



HICHROM

Chromatography Columns and Supplies

LC COLUMNS
Thermo Scientific
Acclaim

Catalogue 9

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Acclaim™

- Ultra-pure, porous spherical silica
- Novel surface chemistries for different selectivities
- LC-MS compatible
- Wide range of phases

Acclaim™ HPLC columns, developed by Dionex, are now sold under the Thermo Scientific brand. Acclaim phases are based on high purity, porous silica particles (2.2, 3 and 5µm), with advanced and innovative column bonding technologies. This provides complementary selectivity, high column efficiencies and symmetrical peaks. Columns for reversed-phase, HILIC, mixed-mode and application specific analyses are available.

Acclaim Reversed-Phase and HILIC Phases

Acclaim Phase	Chemistry	Endcapped	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	Carbon Load (%)	pH Range
120 C18	C18	Yes	2.2, 3, 5	120	300	18	2 - 8
300 C18	C18	Yes	3	300	100	8	2.5 - 7.5
C8	C8	Yes	2.2, 3, 5	120	300	11	2 - 8
C30	C30	Yes	3, 5	200	200	13	2 - 8
Phenyl-1	Alkyl aromatic	Yes	3	120	300	13	2 - 8
PolarAdvantage	Embedded sulphonamide	Yes	2.2, 3, 5	120	300	16	2 - 8
PolarAdvantage II	Embedded amide	Yes	2.2, 3, 5	120	300	16	1.5 - 10.5
HILIC-10	Proprietary	No	3	120	300	8	2 - 8

Acclaim RSLC 2.2µm columns for **Rapid Separation Liquid Chromatography** are designed for high throughput, high efficiency separations and are compatible with UHPLC and standard HPLC systems.

Acclaim C30 is designed to provide high shape selectivity for separating hydrophobic structurally related isomers and unique selectivity complementary to other reversed-phase columns. It is compatible with highly aqueous eluents.

Acclaim PolarAdvantage (PA) features a patented bonding chemistry that incorporates a polar sulphonamide group with an ether linkage near the silica surface. Acclaim PA columns are compatible with 100% aqueous eluents and offer unique selectivity and good peak shape for acidic, basic and neutral analytes. Figure 15 shows the fast analysis of phenols according to EPA Method 604.

Acclaim PolarAdvantage II (PA2) columns feature a patented surface chemistry that incorporates an amide-embedded polar group and multi-point attachment between the ligands and silica surface. This unique chemistry provides enhanced hydrolytic stability from pH 1.5 to 10.5 with 100% aqueous eluents. Acclaim PA2 is specifically designed to withstand high pH conditions, making it a good choice for the separation of both basic and acidic analytes.

Acclaim HILIC-10 is designed for separating highly hydrophilic molecules by HILIC. The phase is based on high purity silica covalently modified with a proprietary hydrophilic layer. Acclaim HILIC-10 is compatible with up to 20% aqueous eluent, while maintaining affinity for polar analytes. Columns can be operated in the primary HILIC mode or, alternatively, in normal-phase mode. Figure 16 shows class separation by normal-phase, where triglycerides elute using 1% IPA, diglycerides using 4% IPA and monoglycerides using 13% IPA.

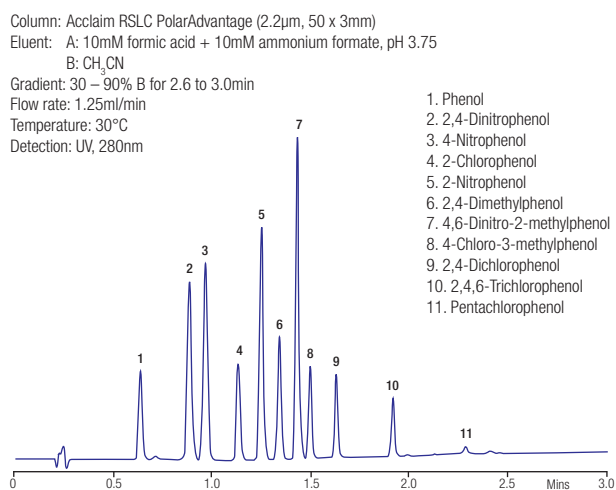


Figure 15. Phenols EPA 604 fast analysis

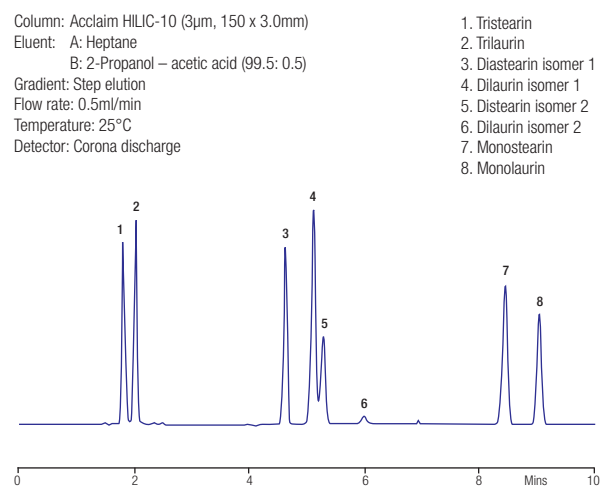


Figure 16. Separation of glycerides on Acclaim HILIC-10

Acclaim™ Mixed-Mode Phases

Mixed-mode columns provide a unique, adjustable selectivity tool, using variation in pH, ionic strength or organic modifier to influence the separation selectivity of acids, bases, zwitterions and neutral molecules.

Acclaim™ Mixed-Mode Phases

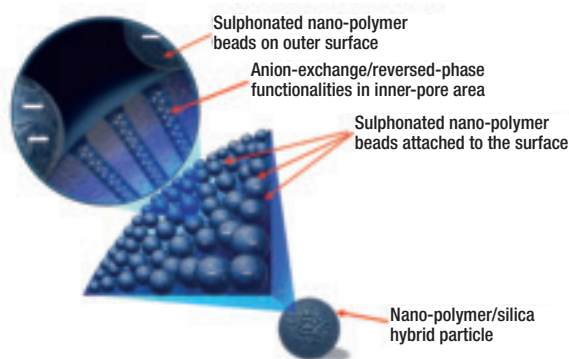
Acclaim Phase	Retention Mechanism	Particle Size (µm)	Pore Size (Å)	Surface Area (m ² /g)	pH Range
Mixed-Mode WAX-1	RP + WAX + cation exclusion + HILIC	3, 5	120	300	2.5 - 7.5
Mixed-Mode WCX-1	RP + WCX + HILIC	3, 5	120	300	2.5 - 7.5
Mixed-Mode HILIC-1	RP + HILIC	3, 5	120	300	2.5 - 7.5
Trinity P1	SCX + WAX + RP	3	300	100	2.5 - 7.0

Acclaim Mixed-Mode WAX-1 is a novel phase, combining hydrophobic and weak anion-exchange characteristics. Selectivity can be adjusted by changing ionic strength, pH or organic solvent content. The surface of the phase consists of a hydrophobic alkyl chain with a tertiary amine group at the terminus. The hydrophobic moiety provides reversed-phase retention and the terminal amino group facilitates electrostatic interactions.

Acclaim Mixed-Mode WCX-1 is manufactured by bonding a specially designed proprietary ligand with both hydrophobic and weak cation-exchange properties. The phase can separate compounds using multiple separation modes: reversed-phase, cation-exchange and HILIC and is ideal for the separation of basic molecules. Selectivity can be adjusted by modifying ionic strength, pH or organic solvent composition. Figure 17 illustrates the effect of changing pH on the capacity of weak cation-exchange functionality of the phase.

Acclaim Mixed-Mode HILIC-1 is a unique silica-based mixed-mode phase that combines both reversed-phase and HILIC properties. This combination allows both hydrophobic and hydrophilic interactions to be utilised in optimising separations. The phase consists of a hydrophobic alkyl chain with a diol group at the terminus, which enables a broader application range compared to conventional diol-based columns.

Acclaim Trinity P1 trimodal phase, based on **Nanopolymer Silica Hybrid (NSH)** technology, consists of high purity porous 3µm silica particles, coated with charged nanopolymer beads. The unique surface chemistry includes an inner-pore area modified with an organic layer that provides both reversed-phase and anion-exchange properties. The outer-pore surface is modified with cation-exchange functionality. The Acclaim Trinity P1 retains both cations and anions at the same time. Baseline separation can be achieved for both a drug and its counterions. Figure 18 illustrates the simultaneous separation of pharmaceutical counterions on Trinity P1.



Acclaim Trinity P1

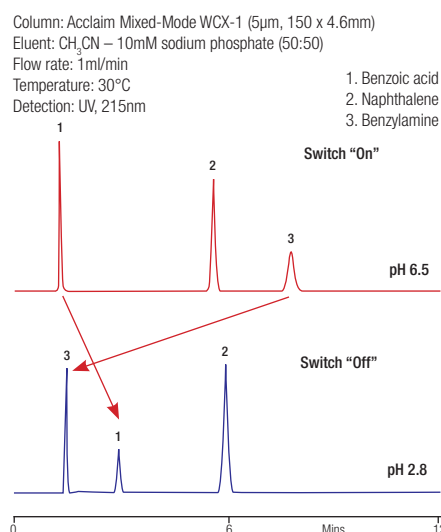


Figure 17. Changing pH with Acclaim Mixed-Mode WCX-1

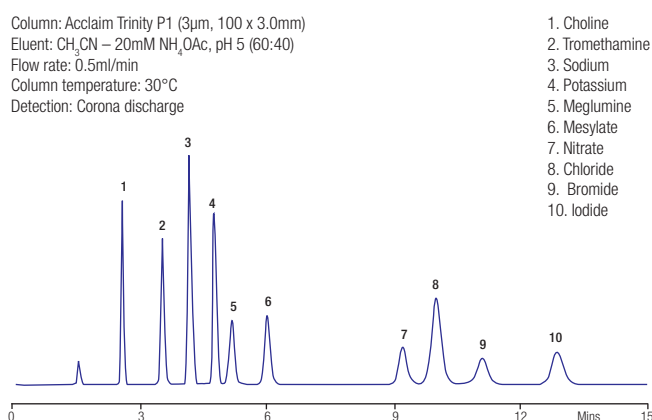


Figure 18. Simultaneous separation of pharmaceutical counterions

Please see page 238 for ordering information for Acclaim mixed-mode columns.

Acclaim™ Application Specific Phases

Thermo Scientific Acclaim™ speciality phases are based on novel and unique chemistries and combine superior resolution with ease of use.

Acclaim Phase	Particle Size (µm)	Pore Size (Å)	pH Range	Typical Applications
Organic Acid (OA)	3, 5	120	2 - 8	Hydrophilic, aliphatic and aromatic organic acids
Surfactant	3, 5	120	2.5 - 7.5	Anionic, cationic, non-ionic and amphoteric surfactants
Explosives E1	5	120	3 - 7	Nitroaromatic and nitramine explosives
Explosives E2	2.2, 3, 5	120	2.5 - 8	
Carbamate	3, 5	120	2 - 8	Carbamate pesticides
Carbonyl	2.2	120	2.5 - 8	DNPH derivatives of aldehydes and ketones

Acclaim Organic Acid (OA) is a reversed-phase column designed for high efficiency, high throughput organic acid analysis. This phase is recommended for determining small hydrophilic organic acids, C1 to C7 aliphatic acids and hydrophilic aromatic acids. It is also valuable for the analysis and quality assurance of food and beverage products, pharmaceutical preparations, plating baths and manufacturing chemicals. Acclaim OA is compatible with 100% aqueous eluents. Figure 19 shows the separation of a range of organic acids found in soft drink.

Acclaim Surfactant is a silica-based column for separating a wide variety of surfactants, including anionic (alkylbenzene sulphonates, alkyl sulphates, alkylether sulphates), cationic (alkyl quaternary ammonium salts, benzylalkylammonium salts, pyridinium salts and quaternary imidazolium compounds), non-ionic (polyethylene glycols) and amphoteric surfactants. The phase is resistant to dewetting under highly aqueous conditions and provides excellent resolution between strongly hydrophilic compounds, such as isomers of xylene sulphonate. Figure 20 shows the separation of a mixture of surfactants.

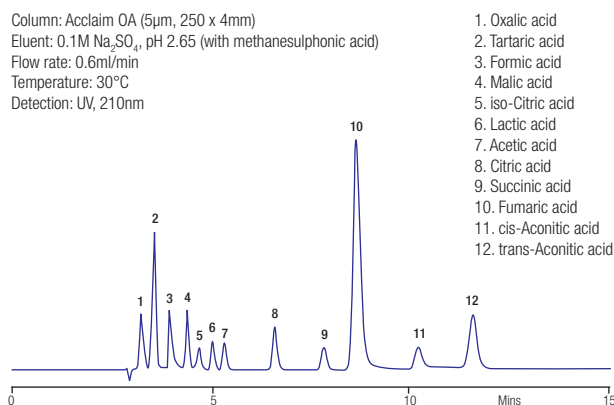


Figure 19. Analysis of organic acids on Acclaim OA

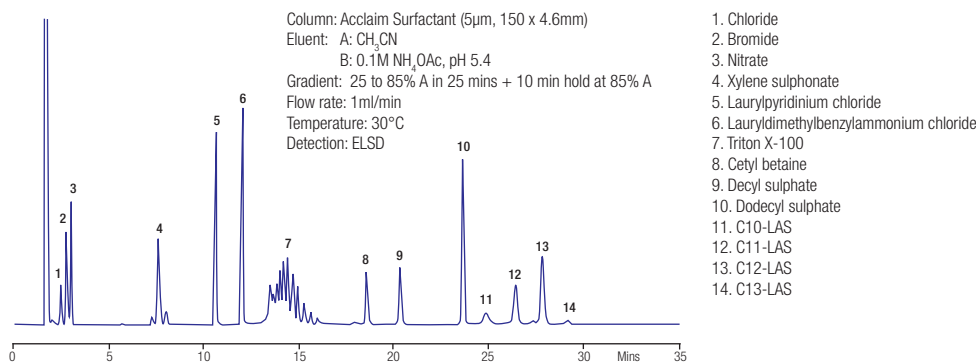


Figure 20. Separation of mixture of surfactants

Acclaim Explosives E1 and E2 columns are specifically designed to resolve all 14 explosives listed in EPA Method 8330 (nitroaromatics and nitroamines). The Acclaim Explosives E1 column is recommended for use as direct replacement for C18 columns for the primary analysis. The Acclaim Explosives E2 offers complementary selectivity and may be used as either a primary or a confirmatory column.

Acclaim Carbamate columns are designed for baseline separation of carbamate pesticides in drinking water and raw surface water, as specified in US EPA Method 531.2. It is used in conjunction with post-column derivatization and fluorescence detection or LC-MS.

Acclaim Carbonyl is a reversed-phase column designed specifically for separating DNPH derivatives of aldehydes and ketones, regulated by various official methods. It has a particle size of 2.2µm, suitable for high efficiency UHPLC performance.

Please see page 238 for ordering information for Acclaim columns.

Ordering Information – Acclaim™

Please contact Hichrom for ordering information for 2.2µm particle size columns and column dimensions not listed below.

Acclaim Reversed-Phase and HILIC Columns

Acclaim Phase	Column Dimensions ¹ (mm)								Guard Cartridges ²	
3µm	50 x 2.1		100 x 2.1		150 x 2.1		250 x 2.1		10 x 2.1mm (2/pk)	
120 C18	059128	£237	059129	£318	059130	£359	076187	£419	-	
120 C8	059122	£237	059123	£318	059124	£359	076185	£419	-	
C30	-	-	-	-	075725	£399	-	-	075722	£102
Phenyl-1	078016	£236	078015	£312	071971	£379	078014	£383	071975	£102
PA (PolarAdvantage)	063174	£237	061316	£318	061317	£359	076215	£419	-	
PA2 (PolarAdvantage II)	077999	£223	077998	£342	063187	£359	077997	£419	-	
HILIC-10	-	-	-	-	074259	£379	-	-	-	
5µm										
120 C18	059142	£220	059143	£284	059144	£318	059145	£348	069689	£102
120 C8	059134	£220	059135	£284	059136	£318	059137	£348	069688	£102

Acclaim Phase	Column Dimensions ¹ (mm)								Guard Cartridges ²	
3µm	50 x 4.6		100 x 4.6		150 x 4.6		250 x 4.6		10 x 4.6mm (2/pk)	
120 C18	059131	£237	059132	£318	059133	£359	-	-	-	
120 C8	059125	£237	059126	£318	059127	£359	-	-	-	
C30	-	-	-	-	075723	£399	-	-	075720	£102
Phenyl-1	078018	£236	078017	£312	071969	£379	-	-	071973	£102
PA (PolarAdvantage)	-	-	076216	£342	061318	£359	-	-	-	
PA2 (PolarAdvantage II)	063189	£237	078001	£342	063191	£359	-	-	-	
HILIC-10	-	-	-	-	074257	£379	-	-	-	
5µm										
120 C18	059146	£220	059147	£284	059148	£318	059149	£359	069695	£85
120 C8	059138	£220	059139	£284	059140	£318	059141	£359	069696	£85
C30	-	-	-	-	075719	£312	075718	£348	-	
PA (PolarAdvantage)	061319	£237	-	-	061320	£359	061321	£411	069698	£85
PA2 (PolarAdvantage II)	-	-	-	-	063197	£359	063199	£399	069699	£85

¹ Other column dimensions available² Use with guard cartridge holder V-2, p/n 069580 (£102) and column coupler V-2 p/n 074188 (£27)

Acclaim Mixed-Mode Phases

Phase	Column Dimensions ¹ (mm)									
3µm	50 x 2.1		100 x 2.1		150 x 2.1		50 x 3.0		150 x 3.0	
Mixed-Mode WAX-1	-	-	-	-	070089	£399	071908	£322	070088	£399
Mixed-Mode WCX-1	-	-	-	-	070093	£399	071910	£322	070092	£399
Mixed-Mode HILIC-1	-	-	-	-	070091	£399	071912	£322	070090	£399
Trinity P1	075565	£366	071389	£470	075564	£480	071388	£366	075563	£480

Phase	Column Dimensions ¹ (mm)						Guard Cartridges ²		Guard Cartridges ²	
5µm	150 x 2.1		150 x 4.6		250 x 4.6		10 x 2.1mm (2/pk)		10 x 4.6mm (2/pk)	
Mixed-Mode WAX-1	067084	£376	064984	£376	064985	£440	069686	£102	069704	£102
Mixed-Mode WCX-1	068371	£376	068353	£379	068352	£440	-	-	069705	£102
Mixed-Mode HILIC-1	066847	£376	066843	£376	066844	£440	069694	£102	069706	£102

Acclaim Speciality Phases³

Phase	Column Dimensions ¹ (mm)									
3µm	150 x 2.1		150 x 3.0		250 x 3.0		150 x 4.6			
Organic Acid	070087	£399	070086	£399	-	-	-			
Surfactant	070085	£399	070084	£399	-	-	-			
Explosives E2	070083	£399	070082	£399	070081	£470	-			
Carbamate	072927	£399	072926	£399	-	-	072925		£399	

Phase	Column Dimensions ¹ (mm)						Guard Cartridges ²		Guard Cartridges ²	
5µm	150 x 2.1		150 x 4.6		250 x 4.6		10 x 2.1mm (2/pk)		10 x 4.6mm (2/pk)	
Organic Acid	-	-	062903 ⁴	£379	062902 ⁴	£440	-	-	069700	£85
Surfactant	068123	£379	063201	£379	063203	£440	069693	£102	069701	£85
Explosives E1	-	-	-	-	064305	£414	-	-	069702	£85
Explosives E2	-	-	-	-	064309	£414	-	-	069703	£85
Carbamate	-	-	-	-	072924	£440	072930	£102	072928	£102

¹ Other dimensions available ² Use with guard cartridge holder V-2, p/n 069580 (£102) and column coupler V-2 p/n 074188 (£27) ³ Please enquire for ordering information for Acclaim Carbonyl columns ⁴ 4.0mm i.d.