

thermo scientific



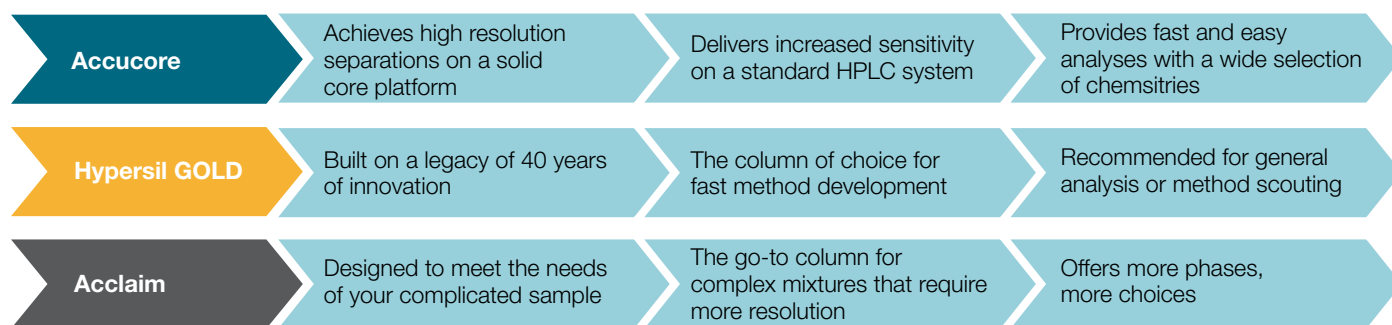
Meet your separation needs

Analytical UHPLC and HPLC columns

ThermoFisher
SCIENTIFIC

Analytical chromatography separations are very diverse. The portfolio of Thermo Scientific™ UHPLC and HPLC high resolution, high throughput columns is designed to meet your unique challenges. With a wide range of innovative column chemistries and size formats, we provide you the most complementary column for your separation. This guide will introduce you to our broad range of reversed-phase chemistries and column families.

Which Thermo Scientific columns meets your separation needs?



Accucore UHPLC and HPLC columns

Thermo Scientific™ Accucore™ columns are based on solid core (superficially porous) particles yielding highly efficient, rugged separations for high performance liquid chromatography (HPLC) and liquid chromatography-mass spectrometry (LC-MS) applications. They offer lower backpressures than fully porous sub-2 µm particles. These are the columns of choice when sample volumes are limited, or when higher throughput is desired.

We offer the widest portfolio of solid core chemistries (1.5, 2.6, 4 µm), which benefits you with options to optimize your resolution and separations.

Hypersil GOLD UHPLC and HPLC columns

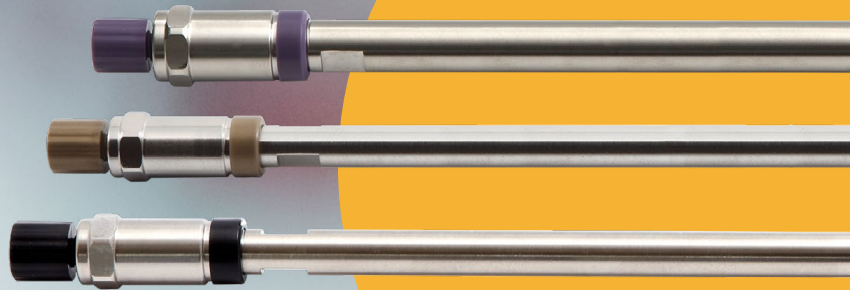
These general-purpose columns for HPLC and LC-MS applications provide exceptional peak shape affording confidence in your analytical data. With minimal peak tailing, these columns are packed to achieve exceptional efficiency, peak shape and resolution.

Thermo Scientific™ Hypersil GOLD™ columns offer a broad range of phases and particle sizes (1.9, 3, 5 µm). They are your go-to column for starting method development.

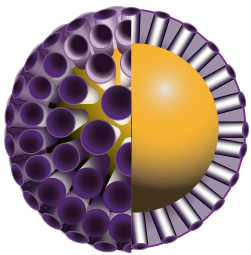
Acclaim UHPLC and HPLC columns

For complex samples requiring higher resolution, Thermo Scientific™ Acclaim™ columns offer unique chemistries for high performance. Featuring high surface area for greater resolution, these columns provide confidence in quantitative data for LC-MS and HPLC analysis.

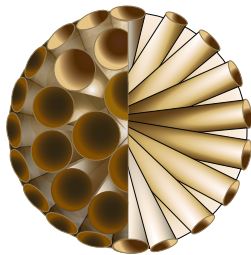
Column selections range from C18 to mixed-mode (2.2, 3, 5 µm) which provide the diversity you need to solve your complicated sample separations.



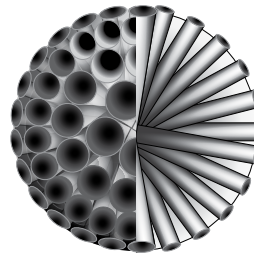
UHPLC and HPLC columns portfolio



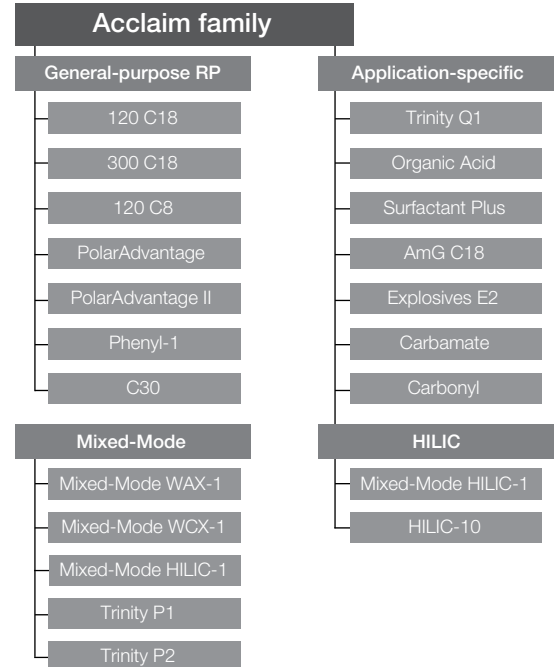
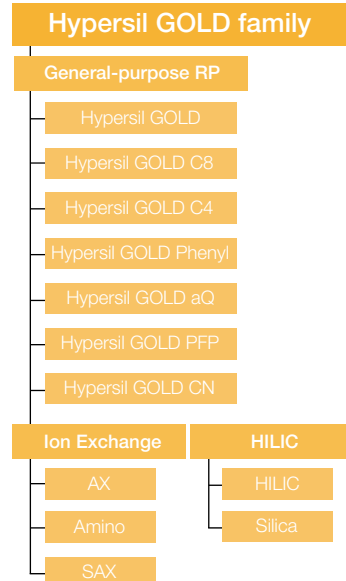
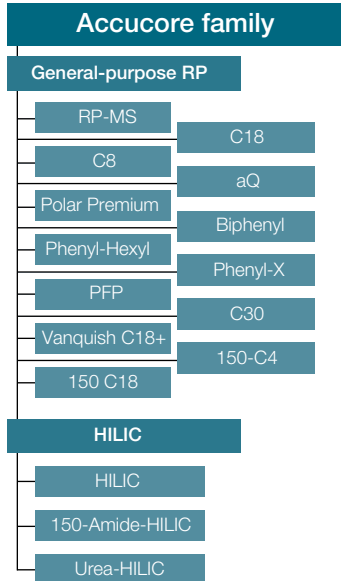
Solid core. High throughput. High resolution.



Excellent resolution. Efficiency. Sensitivity.



Superior resolution for challenging samples.



Column chemistry selection—**which column family is right for your application?**

Hydrophobic capacity is an important consideration when choosing a C18 column. When adapting a method from a different column or developing a new method, surface area and carbon load must be considered, as they provide the primary source for analyte retention on the column. Refer to pages 10–11 for specifications.



The solid core **Accucore column** family includes both low and high hydrophobic capacity options (RP-MS and C18). The Accucore column line takes the best surface chemistries of the Hypersil GOLD and Acclaim column families and puts them on a solid core support for users looking for high resolution separations without elevated backpressures of a sub-2 μm particle.



The **Hypersil GOLD column** is fully porous with low hydrophobic capacity (10% carbon load) resulting in fast run times. It is a great starting point for high efficiency separations of low to moderate complexity samples.



The **Acclaim 120 C18 column** is fully porous with a higher hydrophobic capacity (18% carbon load). This column delivers high resolution through hydrophobic retention. The Acclaim family is designed around specialty chemistries to resolve complicated samples.



Visit
[thermofisher.com/lccolumns](https://www.thermofisher.com/lccolumns)
 for more information about
 our columns, including technical
 details and additional
 resources.

Quick guide to choosing a phase

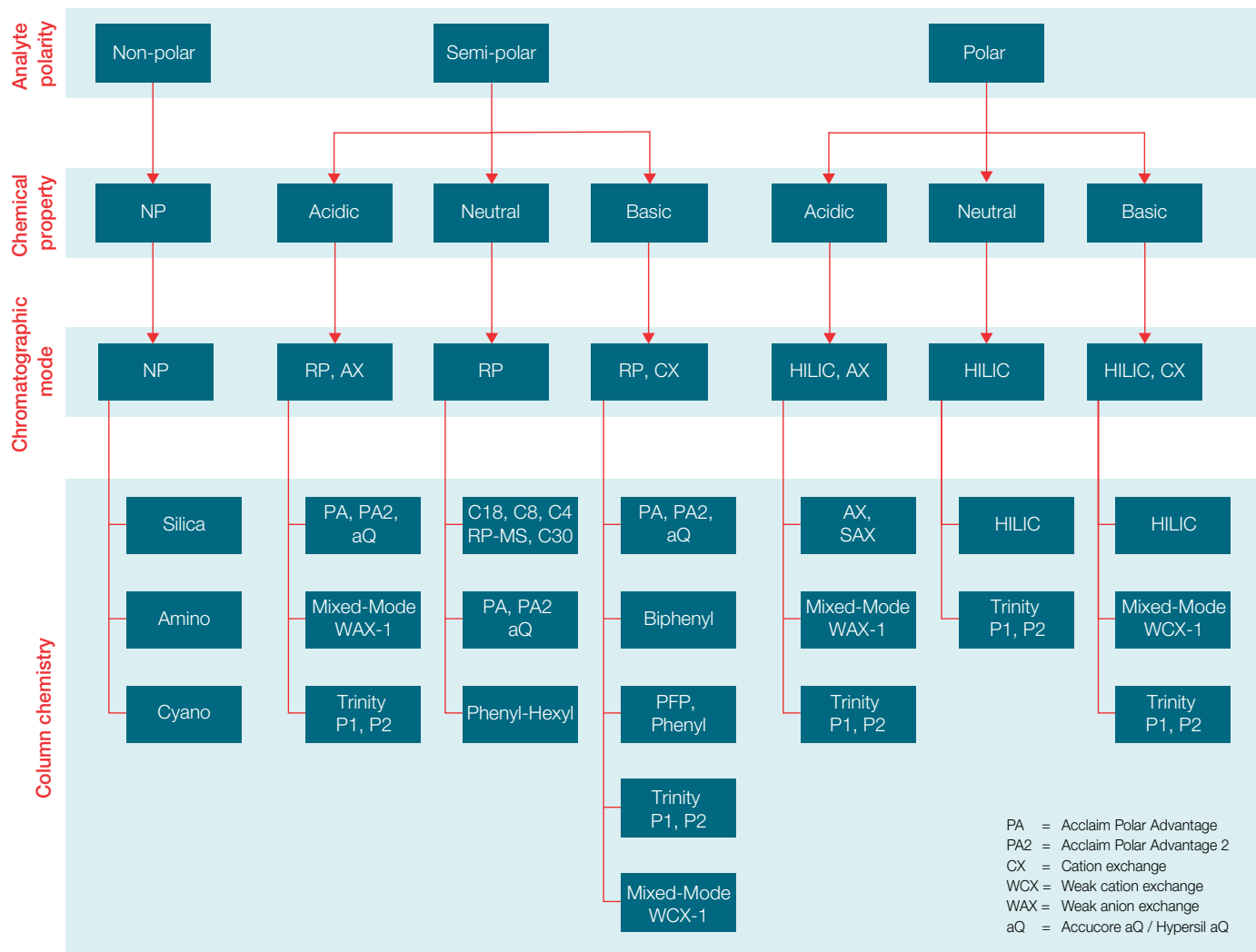
		C18	Polar phases	Aromatic	HILIC
Low to moderate complexity sample	Fully porous	Hypersil GOLD columns	Hypersil GOLD aQ columns	Hypersil GOLD PFP columns	Hypersil GOLD HILIC columns
	Solid core	Accucore RP-MS columns	Accucore aQ columns	Accucore Phenyl-Hexyl columns	Accucore HILIC columns
Moderate to high complexity sample	Fully porous	Acclaim 120 C18 columns	Acclaim Polar Advantage II columns	Acclaim Phenyl-1 columns	Acclaim HILIC-10 columns
	Solid core	Accucore C18 columns	Accucore Polar Premium columns	Accucore Biphenyl columns	Accucore Amide-HILIC columns

Columns overview

	Reversed-phase	HILIC/Normal phase	Ion-exchange	Specialty phases
Accucore UHPLC and HPLC columns	C18, C18+, C8, C4, aQ, Polar Premium, RP-MS, Biphenyl, Phenyl-Hexyl, Phenyl-X, PFP, C30, XL C18, XL C8	HILIC, Urea HILIC, Amide HILIC		
Hypersil Gold UHPLC and HPLC columns	C18, C8, C4, aQ, PFP, Phenyl	Cyano (CN), Amino, Silica, HILIC	AX, SAX	
Acclaim UHPLC and HPLC columns	C18, C8, PA, PA2, Phenyl-1, C30	HILIC-10, Mixed-Mode HILIC-1	Trinity P1, Trinity P2, Mixed-Mode WAX-1, Mixed-Mode WCX-1	SEC, AmG C18, Organic Acids, Surfactant, Surfactant Plus, Explosives E2, Trinity Q1, Carbamate, Carbonyl C18

Selection guide

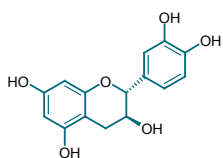
These are the general guidelines intended to identify the recommended column choice. The paths shown illustrate column choices based on analyte polarity, solubility and chemical properties.



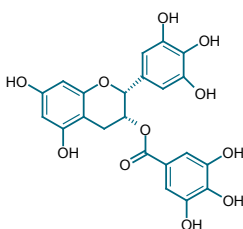
Column chemistry selection

The goal of the chromatographic separation is resolution of the compounds. One of the key factors to achieve resolution is the functional group bound to the surface of the packing material, also referred to as the column chemistry. During the chromatographic separation, understanding the chemical nature of the compounds being separated is key to choosing a column chemistry. This can be seen by comparing the separation of several catechins using different column chemistries and the impact on selectivity.

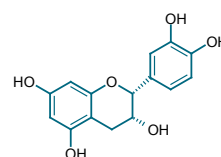
1. Catechin



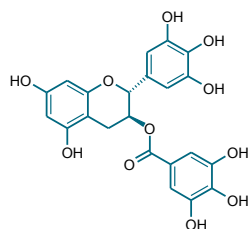
2. Epigallocatechin Gallate



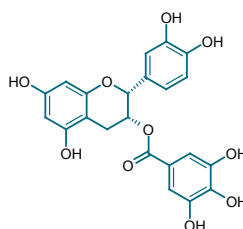
3. Epicatechin



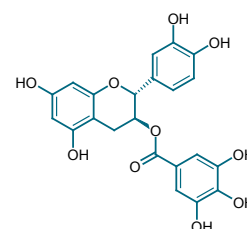
4. Galocatechin Gallate



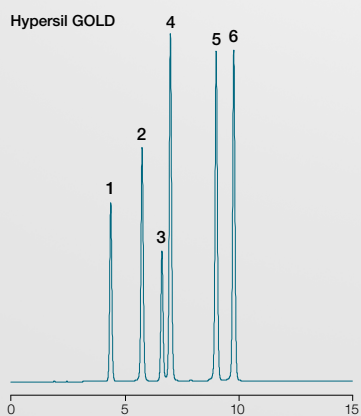
5. Epicatechin Gallate



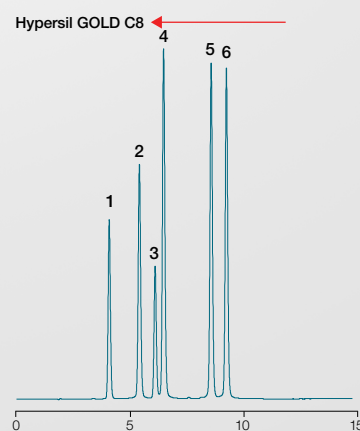
6. Catechin Gallate



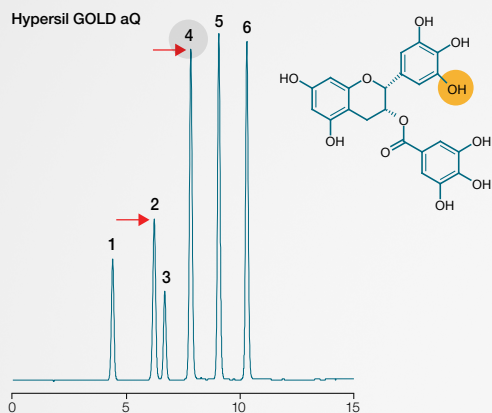
When these catechins are separated using the Hypersil GOLD column, the analytes elute in a predictable order with outstanding peak shape and good resolution, as shown below.



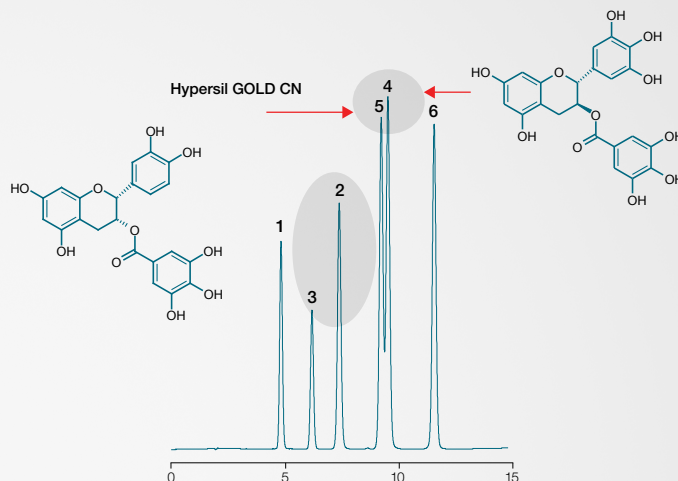
When analyzed using a Thermo Scientific™ Hypersil GOLD™ C8 column, as shown below, all six analytes maintain the same elution order, but with reduced retention, which is to be expected as hydrophobic interactions are reduced.



When analyzed using a Thermo Scientific™ Hypersil GOLD™ aQ HPLC column, the chromatogram below shows that the same elution order as the Hypersil GOLD column results. There is extra retention of analytes 2 and 4, which can be attributed to the fact that the gallicatechins have an additional OH group to interact with the polar endcapping.

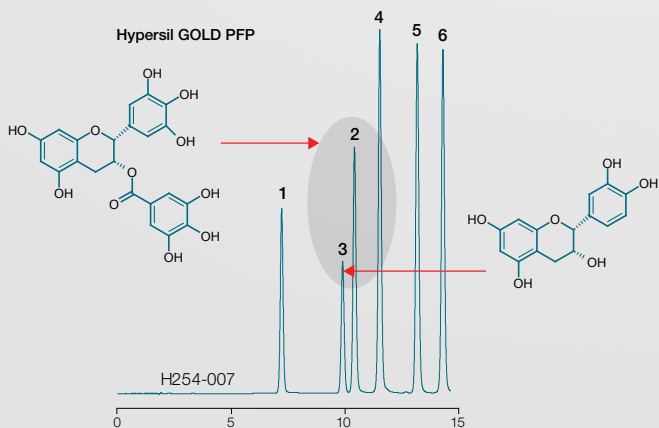


The Hypersil GOLD cyano phase shows another reversal of elution order between gallicatechin gallate and epicatechin gallate. This is likely to be caused by the additional hydroxy group in gallicatechin gallate.



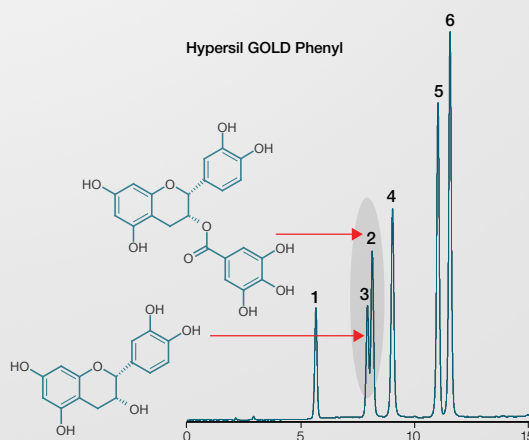
The Thermo Scientific™ Hypersil GOLD™ PFP column in the chromatogram below shows extra retention for all six analytes when compared to the alkyl chain stationary phases (C18, C8, aQ). There are two underlying reasons for this extra retention. Firstly, the carbon-fluorine bond is more polar than a carbon-hydrogen bond, which can enhance electrostatic retention of these analytes.

Secondly, pi-pi interactions between the aromatic rings of the catechins and the aromatic ring on the PFP phase cause increased retention of these analytes. This effect also produces a change in elution order of analytes 2 and 3, when using PFP phase compared with the alkyl chain phases. The extra retention of epigallocatechin gallate over epicatechin is caused by the additional substituted ring which provides an additional opportunity for pi-pi interactions between the analyte and the phenyl ring on the stationary phase.



The chromatogram below shows the retention of catechins using Thermo Scientific™ Hypersil GOLD™ Phenyl HPLC columns.

There is more retention when compared to Hypersil GOLD columns, but less retention than Hypersil GOLD PFP columns. But as with the PFP phase, there is enhanced retention of EGG due to the additional aromatic ring. This is most likely a result of the carbon-hydrogen bond on the phenyl stationary phase being less polar than the carbon-fluorine bond on the PFP stationary phase.



Column selection

The most common column phase used for HPLC separations is the C18 functionality for reversed-phase separation. Thermo Scientific offers many other phases for difficult analytes. Detailed information about each column phase and functionality is shown in the table below.

Selectivity	Functionality	Description	Hypersil GOLD	Acclaim	Accucore
Reversed-phase hydrophobic interaction of nonpolar compounds (reversed-phase)	C30	Designed for separating hydrophobic long chain, structurally related isomers		✓	✓
	C18	Excellent peak shape for hydrophobic interaction	✓	✓	✓
	C8	Similar selectivity to C18 but with less retention	✓	✓	✓
	C4	Short alkyl chain length, low hydrophobicity column for less retention than C18 or C8	✓		✓
	RP/MS	Optimized for MS detection			✓
Reversed-phase with enhanced hydrolytic stability	aQ	Polar endcapped C18 are stable in 100% aqueous mobile phases and provide enhanced retention and resolution of polar analytes	✓		✓
	Polar Advantage (PA)	Sulfonamide functional group for 100% aqueous compatibility		✓	
	Polar Advantage 2 (PA2)	Amide-embedded functional group		✓	
	Polar premium	Amide-embedded functional group			✓
Reversed-phase with selectivity for aromatic compounds	PFP: pentafluorophenyl	Alternative selectivity in reverse phase applications. The fluorine atoms around the phenyl ring enhance pi-pi interactions with aromatic molecules, including halogenated compounds	✓		✓
	Phenyl	Alternative selectivity in reverse phase applications, particularly for aromatic compounds	✓	✓	✓
	Phenyl-Hexyl	Unique selectivity for aromatic and moderately polar analytes			✓
	Biphenyl	Enhanced pi-pi interactions with aromatics, and separation of critical pairs and isomers			✓
Normal phase/ reversed-phase	CN: cyano	For both reversed and normal phase separations; alternative selectivity with lower hydrophobicity.	✓		
Multi Mode: WAX/RP/NP	Amino	Can be used in four modes: reversed-phase, normal phase, ion exchange and HILIC; especially good for carbohydrates	✓		
Anion exchange	AX: anion exchange	Separate proteins, peptides, anionic species and polar molecules	✓		
	SAX: strong anion exchange	Highly stable silica-based quarternary amine strong anion exchange column, designed for separating small polar organic analytes in aqueous mobile phase	✓		

Column selection continued

Selectivity	Functionality	Description	Hypersil GOLD	Acclaim	Accucore
Normal phase of non-polar and moderately polar organic compounds	Silica	Unbonded silica	✓		✓
HILIC; enhanced retention of polar and hydrophilic compounds	HILIC	Polyethyleneimine functional group	✓		
	HILIC-10	Urea functional group		✓	
	Urea-HILIC	Urea functional group			✓
	Amide-HILIC	Amide functional group			✓
Size exclusion	SEC	Polymeric support for the size separation of water soluble polymers		✓	
Mixed-Mode multi-functional	Trinity P1	Reversed-phase + weak anion exchange + strong cation exchange		✓	
	Trinity P2	HILIC + weak cation exchange + strong anion exchange		✓	
	WAX-1	Alkyl tertiary amine: reversed-phase + weak anion exchange		✓	
	WCX-1	Alkyl carboxylic: reversed-phase + weak cation exchange		✓	
	HILIC-10	Alkyl diol: reversed-phase + HILIC		✓	
Specialty / application specific phases	AmG C18	Aminoglycoside analysis		✓	
	Organic acids	Aromatic and aliphatic organic acid analysis		✓	
	Surfactant Plus	Separating anionics, nonionics, cationics, and amphoteric surfactants		✓	
	Explosives E2	Residue analysis; EPA method 8330		✓	
	Trinity Q1	Diquat & paraquat herbicide analysis		✓	
	Carbamate	Pesticides/herbicides in EPA method 531.2		✓	
	Carbonyl C18	Aldehydes and ketones in EPA TO-11, CARB 1004		✓	



Accucore UHPLC and HPLC columns

Phase name	1.5 μm	2.6 μm	4.0 μm	Pore diameter (\AA)	Surface area (m^2/g)	Carbon load (%)
Accucore Vanquish C18+	✓			80	110	6.5
Accucore RP-MS		✓		80	130	7
Accucore C18		✓		80	130	9
Accucore C8		✓		80	130	5
Accucore aQ		✓		80	130	9
Accucore Polar Premium		✓		150	130	8
Accucore Biphenyl		✓		80	130	6
Accucore Phenyl-Hexyl		✓		80	130	5
Accucore PFP		✓		80	130	5
Accucore Phenyl-X		✓		80	130	6
Accucore C30		✓		150	130	5
Accucore HILIC		✓		80	130	
Accucore Urea-HILIC		✓		150	130	
Accucore 150-C18		✓		150	80	7
Accucore 150-C4		✓		150	80	2
Accucore 150-Amide-HILIC		✓		150	80	
Accucore XL C18			✓	80	90	7
Accucore XL C8			✓	80	90	4

Hypersil GOLD UHPLC and HPLC columns

Phase name	1.9 μm	3.0 μm	5.0 μm	Pore diameter (\AA)	Surface area (m^2/g)	Carbon load (%)
Hypersil GOLD Vanquish UHPLC	✓	✓		175	220	10
Hypersil GOLD	✓	✓	✓	175	220	10
Hypersil GOLD C8	✓	✓	✓	175	220	8
Hypersil GOLD C4	✓	✓	✓	175	220	5
Hypersil GOLD aQ	✓	✓	✓	175	220	12
Hypersil GOLD aQ Vanquish UHPLC	✓			175	220	12
Hypersil GOLD PFP	✓	✓	✓	175	220	8
Hypersil GOLD PFP Vanquish UHPLC	✓			175	220	8
Hypersil GOLD Phenyl	✓	✓	✓	175	220	8
Hypersil GOLD CN	✓	✓	✓	175	220	4
Hypersil GOLD Amino	✓	✓	✓	175	220	2
Hypersil GOLD AX	✓	✓	✓	175	220	6
Hypersil GOLD SAX	✓	✓	✓	175	220	2.5
Hypersil GOLD Silica	✓	✓	✓	175	220	
Hypersil GOLD HILIC	✓	✓	✓	175	220	6

Acclaim UHPLC and HPLC columns

Phase name	2.2 μm	3.0 μm	5.0 μm	Pore diameter (\AA)	Surface area (m^2/g)	Carbon load (%)
Acclaim 120 C18	✓	✓	✓	120	300	18
Acclaim 120 C18 Vanquish	✓			120	300	18
Acclaim 120 C8	✓	✓	✓	120	300	11
Acclaim 300 C18		✓		300	100	8
Acclaim Polar Advantage	✓	✓	✓	120	300	17
Acclaim Polar Advantage 2	✓	✓	✓	120	300	17
Acclaim PA2 Vanquish	✓			120	300	17
Acclaim C30		✓	✓	200	200	13
Acclaim Phenyl-1		✓	✓	120	300	13
Acclaim HILIC-10		✓		120		8
Acclaim Organic Acid		✓	✓	120	300	17
Acclaim Surfactant Plus (for LC-MS/CAD)		✓	✓	120	300	12
Acclaim Explosives E2	✓	✓	✓	120	300	
Acclaim Carbamate	✓	✓	✓	120	300	
Acclaim Carbonyl	✓	✓	✓	120	300	
Acclaim Trinity Q1		✓		300	100	
Acclaim AmG C18		✓		120	300	
Acclaim Trinity P1		✓		300	100	
Acclaim Trinity P2		✓		300	100	
Acclaim Mixed-Mode WAX-1		✓	✓	120	300	
Acclaim Mixed-Mode HILIC-1		✓	✓	120	300	
Acclaim Mixed-Mode WCX-1		✓	✓	120		
Acclaim SEC-1000			7 μm			
Acclaim SEC-300			✓			



Accucore UHPLC and UHPLC columns

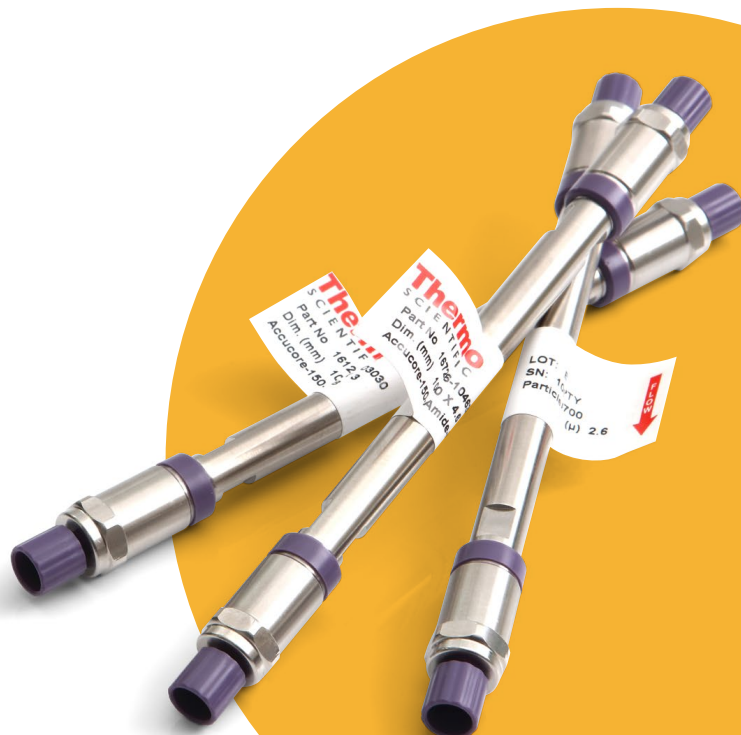
Description	Particle size (µm)	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
Accucore Vanquish C18+	1.5	50	27101-052130		
		100	27101-102130		
		150	27101-152130		
Accucore C18	2.6	30	17126-032130	17126-033030	17126-034630
		50	17126-052130	17126-053030	17126-054630
		100	17126-102130	17126-103030	17126-104630
		150	17126-152130	17126-153030	17126-154630
Accucore RP-MS	2.6	30	17626-032130	17626-033030	17626-034630
		50	17626-052130	17626-053030	17626-054630
		100	17626-102130	17626-103030	17626-104630
		150	17626-152130	17626-153030	17626-154630
Accucore C8	2.6	30	17226-032130	17226-033030	17226-034630
		50	17226-052130	17226-053030	17226-054630
		100	17226-102130	17226-103030	17226-104630
		150	17226-152130	17226-153030	17226-154630
Accucore aQ	2.6	30	17326-032130	17326-033030	17326-034630
		50	17326-052130	17326-053030	17326-054630
		100	17326-102130	17326-103030	17326-104630
		150	17326-152130	17326-153030	17326-154630
Accucore Polar Premium	2.6	50	28026-052130	28026-053030	28026-054630
		100	28026-102130	28026-103030	28026-104630
		150	28026-152130	28026-153030	28026-154630
		250	28026-252130		
Accucore Biphenyl	2.6	50	17826-052130		
		100	17826-102130		
Accucore Phenyl-Hexyl	2.6	30	17926-032130	17926-033030	17926-034630
		50	17926-052130	17926-053030	17926-054630
		100	17926-102130	17926-103030	17926-104630
		150	17926-152130	17926-153030	17926-154630
Accucore PFP	2.6	30	17426-032130	17426-033030	17426-034630
		50	17426-052130	17426-053030	17426-054630
		100	17426-102130	17426-103030	17426-104630
		150	17426-152130	17426-153030	17426-154630
Accucore Phenyl-X	2.6	50	27926-052130	27926-053030	27926-054630
		100	27926-102130	27926-103030	27926-104630
		150	27926-152130	27926-153030	27926-154630
		250	27926-252130		
Accucore C30	2.6	50	27826-052130	27826-053030	27826-054630
		100	27826-102130	27826-103030	27826-104630
		150	27826-152130	27826-153030	27826-154630
		250	27826-252130		
Accucore HILIC	2.6	30	17526-032130	17526-033030	17526-034630
		50	17526-052130	17526-053030	17526-054630
		100	17526-102130	17526-103030	17526-104630
		150	17526-152130	17526-153030	17526-154630
Accucore Urea-HILIC	2.6	50	27726-052130	27726-053030	27726-054630
		100	27726-102130	27726-103030	27726-104630
		150	27726-152130	27726-153030	27726-154630
		250	27726-252130		

Accucore HPLC columns for biomolecules

Description	Particle size (µm)	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
Accucore 150-C18	2.6	30	16126-032130	16126-033030	16126-034630
		50	16126-052130	16126-053030	16126-054630
		100	16126-102130	16126-103030	16126-104630
		150	16126-152130	16126-153030	16126-154630
Accucore 150-C4	2.6	30	16526-032130	16526-033030	16526-034630
		50	16526-052130	16526-053030	16526-054630
		100	16526-102130	16526-103030	16526-104630
		150	16526-152130	16526-153030	16526-154630
Accucore 150-Amide-HILIC	2.6	50	16726-052130	16726-053030	16726-054630
		100	16726-102130	16726-103030	16726-104630
		150	16726-152130	16726-153030	16726-154630
		250	16726-252130		

Accucore XL HPLC columns

Description	Particle size (µm)	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
Accucore XL C18	4	50	74104-052130	74104-053030	74104-054630
		100	74104-102130	74104-103030	74104-104630
		150	74104-152130	74104-153030	74104-154630
		250	74104-252130	74104-253030	74104-254630
Accucore XL C8	4	50	74204-052130	74204-053030	74204-054630
		100	74204-102130	74204-103030	74204-104630
		150	74204-152130	74204-153030	74204-154630
		250	74204-252130	74204-253030	74204-254630





Accucore, Hypersil GOLD and Acclaim Guard Cartridge Holders

Accucore Defender guard cartridges (4/pk)

Description	Particle size (µm)	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
Accucore C18	2.6	10	17126-012105	17126-013005	17126-014005
Accucore RP-MS	2.6	10	17626-012105	17626-013005	17626-014005
Accucore C8	2.6	10	17226-012105	17226-013005	17226-014005
Accucore aQ	2.6	10	17326-012105	17326-013005	17326-014005
Accucore Polar Premium	2.6	10	28026-012105		
Accucore Biphenyl	2.6	10	17826-012105		
Accucore Phenyl-Hexyl	2.6	10	17926-012105	17926-013005	17926-014005
Accucore PFP	2.6	10	17426-012105	17426-013005	17426-014005
Accucore Phenyl-X	2.6	10	27926-012105		
Accucore C30	2.6	10	27826-012105		
Accucore HILIC	2.6	10	17526-012105	17526-013005	17526-014005
Accucore Urea-HILIC	2.6	10	27726-012105		
Accucore 150-C18	2.6	10	16126-012105	16126-013005	16126-014005
Accucore 150-C4	2.6	10	16526-012105	16526-013005	16526-014005
Accucore 150-Amide-HILIC	2.6	10	16726-012105		

Accucore XL guard cartridges (4/pk)

Description	Particle size (µm)	Length (mm)	2.1 mm ID	3.0 mm ID	4.6 mm ID
Accucore XL C18	4	10	74104-012101	74104-013001	74104-014001
Accucore XL C8	4	10	74204-012101	74204-013001	74204-014001

Thermo Scientific™ UNIGUARD™ Drop-In-Guard cartridge holders for Hypersil GOLD columns

Description	1.0 mm ID	2.1 mm ID	3.0 mm ID	4.0 mm ID	4.6 mm ID
UNIGUARD Drop-In-Guard	851-00	852-00	852-00	850-00	850-00
Standard replacement tip	—	850-RT	850-RT	—	850-RT

Acclaim guard holders

Description	Part no.
Acclaim guard cartridge holder	069580
Acclaim guard cartridge-column coupler	074188
Acclaim guard kit (holder and coupler)	069707



Accucore Kits

For validation of the performance of Accucore columns or verification of the optimum selectivity for user's separations.

Accucore Validation kit

Validate the reproducibility of Accucore. Contains 3 Accucore C18 HPLC columns.

Description	Particle size (μm)	Length (mm)	2.1 mm ID
Accucore Validation kit	2.6	50	17126-052130-3V

Accucore Narrow Selectivity kit

Verify optimum selectivity over a narrow range. Contains 1 each of Accucore C18, RP-MS and aQ HPLC columns.

Description	Particle size (μm)	Length (mm)	2.1 mm ID
Accucore Narrow Selectivity kit	2.6	50	17X26-052130-3VA
		100	17X26-102130-3VA
		150	17X26-152130-3VA

Accucore Wide Selectivity kit

Verify selectivity over a wide range. Contains 1 each of Accucore C18, Phenyl-Hexyl and PFP HPLC columns.

Description	Particle size (μm)	Length (mm)	2.1 mm ID
Accucore Wide Selectivity kit	2.6	50	17X26-052130-3VB
		100	17X26-102130-3VB
		150	17X26-152130-3VB

Accucore Polar Selectivity kit

Verify selectivity for polar analytes. Contains 1 each of Accucore aQ, PFP and HILIC HPLC columns.

Description	Particle size (μm)	Length (mm)	2.1 mm ID
Accucore Polar Selectivity kit	2.6	100	17X26-102130-3VC
		150	17X26-152130-3VC

Hypersil GOLD UHPLC and HPLC columns

Particle size (µm)	Description	Length (mm)	ID (mm)	GOLD	C8	C4	aQ	PPF
1.9	UHPLC column	20	2.1	25002-022130	25202-022130		25302-022130	25402-022130
			30	1.0	25002-031030			
		50	2.1	25002-032130	25202-032130		25302-032130	25402-032130
				1.0	25002-051030		25302-051030	25402-051030
			2.1	25002-052130	25202-052130	25502-052130	25302-052130	25402-052130
			3.0	25002-053030		25302-053030	25402-053030	
			4.6	25002-054630	25202-054630	25302-054630	25402-054630	
		100	1.0	25002-101030	25202-101030		25302-101030	25402-101030
			2.1	25002-102130	25202-102130	25502-102130	25302-102130	25402-102130
			3.0	25002-103030	25202-103030		25302-103030	25402-103030
		150	2.1	25002-152130	25202-152130	25502-152130	25302-152130	25402-152130
			200	2.1	25002-202130			25302-202130
		3	Drop-In-Guard (4/µk)	10	1.0	25003-011001	25203-011001	25503-011001
2.1	25003-012101				25203-012101	25503-012101	25303-012101	25403-012101
3.0	25003-013001				25203-013001	25503-013001	25303-013001	25403-013001
4.0/4.6	25003-014001				25203-014001	25503-014001	25303-014001	25403-014001
HPLC column	30		2.1	25003-032130			25303-032130	
			3.0	25003-033030	25203-033030			25403-033030
			4.6	25003-034630	25203-034630			
	50		2.1	25003-052130	25203-052130	25503-052130	25303-052130	25403-052130
			3.0	25003-053030	25203-053030		25303-053030	25403-053030
			4.0	25003-054030			25303-054030	
	100		4.6	25003-054630	25203-054630		25303-054630	
			1.0	25003-101030	25203-101030		25303-101030	25403-101030
			2.1	25003-102130	25203-102130	25503-102130	25303-102130	25403-102130
			3.0	25003-103030	25203-103030	25503-103030	25303-103030	25403-103030
			4.0	25003-104030			25303-104030	
	150		4.6	25003-104630	25203-104630	25503-104630	25303-104630	25403-104630
			1.0	25003-151030		25503-151030	25303-151030	
			2.1	25003-152130	25203-152130	25503-152130	25303-152130	25403-152130
			3.0	25003-153030	25203-153030	25503-153030	25303-153030	25403-153030
			4.6	25003-154630	25203-154630	25503-154630	25303-154630	25403-154630
5		Drop-In-Guard (4/µk)	10	2.1	25005-012101	25205-012101	25505-012101	25305-012101
3.0	25005-013001			25205-013001		25305-013001		
4.0/4.6	25005-014001			25205-014001	25505-014001	25305-014001	25405-014001	
HPLC column	50	2.1	25005-052130	25205-052130	25505-052130	25305-052130	25405-052130	
		3.0	25005-053030	25205-053030		25305-053030		
		4.6	25005-054630	25205-054630	25505-054630	25305-054630		
	100	2.1	25005-102130	25205-102130	25505-102130	25305-102130	25405-102130	
		3.0	25005-103030	25205-103030	25505-103030	25305-103030	25405-103030	
		4.6	25005-104630	25205-104630	25505-104630	25305-104630	25405-104630	
	150	2.1	25005-152130	25205-152130	25505-152130	25305-152130	25405-152130	
		3.0	25005-153030	25205-153030		25305-153030	25405-153030	
		4.0	25005-154030	25205-154030				
		4.6	25005-154630	25205-154630	25505-154630	25305-154630	25405-154630	
	250	2.1	25005-252130	25205-252130	25505-252130	25305-252130	25405-252130	
		3.0	25005-253030	25205-253030				
		4.0	25005-254030	25205-254030				
		4.6	25005-254630	25205-254630	25505-254630	25305-254630	25405-254630	

See page 14 for Guard Holder information.

Items in red are available in Validated for Vanquish, high pressure compatible format. See page 20 for details.

Phenyl	CN	Amino	AX	SAX	Silica	HILIC
25902-052130	25802-052130	25702-052130	26102-052130		25102-052130	26502-052130
25902-102130	25802-102130	25702-102130	26102-102130	26302-102130	25102-102130	26502-102130
25902-152130	25802-152130	25702-152130	26102-152130	26302-152130	25102-152130	26502-152130
	25802-202130	25702-202130	26102-202130		25102-202130	
	25803-011001	25703-011001	26103-011001			26503-011001
25903-012101	25803-012101	25703-012101	26103-012101	26303-012101	25103-012101	26503-012101
25903-013001	25803-013001	25703-013001			25103-013001	26503-013001
25903-014001	25803-014001	25703-014001	26103-014001	26303-014001	25103-014001	26503-014001
		25703-032130	26103-032130		25103-032130	26503-032130
					25103-034630	
25903-052130	25803-052130	25703-052130	26103-052130	26303-052130	25103-052130	26503-052130
						26503-101030
25903-102130	25803-102130	25703-102130	26103-102130	26303-102130	25103-102130	26503-102130
25903-103030	25803-103030	25703-103030		26303-103030	25103-103030	26503-103030
25903-104630	25803-104630	25703-104630	26103-104630	26303-104630		26503-104630
25903-151030	25803-151030	25703-151030	26103-151030			26503-151030
	25803-152130	25703-152130	26103-152130		25103-152130	26503-152130
25903-153030	25803-153030	25703-153030	26103-153030	26303-153030	25103-153030	26503-153030
25903-154630	25803-154630	25703-154630		26303-154630	25103-154630	26503-154630
25905-012101	25805-012101	25705-012101	26105-012101	26305-012101	25105-012101	26505-012101
25905-013001	25805-013001	25705-013001		26305-013001		
25905-014001	25805-014001	25705-014001		26305-014001	25105-014001	26505-014001
25905-052130	25805-052130	25705-052130		26305-052130	25105-052130	26505-052130
25905-054630	25805-054630	25705-054630				26505-054630
25905-102130	25805-102130	25705-102130		26305-102130	25105-102130	26505-102130
25905-103030	25805-103030					26505-103030
			26105-104630	26305-104630		
	25805-152130			26305-152130	25105-152130	
25905-154630	25805-154630	25705-154630	26105-154630	26305-154630	25105-154630	26505-154630
25905-252130		25705-252130	26105-252130	26305-252130	25105-252130	26505-252130
		25705-253030	26105-253030	26305-253030		26505-253030
25905-254030	25805-254030	25705-254030		26305-254030	25105-254030	
25905-254630	25805-254630	25705-254630		26305-254630	25105-254630	26505-254630

Acclaim UHPLC and HPLC columns

Particle Size (µm)	Format	Length (mm)	ID (mm)	120 C18	120 C8	Polar Advantage	Polar Advantage II	Phenyl-1	C30	HILIC-10	Mixed-Mode HILIC-1	Mixed-Mode WAX-1		
2.2	UHPC column	30	2.1	071400	072614		071402							
			3.0			072625								
		50	2.1	068981	072615	072622	068989							
			3.0	071605			071608							
		75	3.0	075697										
		100	2.1	068982	072616	072623	068990							
			3.0	071604	072620		071607							
		150	2.1	071399	072617	072624	071401							
	250	2.1	074812	074811	074813	074814								
	Vanquish column	150	2.1	071399-V				071401-V						
250		2.1	074812-V				074814-V							
3.0	Guard cartridge	10	2.1							074263				
			3.0					071974		074261				
			4.6					071973		074262				
	HPLC column	30	3.0	066272				066276						
			50	2.1	059128	059122	063174	077999		078666				
		50	3.0					068973		078663		071912	071908	
			4.6	059131	059125			063189		078661				
		75	3.0	066273			066275	066277						
		100	2.1	059129	059123	061316	077998			078665				
			3.0	076186			076214	078000	074693	078662				
			4.6	059132	059126			078001		078660				
		150	2.1	059130	059124	061317	063187	071971	075725	074259	070091	070089		
			3.0	063691	068970	063693	063705	071970	075724	074258	070090	070088		
			4.0											
			4.6	059133	059127	061318	063191	071969	075723	074257				
		250	2.1	076187					077997	078664				
			3.0	070077				070079	070080	075726				
		5.0	Guard cartridge	10	2.1	069689	069688	069691	069692		075722		069694	069686
					3.0	071981	071979	071983	071985		075721		071913	071909
					4.6	069695	069696	069698	069699		075720		069706	069704
Guard column	33		4.6											
HPLC column	50		2.1	059142	059134									
			4.6	059146	059138	061319								
	100		2.1	059143										
			4.6	059147	059139									
	150		2.1	059144	059136							066847	067084	
			4.0											
			4.6	059148	059140	061320	063197			075719		066843	064984	
	250		7.8											
			2.1	059145	059137									
	300		4.0											
			4.6	059149	059141	061321	063199	079697	075718			066844	064985	
	7.0	Guard column	33	4.6										
HPLC column		150	7.8											
		300	4.6											
			7.8											

See page 14 for Guard Holder information.

Mixed-Mode WCX-1	Trinity P1	Trinity P2	300 C18	Organic Acid	Surfactant	Surfactant Plus	Carbonyl C18	Carbamate C18	Explosives E2	AmG C18	Trinity Q1	SEC-1000	SEC-300
							077972	075597	076225				
							077974		076227				
							077973	075596	076226				
	071391	085435					079012	072930		088754			
	071390	085436					079013	072929		088756			
							079014	072928		088758			
	075565	085431	060263								083242		
071910	071388	085433									083241		
			060265										
	071389	085432				078955					079717		
	071387	085434				078952					079715		
070093	075564		060264	070087	070085	078954	079011	072927	070083	088753			
070092	075563		063684	070086	070084	078951	079010	072926	070082	088755			
						078956							
			060266			078950		072925		088757			
						078953							
							079009		070081				
			069690		069693	078960					083244		
071911				071987	071991	078959			071989		079719		
069705			069697	069700	069701	082773			069703				
													082740
068371						068123							
				062903									
068353						063201	082768						
													079726
068352				062902									
					063203	082767	083214	072924	064309				
													079723
													079725
											082739		
												079722	
												079724	
												079721	

Validated for Thermo Scientific Vanquish columns

Accucore, Hypersil GOLD and Acclaim columns are available in the Thermo Scientific™ Vanquish™ ultra-high performance liquid chromatography (UHPLC) high pressure configuration. These columns were developed in conjunction with the Thermo Scientific™ Vanquish™ UHPLC system to take advantage of the system's extended

pressure capabilities and robustness. These columns are designed for the required UHPLC higher backpressure requirements. The result is a high level of separation, speed and throughput that solve analytical challenges of analyzing complex matrices using LC and LC-MS.

ID (mm)	Length (mm)	Hypersil GOLD™ VANQUISH™ (1.9 µm)	Hypersil GOLD™ VANQUISH™ aQ (1.9 µm)	Hypersil GOLD™ VANQUISH™ PFP (1.9 µm)	Hypersil GOLD™ VANQUISH™ C18+ (1.5 µm)	Acclaim™ VANQUISH™ 120 C18 (2.2 µm)	Acclaim™ VANQUISH™ Polar Advantage 2 (PA2) (2.2 µm)
2.1	50	25002-052130-V			27101-052130		
2.1	100	25002-102130-V	25302-102130-V	25402-102130-V	27101-102130		
2.1	150	25002-152130-V	25302-152130-V	25402-152130-V	27101-152130	071399-V	071401-V
2.1	200	25002-202130-V	25302-202130-V	25402-202130-V			
2.1	250					074812-V	074814-V

Expect reproducible results with sample prep, columns and vials



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