **Preparative Chromatography Mix** P/N: 186006703	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Alternate selectivity compared to straight chain C_{18}, particularly with phenolic analytes. Compatible with 100% aqueous-phase composition.					**Bonding**: Monofunctional embedded polar C_{18}, fully endcapped, bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
BEH Phenyl **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm		3.0 µmol/m²	15%	Yes	L11	1–12	Low pH = 80 °C High pH = 60 °C	185 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Excellent method development column for alternate selectivity, particularly in regard to polyaromatic compounds. Povides unique level of pH stability for a phenyl bonded phase.					**Bonding**: Trifunctional C_6 phenyl, fully endcapped, bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
BEH HILIC **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm		N/A	Unbonded	No	L3	1–9	Low pH = 45 °C High pH = 45 °C	185 m²/g	**HILIC QC Reference Material** P/N: 186007226	**HILIC QC Reference Material** P/N: 186007226
		Performance Benefits: Excellent for retention of very polar, basic, water-soluble analytes. Specifically designed and tested for HILIC separations using mobile phases containing high concentrations of organic solvent.					**Bonding**: Unbonded Ethylene Bridged Hybrid (BEH) substrate.			
BEH Amide **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm	MAXPEAK PREMIER	7.5 µmol/m²	12%	No	L68	2–11	Low pH = 90 °C High pH = 90 °C	185 m²/g	**HILIC QC Reference Material** P/N: 186007226	**HILIC QC Reference Material** P/N: 186007226
		Performance Benefits: Rugged HILIC stationary phase designed to separate a wide range of very polar compounds. Especially good at separating carbohydrates (saccharides) using high concentrations of organic modifier, elevated temperature, and high pH. Compatible with all modern detectors including MS, ELSD, UV, and fluorescence.					**Bonding**: Trifunctional amide bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
Amino Acid BEH C_{18}, 130 Å **UPLC:** 1.7 µm		3.1 µmol/m²	18%	Yes	L1	1–12	Low pH = 80 °C High pH = 60 °C	185 m²/g	**Amino Acids Standard** P/N: WAT088122 **MassPREP OST Standard** P/N: 186004135	**Amino Acids Standard** P/N: WAT088122 **MassPREP OST Standard** P/N: 186004135
		Performance Benefits: pH and temperature stable, small pore (130 Å), C_{18} LC column for amino acid analysis. Specifically tested with amino acid standard.					**Bonding**: Trifunctional C_{18}, fully endcapped, bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
Peptide BEH C_{18}, 130 Å **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5, 10 µm	MAXPEAK PREMIER	3.1 µmol/m²	18%	Yes	L1	1–12	Low pH = 80 °C High pH = 60 °C	185 m²/g	**Cytochrome *c* Digestion Standard** P/N: 186006371 **Preparative Chromatography Mix** P/N: 186006703	**Peptide Retention Standard** P/N: 186006555
		Performance Benefits: pH and temperature stable, small pore, C_{18} LC column for peptides. Specifically QC tested with a tryptic digest of cytochrome *c* using 0.1% TFA containing eluents.					**Bonding**: Trifunctional C_{18}, fully endcapped, bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
Peptide BEH C_{18}, 300 Å **UPLC:** 1.7 µm **HPLC:** 3.5, 5, 10 µm	MAXPEAK PREMIER	3.1 µmol/m²	12%	Yes	L1	1–12	Low pH = 80 °C High pH = 60 °C	90 m²/g	**Cytochrome *c* Digestion Standard** P/N: 186006371 **Preparative Chromatography Mix** P/N: 186006703	**Peptide Retention Standard** P/N: 186006555
		Performance Benefits: pH and temperature stable, wide pore, C_{18} LC column for peptides. Specifically QC tested with a tryptic digest of cytochrome *c* using 0.1% TFA containing eluents.					**Bonding**: Trifunctional C_{18}, fully endcapped, bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
Protein BEH C_4, 300 Å **UPLC:** 1.7 µm **HPLC:** 3.5, 5, 10 µm		2.4 µmol/m²	8%	No	L26	1–10	Low pH = 80 °C High pH = 60 °C	90 m²/g	**MassPREP Protein Standard Mix** P/N: 186004900	**MassPREP Protein Standard Mix** P/N: 186004900
		Performance Benefits: pH and temperature stable, wide pore, C_4 LC column for proteins. Specifically QC tested with protein mixture.					**Bonding**: Proprietary monofunctional C_4 bonding to an Ethylene Bridged Hybrid (BEH) substrate.			
Protein BEH SEC, 125 Å **UPLC:** 1.7 µm **UHPLC:** 2.5 µm **HPLC:** 3.5 µm		4.9 µmol/m²	15%	No	L33	1–8	Low pH = 60 °C High pH = 60 °C	395 m²/g	**BEH125 Protein Standard Mix** P/N: 186006519	**BEH125 Protein Standard Mix** P/N: 186006519
		Performance Benefits: Mid size pore SEC column for proteins from 1000 to 80,000 daltons. Specifically QC tested with protein/peptide standards.					**Bonding**: Diol bonded to a high pore volume Ethylene Bridged Hybrid (BEH) substrate.			
Protein BEH SEC, 200 Å **UPLC:** 1.7 µm **UHPLC:** 2.5 µm **HPLC:** 3.5 µm		5.5 µmol/m²	12%	No	L33	1–8	Low pH = 60 °C High pH = 60 °C	220 m²/g	**BEH200 SEC Protein Standard Mix** P/N: 186006518	**BEH200 SEC Protein Standard Mix** P/N: 186006518
		Performance Benefits: Mid size pore SEC column for proteins from 10,000 to 450,000 daltons. Specifically QC tested with protein standards.					**Bonding**: Diol bonded to a high pore volume Ethylene Bridged Hybrid (BEH) substrate.			
Protein BEH SEC, 450 Å **UPLC:** 2.5 µm **HPLC:** 3.5 µm		4.8 µmol/m²	9%	No	L33	1–8	Low pH = 60 °C High pH = 60 °C	80 m²/g	**BEH450 SEC Protein Standard Mix** P/N: 186006842	**BEH450 SEC Protein Standard Mix** P/N: 186006842
		Performance Benefits: Wide pore SEC column for proteins from 100,000 to 1.5 million daltons. Specifically QC tested with protein standards.					**Bonding**: Diol bonded to a high pore volume Ethylene Bridged Hybrid (BEH) substrate.			
Oligonucleotide BEH C_{18}, 130 Å **UPLC:** 1.7 µm **HPLC:** 2.5 µm	MAXPEAK PREMIER	3.1 µmol/m²	18%	Yes	L1	1–12	Low pH = 80 °C High pH = 60 °C	185 m²/g	**MassPREP OST Standard** P/N: 186004135	**MassPREP OST Standard** P/N: 186004135
		Performance Benefits: pH and temperature stable, small pore (130 Å), C_{18} LC column for synthetic DNA and RNA. Specifically QC tested with synthetic DNA ladder.					**Bonding**: Trifunctional C_{18}, fully endcapped, bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
Glycan BEH Amide, 130 Å **UPLC:** 1.7 µm **UHPLC:** 2.5 µm **HPLC:** 3.5 µm	MAXPEAK PREMIER	7.15 µmol/m²	N/A	No	L68	2–11	Low pH = 90 °C High pH = 90 °C	194 m²/g	**Glycan Performance Test Standard** P/N: 186006349	**Glycan Performance Test Standard** P/N: 186006349 **Dextran Calibration Standard** P/N: 186006841
		Performance Benefits: A HILIC based column for LC and LC-MS analysis of fluorescently labeled glycans.					**Bonding**: Trifunctional amide bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
Glycoprotein BEH Amide, 300 Å **UPLC:** 1.7 µm	MAXPEAK PREMIER	7.15 µmol/m²	N/A	No	L68	2–11	Low pH = 90 °C High pH = 90 °C	93 m²/g	**Glycoprotein Performance Test Standard** P/N: 186008010	**Glycoprotein Performance Test Standard** P/N: 186008010
		Performance Benefits: A HILIC column for LC and LC-MS analyses of glycoproteins, glycoprotein fragments, glycopeptides, and released and labeled glycans.					**Bonding**: Trifunctional amide bonded to an Ethylene Bridged Hybrid (BEH) substrate.			
Glycan BEH C_{18} AX, 95 Å **UPLC:** 1.7 µm **UHPLC:** 2.5 µm	MAXPEAK PREMIER	1.6 µmol/m²	17%	Yes	L78	2–10	Low pH = 60 °C High pH = 60 °C	270 m²/g	**Sialylated Glycan Performance Test Standard** P/N: 186007983	**Sialylated Glycan Performance Test Standard** P/N: 186007983
		Performance Benefits: Excellent retention of polar acidic analytes, and an alternative selectivity compared to traditional C_{18} phases. LC column that is designed for acidic glycan analysis. Specifically QC tested with sialylated glycan performance standard.					**Bonding**: Mixed-mode C_{18}/anion -exchange bonding, fully endcapped, bonded to a highly retentive BEH 95 Å particle.			

ACQUITY UPLC and XSelect HPLC/UHPLC Columns

	Particle/Ligand	Ligand Density	Carbon Load	Endcapped	USP Class No.	pH Range	Temperature Limits	Surface Area	Performance Standards	Application Standards
CSH C_{18} **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5, 10 µm	MAXPEAK PREMIER	2.3 µmol/m²	15%	Yes	L1	1–11	Low pH = 80 °C High pH = 45 °C	185 m²/g	**Neutrals QC Reference Material** P/N: 186006360 **Preparative Chromatography Mix** P/N: 186006703	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose reversed-phase column that offers excellent pH stability and rapid mobile-phase re-equilibration for method development. Charged Surface Hybrid (CSH™) Technology enables superior peak shape and increased loading capacity for basic compounds.					**Bonding**: Trifunctional C_{18}, fully endcapped, bonded to a Charged Surface Hybrid (CSH) substrate.			
CSH Phenyl-Hexyl **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm	MAXPEAK PREMIER	2.3 µmol/m²	14%	Yes	L11	1–11	Low pH = 80 °C High pH = 45 °C	185 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose alternative selectivity ligand that provides pi-pi interactions with polyaromatic compounds, while maintaining excellent reproducibility at pH extremes. Charged Surface Hybrid (CSH) Technology enables superior peak shape and increased loading capacity for basic compounds.					**Bonding**: Trifunctional C_6 phenyl, fully endcapped, bonded to a Charged Surface Hybrid (CSH) substrate.			
CSH Fluoro-Phenyl **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm		2.3 µmol/m²	10%	No	L43	1–8	Low pH = 60 °C High pH = 45 °C	185 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose column that provides a very high degree of analyte selectivity, especially when using low pH mobile phases. Charged Surface Hybrid (CSH) Technology enables superior peak shape and increased loading capacity for basic compounds.					**Bonding**: Trifunctional propyl fluorophenyl, non-endcapped, bonded to a Charged Surface Hybrid (CSH) substrate.			
Peptide CSH C_{18}, 130 Å **UPLC:** 1.7 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5, 10 µm	MAXPEAK PREMIER	2.3 µmol/m²	15%	Yes	L1	1–11	Low pH = 80 °C High pH = 45 °C	185 m²/g	**Cytochrome *c* Digestion Standard** P/N: 186006371	**Peptide Retention Standard** P/N: 186006555
		Performance Benefits: Works particularly well with 0.1% formic acid for LC or LC-MS applications. Specifically QC tested with a tryptic digest of cytochrome *c* using 0.1% formic acid containing eluents.					**Bonding**: Trifunctional C_{18}, fully endcapped, bonded to a Charged Surface Hybrid (CSH) substrate.			
HSS C_{18} **UPLC:** 1.8 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm		3.2 µmol/m²	15%	Yes	L1	1–8	Low pH = 45 °C High pH = 45 °C	230 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Resistant to acid hydrolysis at low pH, this column offers increased retention and superior peak shape.					**Bonding**: High coverage trifunctional C_{18}, fully endcapped, bonded to a High Strength Silica (HSS) substrate.			
HSS C_{18} SB **UPLC:** 1.8 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm		1.6 µmol/m²	8%	No	L1	2–8	Low pH = 45 °C High pH = 45 °C	230 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Unique, non-endcapped C_{18} chemistry designed specifically for method development scientists. Offers unique selectivity for bases (SB) when operating under low pH conditions.					**Bonding**: Intermediate coverage trifunctionally bonded C_{18}, non-endcapped, bonded to a High Strength Silica (HSS) substrate.			
HSS T3 **UPLC:** 1.8 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm	MAXPEAK PREMIER	1.6 µmol/m²	11%	Yes	L1	2–8	Low pH = 45 °C High pH = 45 °C	230 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Aqueous mobile-phase compatible column designed for exceptional polar compound retention.					**Bonding**: Intermediate T3 (C_{18}) bonding and endcapping, bonded to a High Strength Silica (HSS) substrate.			
Peptide HSS T3, 100 Å **UPLC:** 1.8 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm	MAXPEAK PREMIER	1.6 µmol/m²	11%	Yes	L1	2–8	Low pH = 45 °C High pH = 45 °C	230 m²/g	**Cytochrome *c* Digestion Standard** P/N: 186006371	**Peptide Retention Standard** P/N: 186006555
		Performance Benefits: Aqueous mobile-phase compatible column designed for exceptional polar compound retention in proteins.					**Bonding**: T3 (C_{18}) bonding and endcapping, bonded to a High Strength Silica (HSS) substrate.			
HSS PFP **UPLC:** 1.8 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm		3.2 µmol/m²	7%	No	L43	2–8	Low pH = 45 °C High pH = 45 °C	230 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: A general purpose column designed to maximize selectivity differences for Lewis bases through pi-pi interactions. The rigid aromatic ring provides additional selectivity based on shape, dipole moment, and hydrogen bonding interactions.					**Bonding**: Trifunctional pentafluoro-phenyl, non-endcapped, bonded to a High Strength Silica (HSS) substrate.			
HSS CN **UPLC:** 1.8 µm **UHPLC:** 2.5 µm ***XP*** **HPLC:** 3.5, 5 µm		2.0 µmol/m²	5%	No	L10	2–8	Low pH = 45 °C High pH = 45 °C	230 m²/g	**Neutrals QC Reference Material** P/N: 186006360	–
		Performance Benefits: A general purpose column that shows contrasting analyte selectivity when compared to C_{18} phases. This column can be used for both reversed- and normal-phase separations.					**Bonding**: Sterically hindered, mono-functional cyanopropyl, non-endcapped, bonded to a High Strength Silica (HSS) substrate.			

Atlantis UPLC, UHPLC, and HPLC Columns

	Particle/Ligand	Ligand Density	Carbon Load	Endcapped	USP Class No.	pH Range	Temperature Limits	Surface Area	Performance Standards	Application Standards
BEH C_{18} AX **UPLC:** 1.7 µm **UHPLC:** 2.5 µm **HPLC:** 5 µm	MAXPEAK PREMIER	1.6 µmol/m²	17%	Yes	L78	2–10	Low pH = 60 °C High pH = 60 °C	270 m²/g	**Neutrals QC Reference Material** P/N: 186006360	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Excellent retention of polar acidic analytes, and an alternative selectivity when compared to traditional C_{18} phases, especially for ionizable analytes. Excellent low- and high-pH stability, low MS bleed, and compatible with 100% aqueous mobile phases.					**Bonding**: Mixed-mode C_{18}/anion -exchange bonding, fully endcapped, bonded to a high retentive BEH 95 Å particle.			
BEH Z-HILIC **UPLC:** 1.7 µm **UHPLC:** 2.5 µm **HPLC:** 5 µm	MAXPEAK PREMIER	3.0 µmol/m²	17%	No	L122	2–10	Low pH = 60 °C High pH = 60 °C	270 m²/g	**HILIC QC Reference Material** P/N: 186007226	**HILIC QC Reference Material** P/N: 186007226
		Performance Benefits: Excellent retention and complementary selectivity for a wide range of polar compounds using HILIC. Ideal for wide panel metabolite methods development. Excellent low- and high-pH stability and low MS bleed.					**Bonding**: Trifunctionally bonded zwitterionic sulfobetaine functional group to a high retentive BEH 95 Å particle.			
Silica T3 **HPLC:** 3, 5, 10 µm		1.6 µmol/m²	14%	Yes	L1	2–8	Low pH = 45 °C High pH = 45 °C	330 m²/g	**Neutrals QC Reference Material** P/N: 186006360 **Preparative Chromatography Mix** P/N: 186006703	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Designed for enhanced polar compound retention, offering superior stability under low pH conditions and is compatible with 100% aqueous mobile phases.					**Bonding**: Intermediate T3 (C_{18}) bonding and endcapping, bonded to a high purity silica substrate.			
Silica HILIC **HPLC:** 3, 5 µm		No	Unbonded	No	L3	1–5	Low pH = 45 °C High pH = 45 °C	330 m²/g	**HILIC QC Reference Material** P/N: 186007226	**HILIC QC Reference Material** P/N: 186007226
		Performance Benefits: Excellent for retention of very polar, basic, water soluble analytes. Specifically designed and tested for HILIC separations using mobile phases containing high concentrations of organic solvent.					**Bonding**: Unbonded high purity silica substrate.			
Silica dC$_{18}$ **HPLC:** 3, 5, 10 µm		1.6 µmol/m²	12%	Yes	L1	3–7	Low pH = 45 °C High pH = 45 °C	330 m²/g	**Neutrals QC Reference Material** P/N: 186006360 **Preparative Chromatography Mix** P/N: 186006703	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: Retention of polar compounds. Designed for compatibility with 100% aqueous mobile phases.					**Bonding**: Difunctional C_{18} bonding, fully endcapped, bonded to a high purity silica substrate.			

SunFire HPLC Columns

	Particle/Ligand	Ligand Density	Carbon Load	Endcapped	USP Class No.	pH Range	Temperature Limits	Surface Area	Performance Standards	Application Standards
Silica C_{18} **HPLC:** 3.5, 5, 10 µm		3.5 µmol/m²	16%	Yes	L1	2–8	Low pH = 50 °C High pH = 40 °C	340 m²/g	**Neutrals QC Reference Material** P/N: 186006360 **Preparative Chromatography Mix** P/N: 186006703	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose method development column. Very high loading capacity, particularly for basic analytes in low pH mobile phases. Ideally suited for purification and impurity profile assays.					**Bonding**: Difunctional C_{18}, fully endcapped, bonded to a high purity silica substrate.			
Silica C_8 **HPLC:** 3.5, 5, 10 µm		3.5 µmol/m²	12%	Yes	L7	2–8	Low pH = 40 °C High pH = 40 °C	340 m²/g	**Neutrals QC Reference Material** P/N: 186006360 **Preparative Chromatography Mix** P/N: 186006703	**Reversed-Phase QC Reference Material** P/N: 186006363
		Performance Benefits: General purpose method development column. Very high loading capacity, particularly for basic analytes in low pH mobile phases. Less hydrophobic, therefore, less retentive than C_{18} for most analytes.					**Bonding**: Difunctional C_8, fully endcapped, bonded to a high purity silica substrate.			

BioResolve UPLC, UHPLC and HPLC Columns

	Particle/Ligand	Ligand Density	Carbon Load	Endcapped	USP Class No.	pH Range	Temperature Limits	Surface Area	Performance Standards	Application Standards
RP mAb Polyphenyl **UPLC:** 2.7 µm **UHPLC:** 2.7 µm **HPLC:** 2.7 µm		5.5 µmol/m²	0.95%	Yes	L11	2–7	Low pH = 90 °C High pH = 50 °C	22.2 m²/g	**mAb Subunit Standard** P/N: 186008927	**mAb Subunit Standard** P/N: 186008927
		Performance Benefits: Intended for reversed-phase analysis of intact or sub-unit-digested monoclonal antibodies (mAbs) and antibody-drug conjugates (ADCs) using LC-UV and LC-MS.					**Bonding**: Polyphenyl bonding onto a solid-core, silica particle with 450 Å pores, fully endcapped.			
SCX mAb **UPLC:** 3 µm **UHPLC:** 3 µm **HPLC:** 3 µm		N/A	N/A	N/A	N/A	2–12	Recommended to maintain at 30 °C	2–3 m²/g	**mAb Charge Variant Standard** P/N: 186009057	**mAb Charge Variant Standard** P/N: 186009057
		Performance Benefits: Specifically designed for cation-exchange analysis of intact mono-clonal antibodies (mAb) or IdeS digest charge variants using LC-UV or LC-MS methods.					**Bonding**: SO_3			
SEC mAb **UPLC:** 3 µm **UHPLC:** 3 µm **HPLC:** 3 µm		5.5 µmol/m²	12%	No	L33	1–8	Low pH = 60 °C High pH = 60 °C	220 m²/g	**mAb Size Variant Standard** P/N: 186009429	**mAb Size Variant Standard** P/N: 186009429
		Performance Benefits: Specifically designed and QC tested for reliable SEC separations of monoclonal antibody (mAb) aggregates, monomers, and fragments on any LC platform.					**Bonding:** Diol bonded to a high pore volume Ethylene Bridged Hybrid (BEH) substrate.			

MAXPEAK PREMIER

Select column configurations for chemistries that show the MaxPeak™ Premier symbol are available in the MaxPeak Premier Column format. The MaxPeak Premier Columns utilize MaxPeak High Performance Surface (HPS) Technology which increases reproducibility, improves peak shape, and enables more accurate recovery by minimizing unwanted analyte/surface interactions.

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