

Chromatography

Whatman is known as an experienced manufacturer of chromatography products including chromatography paper, chromatography separation media, High Performance Liquid Chromatography (HPLC) columns and thin layer chromatography plates.

Today's pharmaceutical, chemical and biotechnology industries are facing demands for purity in the development of commercially important products. As a result, chromatography has become a major purification technique on a process and preparative scale. Separation media with guaranteed uniformity and reproducibility have become vital components in the ultimate goal of bringing a new product to market. Whatman has a complete line of chromatography products to suit these exacting requirements.

Chromatography Cellulose Media

Whatman offers an extensive product line of chromatography cellulose media for applications ranging from the separation of biopolymers such as proteins, peptide and hormones to the purification of monoclonal antibodies, vaccines, synthetic pharmaceuticals and agrochemicals.

Technological innovations in product development and manufacturing processes and a dedication to excellence are combined to ensure batch-to batch reproducibility of these chromatography cellulose media.

Cellulose Powders

Whatman cellulose powders are used for column and Thin Layer Chromatography (TLC). Four high-purity cellulose powders are available for separations using the partition mode.

CC31

Pure, microgranular cellulose powder for column separations.

CC41

Pure, binder-free microgranular cellulose powder for TLC.



CF1

Fibrous, long cellulose for batch separations.

CF11

Fibrous, medium cellulose powder for general column chromatography.

Ordering Information - Cellulose Powders

Catalog Number	Product	Description	Size
4020-050	CF1	Fibrous cellulose for batch separations	500 g
4021-050	CF11	Fibrous cellulose powder for column work	500 g
4021-500	CF11	Fibrous cellulose powder for column work	5 kg
4014-050	CC31	Microgranular cellulose powder for column work	500 g
4014-200	CC31	Microgranular cellulose powder for column work	2 kg
4061-050	CC41	Microgranular cellulose for TLC	500 g

Specialty Products for Protein Separations

CDR (Cell Debris Remover)

Aids in protein purification through initial cleanup of cell lysates; removes unwanted suspended, colloidal and insoluble matter, leaving target proteins in solution.

Ordering Information - CDR

Catalog Number	Product	Description	Size
4025-050	CDR	Cell Debris Remover	500 g
4025-200	CDR	Cell Debris Remover	2 kg

Advanced Ion Exchange Cellulose

Whatman Advanced Ion Exchange Cellulose (AIEC) and Column Chromatography (CC) products are ideal for the separation of biopolymers and are suitable for a wide variety of applications. Available as:

- Preswollen microgranular AIEC for high load capacity fast kinetics and resolution; saves time by eliminating need for precycling prior to buffer equilibration
- Dry microgranular AIEC for similar performance characteristics as preswollen media after precycling; reduces possibility of bacterial growth

- Fibrous AIEC for maximum throughput at high flow rates
- Commonly used anion and cation exchange functional groups: DEAE (diethylaminoethyl tertiary amine) and CM (ether-linked carboxymethyl)
- Orthophosphate bifunctional cation exchanger for sharp separation of medium molecular weight molecules

Anion Exchangers

The DE weak anion exchangers are based on the diethylaminoethyl (DEAE) tertiary amine functional group. QA52 is a strongly basic anion exchange medium, containing quaternary amine groups.

DE23 (Dry Fibrous)

Allows fast flow rates especially after fines removal; suitable for negative charged biopolymers.

DE32 (Dry Microgranular)

Similar performance characteristics as DE52 after precycling.

DE51 (Preswollen, Microgranular)

Low overall net charge. For use with proteins bearing a high negative charge and for nucleic acids. Suitable for isocratic elution systems.

DE52 (Preswollen, Microgranular)

Probably the most widely used DEAE cellulose in the world; used for biopolymers with low to high negative charges; exhibits excellent resolution with good flow rates.

DE53 (Preswollen, Microgranular)

Partially quaternized DEAE anion exchanger, highly substituted and with higher capacity than DE52; can be used in series with DE51 and DE52 media.

QA52 (Preswollen, Microgranular)

A strongly basic, quaternary amine-bearing anion exchange medium, moderately substituted, with high protein capacity. Fully ionized, bears constant charge under all pH conditions; excellent for high pH applications.

Typical Data - Anion Exchange Media

Physical Form	Functional Group	Normal pH Range	Small Ion Capacity (meq/dg*)	Protein Capacity ¹		gExchanger/ mL Bed Volume
				Dry Gram (mg/dg*)	Bed Volume (mg/mL)	
Dry Fibrous						
DE23	Diethylaminoethyl	2-9.5	0.88-1.08	425 ^b	60	0.15
Dry Microgranular						
DE32	Diethylaminoethyl	2-9.5	0.88-1.08	700 ^b	140	0.20

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Physical Form	Functional Group	Normal pH Range	Small Ion Capacity (meq/dg*)	Protein Capacity ¹		gExchanger/ mL Bed Volume
				Dry Gram (mg/dg*)	Bed Volume (mg/mL)	
Preswollen Microgranular						
DE51	Diethylaminoethyl	2-9	0.20-0.25	175 ^a	30	1.20
DE52	Diethylaminoethyl	2-9.5	0.88-1.08	700 ^b	130	0.90
DE53	Diethylaminoethyl	2-12	1.8-2.2	750 ^b	150	1.05
QA52	Quaternary Ammonium	2-12	1.1	750 ^b	150	1.20

* dg = dry gram

¹ Protein capacity quoted:

^a 0.005 M pH 8.5 phosphate buffer – Bovine serum albumin

^b 0.01M pH 8.5 phosphate buffer – Bovine serum albumin

Ordering Information - Anion Exchangers DEAE and QA Celluloses

Catalog Number	Product	Description	Size
4053-010	DE23	Fibrous DEAE Cellulose	100 g
4053-025	DE23	Fibrous DEAE Cellulose	250 g
4055-010	DE32	Dry Microgranular DEAE Cellulose	100 g
4056-050	DE51	Preswollen Microgranular DEAE Cellulose	500 g
4057-050	DE52	Preswollen Microgranular DEAE Cellulose	500 g
4057-200	DE52	Preswollen Microgranular DEAE Cellulose	2 kg
4058-050	DE53	Preswollen Microgranular DEAE Cellulose	500 g
4058-200	DE53	Preswollen Microgranular DEAE Cellulose	2 kg
4065-050	QA52	Quaternary Amine Substituted	500 g
4065-200	QA52	Quaternary Amine Substituted	2 kg

Cation Exchangers

CM32 (Dry Microgranular)

High-capacity medium for proteins, hormones, polypeptides and other biopolymers bearing low to high positive charges; excellent resolution with good column flow rates. Requires precycling to restore swelling. Equivalent to CM52 when swollen.

CM52 (Preswollen, Microgranular)

High-capacity medium for proteins, hormones, polypeptides and other biopolymers bearing low to high positive charges; excellent resolution with good column flow rates.

P11 Cellulose Phosphate

Dry fiber. Recommended for column separations.

Typical Data - Cation Exchange Media

Physical Form	Functional Group	Normal pH Range	Small Ion Capacity (meq/dg*)	Protein Capacity ¹		gExchanger/ mL Bed Volume
				Dry Gram (mg/dg*)	Bed Volume (mg/mL)	
Preswollen Microgranular						
CM52	Carboxymethyl	3-10	0.90-1.15	1180 ^a	210	1.05
Dry Microgranular						
CM32	Carboxymethyl	3-10	2.1-2.8	1180 ^b	200	0.17
Dry Fibrous						
P11	Orthophosphate	2-10	3.2-5.3	400-500	-	0.17

* dg = dry gram

¹ Protein capacity quoted:

^a 0.01M pH 5.0 acetate buffer – Lysozyme

^b 0.01M pH 4.4 acetate buffer – Lysozyme

Ordering Information - Cation Exchangers - CM Celluloses and P Phosphates

Catalog Number	Product	Description	Size
4035-010	CM32	Dry Microgranular CM Cellulose	100 g
4035-050	CM32	Dry Microgranular CM Cellulose	500 g
4037-050	CM52	Preswollen Microgranular CM Cellulose	500 g
4037-200	CM52	Preswollen Microgranular CM Cellulose	2 kg
4071-010	P11	Dry Bifunctional Cation Exchange Cellulose	100 g
4071-050	P11	Dry Bifunctional Cation Exchange Cellulose	500 g
4071-200	P11	Dry Bifunctional Cation Exchange Cellulose	2 kg

Ion Exchangers - EXPRESS-ION® High Flow Rate Media

EXPRESS-ION media are matrices whose flow characteristics have been greatly improved. The manufacturing process has been optimized so that the matrix retains its inherent property of fast kinetics of adsorption and desorption. They are supplied as moist powders, so pre-cycling and fines removal are not required.

EXPRESS-ION D

A weak anion exchange cellulose substituted with diethylaminoethyl (DEAE) groups and recommended for separations between pH 2 and pH 9.

EXPRESS-ION Q

A strong anion exchange cellulose having general applicability in separations requiring an anion exchange step, with the benefit of wide pH versatility. The N,N,N-trimethyl hydroxypropyl amine (quaternary amine) group is fully ionized throughout pH range 2-12.

EXPRESS-ION C

A moderately acidic cation exchange cellulose. A weak ion exchanger recommended for separations between pH 4.5 and pH 10 to ensure the carboxymethyl functional group remains ionized.

EXPRESS-ION S

A strongly acidic cation exchange cellulose having general applicability in separations requiring a cation exchange step, with the benefit of wide pH versatility. The sulfoxyethyl functional group is fully ionized throughout the pH range 2-12.

Typical Data - EXPRESS-ION High Flow Rate Media (cm/h)

	Pressure (psi)		
	5	7.5	10
EXPRESS-ION D	171.6	213.6	238.5
EXPRESS-ION Q	134.7	173.6	212.4
EXPRESS-ION C	94	127.2	165.3
EXPRESS-ION S	94	127.2	160.8

Column dimensions 45 cm ID x 15 cm

Properties - EXPRESS-ION High Flow Rate Media

	EXPRESS-ION D	EXPRESS-ION Q	EXPRESS-ION C	EXPRESS-ION S
Type	Weak Anion	Strong Anion	Weak Cation	Strong Cation
Working pH range	2-9	2-12	4.5-10	2-12
Typical Protein	-	-	-	-
Capacity mg/mL:				
BSA	60	55	-	-
Lysozyme	-	-	162	153
Small Ion Capacity	← 1 meq/dg →			
Fiber Length	← 60-130 μm →			
Base Matrix	← Microgranular cellulose →			
Typical Flow Rate	← 150 cm/hr →			
Physical Stability	← Negligible volume changes due to ionic strength or pH →			
gExchanger/mL	0.72	0.64	0.7	0.8
Bed Volume				

Ordering Information - EXPRESS-ION High Flow Rate Media

Catalog Number	Description	Size
4079-0025	EXPRESS-ION D	250 g
4079-3025	EXPRESS-ION Q	250 g
4079-1025	EXPRESS-ION C	250 g
4079-2025	EXPRESS-ION S	250 g

Chromatography Paper

Whatman chromatography papers are the most widely used papers for chromatography worldwide. This acceptance and usage reflect the purity, high quality and consistency of Whatman papers. These qualities are relied upon by chromatographers and are essential to successful, reproducible chromatography. Whatman chromatography paper media are made from specially selected cotton cellulose. They are rigorously quality controlled for characteristics important to the chromatographer and to ensure uniformity within the grade. The chromatography paper product line includes standard cellulose and ion exchange grades.



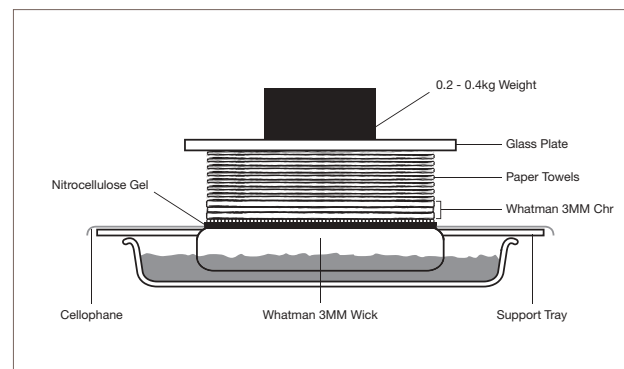
Cellulose Chromatography Papers

3MM Chr

Though widely used as a blotting paper, 3MM Chr is used in both electrophoresis and for general chemistry. A medium thickness paper (0.34 mm) used extensively for general chromatography and electrophoresis. Flow rate is 130 mm/30 min.

17 Chr

A thick (0.92 mm) and highly absorbent paper with a very high flow rate of 190 mm/30 min. Suitable for the heaviest loadings and ideal for preparative paper chromatography and electrophoresis.



3MM Chr Paper Typical Blotting Apparatus

20 Chr

Thickness 0.17 mm. Flow rate 85 mm/30 min. For maximum resolution, this grade is supreme, giving the greatest possible separation of closely related compounds. Smooth surface. Recommended for separation of samples of unknown composition, with outstanding resolution at low loadings.

31ET Chr

Thickness 0.50 mm. Flow rate 225 mm/30 min. Extremely fast. Flow rate is the highest of all chromatography papers in the Whatman range. Thick paper with fairly soft surface. Principal application is in electrophoresis of large molecules.

1 Chr

The world standard chromatography paper. A smooth surface, 0.18 mm thick with a linear flow rate (water) of 130 mm/30 min. Good resolution for general analytical separations.

2 Chr

Thickness 0.18 mm. Flow rate 115 mm/30 min. Slower than 1 Chr for higher resolution applications. Smooth surface. Particularly recommended for optical or radiometric scanning.

3 Chr

A medium thickness paper (0.36 mm) with a flow rate of 130 mm/30 min. For general applications with medium/heavy solute loadings. Frequently used for separation of inorganic compounds and for electrophoresis.

2668 Chr

Thickness 0.9 mm. Flow rate 155 mm/10 min. For separation of relatively large molecules by electrophoresis.

2727 Chr

Thickness 1.40 mm. Flow rate 180 mm/30 min. For separation of very large amounts of substance.

54 SFC

Thin (0.18 mm) hardened paper with high speed (180 mm/30 min.) and fair to good resolution. Recommended for routine chromatography. High wet strength.

Features and Benefits

- Pure cellulose produced entirely from the highest quality cotton linters with no additives of any kind
- Manufactured and tested specifically for chromatographic techniques - this ensures the wicking capability and uniformity of capillary action that is important in obtaining clean and even transfers during blotting

Ordering Information - Whatman Pure Cellulose Chromatography Papers

Size (cm)	Catalog Number	Quantity/Pack
3MM Chr Precut Sheets		
11 x 14	3030-6185	100
12 x 14	3030-6132	100
15 x 17.5	3030-153	100
15 x 20	3030-6188	100
18 x 34	3030-221	100
20 x 20	3030-861	100
26 x 41	3030-6461	100
35 x 43	3030-347	100
35 x 45	3030-392	100
31.5 x 35.5	3030-335	100
46 x 57	3030-917	100
58 x 68	3030-931	100
4 x 5 1/4"	3030-6189	100
6 x 8"	3030-6187	100
8 x 10"	3030-866	100

Ordering Information - Chromatography Paper Rolls*

Length (m) x Width (cm)	1 Chr	3MM Chr	4 Chr	54 SFC
100 x 1	3001-604	-	-	-
100 x 2	3001-614	3030-614	3004-614	-
100 x 3	3001-640	-	-	-
100 x 4	3001-652	-	-	-
100 x 5	3001-653	-	-	-
100 x 7.5	-	3030-662	-	-
100 x 10	3001-672	3030-672	-	-
100 x 12.5	-	3030-675	-	-
100 x 15	3001-681	3030-681	-	-
100 x 19	-	3030-690	-	-
100 x 23	-	3030-700	-	-
100 x 27	-	3030-704	-	-
100 yards x 1"	3001-633	-	-	-
100 yards x 1 1/2"	3001-651	-	3004-651	3454-651

* One roll per pack

Ordering Information - Chromatography Sheets*

Size (cm)	1 Chr	2 Chr	3 Chr	4 Chr	17 Chr	20 Chr	31ET Chr	2668 Chr	2727 Chr
46 x 57	3001-917	3002-917	3003-917	3004-917	3017-915**	3020-917	3031-915**	-	-
20 x 20	3001-861	-	-	-	-	-	-	-	-
58 x 68	3001-931	-	-	-	-	-	-	-	-
10 x 30	3001-845	-	-	-	-	-	-	-	-
25 x 25	3001-878	-	-	-	-	-	-	-	-
58 x 60	-	-	-	-	-	-	-	10 382 461	10 382 562
19 x 19	-	-	-	-	-	-	-	-	10 382 581

* 100 sheets per pack

** 25 sheets per pack

Ordering Information - Chromatography Strips

Size (cm)	1 Chr - CRL
Chromatography Strips	
11 x 21.3; 12 strips, 15 mm	3001-964

1 Chr divided into 15 mm lanes for running up to 12 samples in parallel

Ion Exchange Papers

DE81

A thin (0.20 mm) DEAE cellulose paper - a weakly basic anion exchanger with diethylaminoethyl functional groups. The ion exchange capacity is 1.7 $\mu\text{eq}/\text{cm}^2$ and flow rate is 95 mm/30 min. For use with reverse transcriptase assays and DNA polymerase.

P81

A thin (0.23 mm) cellulose phosphate paper. Strong cation exchanger of high capacity. Ion exchange capacity is 18.0 $\mu\text{eq}/\text{cm}^2$ and the flow rate is 125 mm/30 min. For use with protein kinase assay with peptide substrates.

SG81

A unique paper (0.27 mm thick) combining cellulose and large pore silica gel. Suitable for separations in which both partition and adsorption are important, including the separation of phospholipids, steroids, phenols and dyes. Flow rate is 110 mm/30 min.

Features and Benefits

- Simultaneous development of multiple samples on the same sheet under identical conditions
- Sequential development of the same samples with different solvents and/or different concentrations of the same solvent
- Suitability for two-dimensional chromatography (change in direction of the solvent front) with possible improved resolution

Ordering Information - Ion Exchange Papers

Catalog Number	Description	Diameter (cm)	Quantity/Pack
Ion Exchange Cellulose Paper Circles			
3658-023	DE81 DEAE Cellulose	2.3	400
3658-323	DE81 DEAE Cellulose	2.3	100
3658-324	DE81 DEAE Cellulose	2.4	100
3658-325	DE81 DEAE Cellulose	2.5	100
3698-321	P81 Cellulose Phosphate	2.1	100
3698-325	P81 Cellulose Phosphate	2.5	100
Ion Exchange Cellulose Paper Sheets			
3658-915	DE81 DEAE Cellulose	46 x 57	25
3698-915	P81 Cellulose Phosphate	46 x 57	25
3668-915	SG81 Silica Gel Loaded Paper	46 x 57	25

Bulk Silica Media for Column Chromatography

The Whatman bulk silica media are used for low pressure columns. Same base silica and chemistries as those used for Whatman TLC plates. Particularly useful for scaling up separations optimized by TLC. In addition, Whatman offers an all-purpose media for general column chromatography. Applicable for preparative low pressure column separations scaled up from Partisil analytical HPLC columns.



Bulk Silica Media for Column Chromatography



Bulk Silica Media

Features and Benefits

- High resolution
- Good flow characteristics
- High surface area

Ordering Information - Bulk Silica Media for Low Pressure Column Chromatography

Catalog Number	Product	Particle Size (µm)	Other Specifications	Weight
4776-001	LRP-2 ODS bonded silica gel	37-53	Reversed phase	LPS-2 silica bonded with 16% C; - may be dry packed; end-capped 100 g
4776-005	LRP-2 ODS bonded silica gel	37-53	Reversed phase	LPS-2 silica bonded with 16% C; - may be dry packed; end-capped 500 g

Ordering Information - Bulk Silica Media for General Column Chromatography

Catalog Number	Product	Particle Size (µm)	Other Specifications	Weight
4132-100	ODS-3 (C-18)	32-75	Reversed Phase	Octadecyl-bonded; end-capped; polymeric; 10.5% carbon load 100 g
4132-301	ODS-3 (C-18)	32-75	Reversed Phase	Octadecyl-bonded; end-capped; polymeric; 10.5% carbon load 1 kg
4790-010	Silica, 60Å	230-400 mesh (38-63)	Adsorption	Bulk media for column or dry chromatography 1 kg
4790-050	Silica, 60Å	230-400 mesh (38-63)	Adsorption	Bulk media for column or dry chromatography 5 kg
4790-250	Silica, 60Å	230-400 mesh (38-63)	Adsorption	Bulk media for column or dry chromatography 25 kg
4791-005	Silica, 60Å	70-230 mesh (63-212)	Adsorption	Bulk media for column or dry chromatography 500 g
4791-010	Silica, 60Å	70-230 mesh (63-212)	Adsorption	Bulk media for column or dry chromatography 1 kg
4791-050	Silica, 60Å	70-230 mesh (63-212)	Adsorption	Bulk media for column or dry chromatography 5 kg
4791-250	Silica, 60Å	70-230 mesh (63-212)	Adsorption	Bulk media for column or dry chromatography 25 kg

Purasil™ 60Å Silica Gel

Silica Gel Media for Flash Chromatography

Whatman Purasil high purity silica gel provides an excellent separation medium for flash chromatography purification of target molecules. Narrow particle size distribution and minimal fines enable fast separations with no loss of chromatographic performance.

Features and Benefits

- High resolution
- Excellent flow rates
- Direct scalability

Typical Data - Purasil 60Å Silica Gel

Iron Content	<0.02%
Chloride Content	<0.10%
Loss on Drying	<7%
pH (10% suspension)	7 ± 0.5
Pore Volume	60–80 mL/g
Surface Area	500–600 m ² /g

Ordering Information - Purasil 60Å Silica Gel

Catalog Number	Product	Quantity/Pack
4745-010	230–400 mesh (38–63 µm)	1 kg
4745-250	230–400 mesh (38–63 µm)	25 kg
4746-010	70–230 mesh (63–210 µm)	1 kg
4746-250	70–230 mesh (63–210 µm)	25 kg

High Performance Liquid Chromatography (HPLC)

Whatman offers an extensive product line of High Performance Liquid Chromatography (HPLC) products ranging from the Partisil high-purity silica gel for normal phase separations to seven different bonded phases for reversed phase or ion exchange separations. In addition, the PartiSphere®, 5 µm spherical media are available with different chemistries in a void sealing column configuration for optimum speed and resolution.

Partisil® Media for High Performance Liquid Chromatography

Partisil Silica Media Characteristics

The following describes the characteristics of each of the Partisil media.

Adsorption (Normal Phase) Media

Partisil 5

A high efficiency stationary phase for adsorption chromatography that provides good selectivity and high loading capacity for maximum resolution and fast analysis. Partisil 5 is available prepacked in Whatman Void Sealing (WVS) and Analytical and Rapid Analysis Column (RAC) configurations. Partisil 5 is the support on which the 5 µm bonded phases are based.

Partisil 10

The stationary phase for routine separations, Partisil 10 is the support material for the 10 µm bonded media. This medium is used when higher flow rates are indicated and back pressure must be minimized. In addition to bulk media, it is available prepacked in most column configurations.

Ion Exchange Media

Partisil SAX (10 µm)

A strong anion exchanger based on quaternary ammonium groups (-NR₃₊). Supplied in the H₂PO₄ form in methanol, Partisil 10 SAX has been widely reported in literature and is best known for separation of nucleotides. Stable over pH range 1.5-7.5 when used in conjunction with a Solvecon mobile phase conditioning column. Obtains the highest anion exchange efficiencies and resolution. Applicable to separations of nucleic acids, organic acids and inorganic anions. Check prepacked column ordering information for availability of specific combinations of columns.

Partisil SCX (5 µm and 10 µm)

Based on aromatic benzene sulfonic acid groups. Supplied in the ammonium form (NH₄₊). Excellent for separation of nucleic acids, amino acids, polyamines, drugs and other cationic species. Capable of being loaded with specific metallic cations for use in ligand exchange chromatography. Stable over pH range 1.5-7.0 when used in conjunction with a Solvecon mobile phase conditioning column. Exceptionally stable Si-O-Si-C bond, both thermally and chemically. Check prepacked column ordering information for availability of specific combinations of columns.

Reversed Phase Media

Partisil ODS (10 µm)

A C-18 phase with a 5% carbon load for both normal adsorption and reversed phase partitioning. Dual-mode operation for added selectivity with 50% residual silanols. Lightly loaded C-18 packing is particularly effective for compounds having greater water solubility when used in the reversed phase mode. Creates a moderately polar surface, different from that of pure silica, in normal phase mode. Check prepacked column ordering information for availability of specific columns.

Partisil ODS-2 (10 µm)

The high carbon load (16%) of this polymeric phase makes it the most nonpolar and, therefore, the most retentive of the reversed phases. An alternative to end-capped C-18 where different elution order is desirable for optimum separation. High sample load capacity and 10 µm particle size are very suitable for preparative work.

Partisil ODS-3 (5 µm and 10 µm)

A C-18 polymeric phase with a 10.5% carbon load. Medium of choice for improved speed, efficiency and resolution in applications requiring C-18 phases. End-capped for deactivation of silanols to minimize the need for ion suppression or ion pairing agents. Used in a wide range of applications with optimal selectivity, including pharmaceuticals, natural products, food, biological and environmental pollutants.

Partisil C-8 (5 µm and 10 µm)

An end-capped C-8 monomeric phase with at least 8.5% carbon load. Provides high efficiency and rapid mass transfer while maintaining excellent peak shape and stability over a range of aqueous mobile phase compositions. Recommended for ion pair chromatography.

Partisil PAC (5 µm and 10 µm)

A polar amino cyano bonded phase with secondary amine groups for good thermal and chemical stability. Selectivity and rapid equilibrium allow a range of separation mechanisms to be used, including adsorption, reversed phase and weak anion exchange. Extremely fast equilibration across the entire range of solvents from heptane to water. The media of choice for carbohydrate separations.

UniSep C-8

Hydrophobic octyl chain on hydrophilic silica surface.

PartiSphere® Spherical Media

Available in prepacked columns and a choice of 5 µm high performance phases. In addition to its efficient pure silica and monomeric C-18 and C-8, Whatman has added WCX (Weak Cation Exchanger) as well as SAX, SCX and PAC. PartiSphere media feature narrow particle size distribution and excellent reproducibility.

Typical Data - Partisil Media for High Performance Liquid Chromatography

Product	Specifications
Partisil Bonded Phase	
Silica	Irregular. Pore Size 85Å
ODS-3	10.5% carbon load; end-capped; polymeric
ODS-2	16% carbon load; polymeric
C-8	8.5% carbon load; end-capped; monomeric brush
PAC	0.85% N
SAX	0.85% -NR ₃₊
SCX	0.40% S
PartiSphere Bonded Phase	
Silica	Spherical. Pore Size 120Å
C-18	10% carbon load; end-capped; brush

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Product	Specifications
C-8	6% carbon load; end capped; brush
PAC	0.85% N
SAX	0.8% -NR ₃₊
SCX	0.40% S
PartiSphere RTF Bonded Phase	
C-18	22% carbon load; monomeric brush

Ordering Information - Partisil for Customer Packed Columns

Catalog Number	Products	Package	Bonded Phase	Particle Size (µm)
Partisil Media				
4138-010	Partisil 5 ODS-3	10 g	C-18 polymeric; 10.5% carbon load; end-capped	5
4128-010	Partisil 10 ODS-3	10 g	C-18 polymeric; 10.5% carbon load; end-capped	10
4139-010	Partisil 5 C-8	10 g	C-8 monomeric; 8.5% carbon load; end-capped	5
4129-010	Partisil 10 C-8	10 g	C-8 monomeric; 8.5% carbon load; end-capped	10
4124-010	Partisil 10 ODS-2	10 g	C-18 polymeric; 16% carbon load; uncapped	10
4123-010	Partisil 10 ODS	10 g	C-18 polymeric; 5% carbon load; uncapped	10
4135-010	Partisil 5 PAC	10 g	Alkyl groups containing amino-cyano groups in a (2:1) ratio	5
4125-010	Partisil 10 PAC	10 g	Alkyl groups containing amino-cyano groups in a (2:1) ratio	10
4115-010	Partisil 5 Silica	10 g	None	5
4116-010	Partisil 10 Silica	10 g	None	10
4126-010	Partisil 10 SAX	10 g	Quaternary amino groups (-NR ₃₊)	10
4127-010	Partisil 10 SCX	10 g	Aromatic benzene sulfonic acid functional groups; may also be loaded with metallic cations for ligand exchange chromatography	10

Application Specific HPLC Columns

TAC 1*

For great discoveries such as Taxol, Whatman technology optimally separates the closely eluting taxanes of Pacific yew trees.

Whatman worked closely with two leading customers to develop a specific bonded phase that achieves baseline resolution of the paclitaxel molecule from its closest impurity. Each lot of TAC 1 (Taxane Analysis Column) is tested with a paclitaxel chromatographic purity separation to ensure the best possible reproducibility.

*Richheimer SL et al. Anal Chem. 1992; 64: 2323-2326

MAX-1

For use in specialized separation for corn and soy protein.

Ordering Information - Application Specific HPLC Columns

Catalog Number	Product	Particle Size (µm)	Dimensions (mm)	Quantity/Pack
4601-1001	TAC 1	5	4.6 x 250	1
4120-001	MAX-1	5	4.6 x 250	1

Both in Whatman Void Sealing (WVS) format

Partisil® High Performance Liquid Chromatography (HPLC) Columns

Whatman offers a wide range of high-quality columns to meet your specific needs. In addition to the innovative Whatman Void Sealing Columns, Whatman makes available a selection of standard end fitting column configurations for your analytical and preparative needs. They are specifically designed for compatibility with all HPLC instrumentation.

Whatman Partisil® is a high purity irregular silica gel available in both 5 µm and 10 µm particle sizes with a pore size of 80Å. The choice of column packing includes Silica, C-18 polymeric phases (ODS-3, ODS-2) and C-8. Also available are SAX (Strong Anion Exchanger), SCX (Strong Cation Exchanger) and PAC (Polar Amino Cyano). These columns provide reproducible results, column to column, lot to lot.



Due to the greater surface area of the irregular Partisil, the medium offers enhanced selectivity and loading capacity. Through uniform particle sizing, back pressure is minimized. Also, the neutral pH of Partisil provides for better peak symmetry without the need for mobile phase modifiers.

Standard Analytical

4.6 mm ID x 25 cm long, standard analytical column for research, methods development and routine separations. After optimization, other sizes can be considered for greater speed or capacity. Allows direct scale-up or scale-down to other size columns. Supplied with Whatman Compression Screw (WCS) end fittings.

RAC II

4.6 mm ID x 10 cm long. Second-generation rapid analysis chromatography for faster analytical separations and reduced solvent consumption. Operates at low back pressure, even at high flow rates, prolonging column life. Connects easily to most LC instrumentation with convenient Whatman Compression Screw (WCS) end fittings.

Magnum 9 (50 cm)

9.4 mm ID x 50 cm long. Semi-preparative columns for microgram to gram quantities. Unique coned outlet allows high load capacity with minimal peak distortion. Durable construction ensures extended service. Magnum 9 columns are compatible with today's HPLC instruments, allowing you to use the same equipment for analytical and preparative work.

Magnum 9 (25 cm)

9.4 mm ID x 25 cm long.

Magnum 20 (50 cm)

22 mm ID x 50 cm long. Preparative columns for multigram separations. Coned outlet allows high load capacity with minimal peak distortion. Durable construction ensures extended service. Magnum 20 columns provide sufficient yield and resolving power to accomplish difficult separations on a single pass, achieving high product purity.

Magnum 20 (25 cm)

22 mm ID x 25 cm long.

Ordering Information - Partisil High Performance Liquid Chromatography (HPLC) Columns (with WCS Standard End-Fittings)

Catalog Number	Column Configuration	Particle Size (µm)	Dimensions
Bonded Phase			
Partisil Silica			
4215-001	Standard Analytical	5	4.6 x 250 mm
4216-001	Standard Analytical	10	4.6 x 250 mm
4230-120	Magnum 9	10	9.4 x 250 mm
4230-220	Magnum 9	10	9.4 x 500 mm
4232-220	Magnum 20	10	22 x 500 mm

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Catalog Number	Column Configuration	Particle Size (µm)	Dimensions
Bonded Phase			
Partisil ODS-3			
4222-225	RAC II	5	4.6 x 100 mm
4238-001	RAC II	5	4.6 x 250 mm
4228-001	RAC II	10	4.6 x 250 mm
4230-125	Magnum 9	10	9.4 x 250 mm
Partisil C-8			
4222-232	RAC II	5	4.6 x 100 mm
4239-001	Standard Analytical	5	4.6 x 250 mm
4229-001	Standard Analytical	10	4.6 x 250 mm
Partisil SAX			
4222-227	RAC II	5	4.6 x 100 mm
4226-001	Standard Analytical	10	4.6 x 250 mm
4250-001*	Standard Analytical	10	4.6 x 250 mm (with Solvecon)
Partisil SCX			
4222-228	RAC II	5	4.6 x 100 mm
4227-001	Standard Analytical	10	4.6 x 250 mm
4251-001*	Standard Analytical	10	4.6 x 250 mm
Partisil PAC			
4235-001	Standard Analytical	5	4.6 x 250 mm
4225-001	Standard Analytical	10	4.6 x 250 mm
Partisil 10 ODS			
4223-001	Standard Analytical	10	4.6 x 250 mm
Partisil 10 ODS-2			
4224-001	Standard Analytical	10	4.6 x 250 mm
4230-124	Magnum 9	10	9.4 x 250 mm
Accessories			
4334-225	Frits, 1/4" Diameter, 2 µm Porosity, 10/Pack		

* With Solvecon pre-column

UniSep High Performance Liquid Chromatography (HPLC) Columns

The UniSep HPLC column is the newest C-8 reverse phase HPLC column from Whatman. Using state-of-the-art technology, UniSep was developed for conditions that call for a highly aqueous mobile phase.

The advantage of the UniSep C-8 column over a traditional C-8 column is the UniSep silica is hydrophilic, or able to be wetted out. This change in hydrophobicity is achieved by attaching an ether linkage in close proximity to the silica backbone. Since the ether group is polar, water can easily penetrate and hydrate the silica surface, allowing the analyte greater access to the binding sites.

The advantage to the chromatographer is the flexibility gained when developing a method for highly water soluble compounds.

Features and Benefits

- C-8-RP
- 100Å pore size
- 16% carbon load
- Easy scale up
- Whatman Void Sealing (WVS) format

Applications

- Life science
- Food and beverage
- Pharmaceutical

Ordering Information - UniSep HPLC Columns

Catalog Number	Particle Size (µm)	Dimensions	Quantity/Pack
4550-4605	5	4.6 mm x 50 mm	1
4550-4610	5	4.6 mm x 100 mm	1
4550-4615	5	4.6 mm x 150 mm	1
4550-4625	5	4.6 mm x 250 mm	1

Whatman Void Sealing (WVS) Columns

Whatman WVS columns are renowned for their high quality, innovative design and exceptional durability.

Features and Benefits

- Void sealing columns can last twice as long as standard end fitting columns, saving as much as 50% on cost per test
- Available packed with spherical and irregular media
- Integral void sealing mechanism prolongs column life
- Reusable, hand tightened end-fittings save money, allow for wrench-less installation and rapid column changes
- Require no holder or module, meaning fewer components, reduced cost



Optimum Resolution

Typical column efficiencies for:

- Partisil 10 µm media - 45,000 N/m
- Partisil 5 µm media - 65,000 N/m
- PartiSphere 5 µm media - 90,000 N/m

Partisil Irregular Media

Available in prepacked, replaceable columns and a choice of 5 µm and 10 µm phases. These include Silica, our popular ODS-3 and the other reversed phase packings ODS-2 and C-8. Also available are SAX (Strong Anion Exchanger), SCX (Strong Cation Exchanger) and PAC (Polar Amino Cyano).

Due to the greater surface area of the irregular Partisil, the medium offers enhanced selectivity and loading capacity. Through uniform particle sizing, back pressure is minimized. Also, the neutral pH of Partisil provides for better peak symmetry without the need for mobile phase modifiers.

PartiSphere Spherical Media

Available in prepacked columns and a choice of 5 µm high performance phases. In addition to its efficient pure silica and monomeric C-18 and C-8, Whatman has added WCX (Weak Cation Exchanger) as well as SAX, SCX and PAC. PartiSphere media feature narrow particle size distribution and excellent reproducibility.

PartiSphere WVS Columns: Engineered to Provide Unsurpassed Consistency and Longevity

PartiSphere RTF

PartiSphere RTF (Reduced Tailing Factor) HPLC columns are base-deactivated columns. They employ a unique proprietary process that effectively 'deactivates' the secondary chromatographic effect due to residual silanols. In addition, these columns are extremely stable and can be used from pH 2 to pH 8 with no loss in performance. Excellent for separation of basic compounds without the need for amine-modified mobile phases. PartiSphere RTF is available prepacked in Whatman Void Sealing (WVS) and Analytical (WCS) column configurations and in a choice of C-18, C-8 and cyano phases.

Features and Benefits

- All PartiSphere columns are guaranteed to perform reproducibly every time, thanks to multiple quality control tests for both primary and secondary separation mechanisms
- Polished internal column walls ensure packing symmetries and efficiencies
- PartiSphere RTF (Reduced Tailing Factor) employs a unique proprietary process that effectively 'deactivates' the secondary chromatographic effect due to residual silanols

Ordering Information - WVS Columns

Catalog Number	Particle Size (µm)	Column Type	Column Size (mm)
Partisil¹ 5 µm and 10 µm Columns Only*			
Partisil 5 Silica			
4681-1501	5	Whatman Void Sealing	4.6 x 250
Partisil 5 ODS-3			
4681-0502	5	Whatman Void Sealing	4.6 x 125
4681-1502	5	Whatman Void Sealing	4.6 x 250
Partisil 5 SAX			
4681-0505	5	Whatman Void Sealing	4.6 x 125
4681-1505	5	Whatman Void Sealing	4.6 x 250
Partisil 5 SCX			
4681-1507	5	Whatman Void Sealing	4.6 x 250
Partisil 5 ODS-2			
4681-1509	5	Whatman Void Sealing	4.6 x 250
Partisil 10 ODS-3			
4682-1502	10	Whatman Void Sealing	4.6 x 250
Partisil 10 SAX			
4682-1505	10	Whatman Void Sealing	4.6 x 250
Partisil 10 SCX			
4682-1507	10	Whatman Void Sealing	4.6 x 250
PartiSphere² 5 µm Columns*			
PartiSphere Silica			
4621-0501	5	Whatman Void Sealing	4.6 x 125
4621-1501	5	Whatman Void Sealing	4.6 x 250
PartiSphere C-18			
4621-0502	5	Whatman Void Sealing	4.6 x 125
4621-1502	5	Whatman Void Sealing	4.6 x 250
PartiSphere C-8			
4621-0503	5	Whatman Void Sealing	4.6 x 125
PartiSphere SAX			
4621-0505	5	Whatman Void Sealing	4.6 x 125
4621-1505	5	Whatman Void Sealing	4.6 x 250
PartiSphere SCX			
4621-0507	5	Whatman Void Sealing	4.6 x 125
4621-1507	5	Whatman Void Sealing	4.6 x 250
PartiSphere PAC			
4621-0508	5	Whatman Void Sealing	4.6 x 125
4621-1508	5	Whatman Void Sealing	4.6 x 250
Whatman Base-Deactivated (WCS) HPLC Columns - PartiSphere² 5 µm RTF (Reduced Tailing Factor)			
PartiSphere RTF C-18			
4522-0102	5	Standard Analytical	4.6 x 250
4522-0202	5	Standard Analytical	4.6 x 150

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* Requires one-time purchase of 4.6 mm ID WVS end fittings, Catalog Number 4631-1001

¹ Irregular media

² Spherical media

HPLC Guard Cartridge System

The prepacked, disposable plastic guard cartridge retains unwanted materials that can harm your analytical column. Used in a wide range of applications, the HPLC guard cartridge system offers high efficiency, convenience and cost savings. The guard cartridge holder is available in two configurations. The integral system attaches directly to and becomes an integral part of the WVS replacement column requiring no connecting tubing. Because of this, there is virtually no loss in efficiency.

The universal system can be used with any standard analytical column, bringing guard cartridge convenience to traditional HPLC columns. Guard cartridges are available in four phases: silica, reversed phase, anion exchanger and cation exchanger.

Zero-Dead-Volume

Guard columns offer protection by trapping unwanted compounds that would otherwise be strongly retained on the HPLC column. One of the problems inherent with other guard columns is that they either contribute too much dead volume or add to the analysis times of the separation (especially in short, high speed columns). Whatman has overcome this by developing a zero-dead-volume HPLC guard cartridge system which eliminates almost all extra void volume and does not detrimentally affect the separation.

Ordering Information - HPLC Guard Cartridge System

Catalog Number	Product	Quantity/Pack
Guard Cartridge Holders		
4631-1003	Integral Guard Cartridge Holder (for use with WVS Analytical Column)	WVS Small 1
4631-1004	Universal Guard Cartridge Holder	WCS Small 1
Guard Cartridge System Replacement Cartridges (for both cartridge holders)		
4641-0001	SIL Cartridge	5
4641-0002	RP Cartridge	5
4641-0005	SAX Cartridge	5
4641-0007	SCX Cartridge	5
4641-0008	PAC Cartridge	5
PartiSphere RTF Guard Cartridges		
4641-1002	PartiSphere RTF C-18	5
WVS Analytical Hardware		
4631-1001	Column end fittings: WVS type (for void sealing columns)	1 pair

Thin Layer Chromatography (TLC)

Product innovations from Whatman have made thin layer chromatography (TLC) a practical laboratory tool for both qualitative and quantitative analysis.

Features and Benefits

- Stringent quality standards assure a consistent level of resolution, accuracy and reproducibility
- Multiple samples and standards can be run simultaneously under identical conditions
- Wide range of chemistries and sizes to suit your application needs
- Sample preparation is simplified because plates are disposable
- Mobile phase need not be compatible with detector
- Available with or without fluorescent indicator



Linear-K: Fast, Accurate Spotting

Whatman pioneered the linear preadsorbent layer for easy, rapid and accurate sample application. The layer actually acts as a sponge to preconcentrate the sample before it interacts with the silica layer. In order to facilitate sample application and the preconcentrating power of the preadsorbent layer, Whatman made it thicker than the silica layer. This allows the analyst to apply sample in amounts never before attainable with standard TLC plates, and to apply dilute samples without sacrificing resolution.

TLC Plates: Designations/Formats

Whatman has designed nomenclature as a simple and convenient way of distinguishing among the different types of plates.

The symbol for silica gel is K (for Kieselgel), followed by a qualifying number. K5: 10-12 μm silica, of pore size 150Å; K6: 10-12 μm silica, of pore size 60Å.

The high performance silica is prefixed by the letters HP: HP-K 4.5 μm silica, pore size 60Å.

Reversed phase plates, with a bonded alkyl group, are represented by a K followed by the length of the alkyl chain: KC-18 10-12 μm silica, 60Å, octadecyl bonded phase.

Additional format information is provided for each plate through the following letter codes:

L Preadsorbent Layer

This compresses each sample into a narrow horizontal band. Hence, it is known as Linear-K; prefix L.

D Channelled Plates

2 mm channels of clear glass separate each sample lane, preventing crossover. D indicates division.

F Fluorescent Indicator

Fluorescent plates glow bright green under shortwave UV light. Samples which absorb shortwave UV at 254 nm are detected due to fluorescence quenching.

M Microscope Slide

Plate size 1" x 3".

P Preparative Layer

Has 500 µm or 1000 µm thickness for large sample sizes.

Using these letter codes it is easy to define any TLC plate, for example: PLK6DF = preparative K6 silica 60Å pore diameter featuring a channeled, fluorescent plate and the preadsorbent layer.

Typical Data - Thin Layer Chromatography (TLC)

Type	Separation Mode	Application	Layer Thickness (µm)	Plate Size (cm)	Fluorescent Linear-K	Channeled	Fluorescent Indicator
C-18	Reversed Phase	General Hydrophobic Molecules	200	1" x 3"	Available	-	Available
			1000	10 x 10			
			1000	5 x 20 20 x 20			
C-2	Reversed Phase	Hydrophobic & Small Polar Molecules	200	5 x 20 20 x 20	-	-	Available
Diamond	Adsorption	General	250	2½" x 7½" 10 x 10 5 x 20 10 x 20	Available	Available	Available
Silica Gel (K6)	Adsorption (60Å Pore Diameter)	General; Untreated Samples	250	1" x 3"	Available	Available	Available
			500	5 x 10			
			1000	5 x 20 10 x 20 20 x 20			
Silica Gel (K5)	Adsorption (150Å Pore Diameter)	General; Untreated Samples	250	5 x 10	Available	Available	Available
			500	5 x 20			
			1000	20 x 20			

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Type	Separation Mode	Application	Layer Thickness (µm)	Plate Size (cm)	Fluorescent Linear-K	Channeled	Indicator
HPTLC (HP-K)	Adsorption	Small Samples; (Nanograms and Picograms)	200	5 x 5	Available	Available	Available
			250	10 x 10			
			100	10 x 20			
Flexible	Adsorption Ion Exchange	General Anionic Anionic Biopolymers	250	20 x 20	-	-	Available
			100	20 x 20			

Diamond Series TLC Plates

Whatman Diamond Series TLC Plates exhibit gem-like qualities of hardness and reflectance. These technologically advanced plates facilitate dipping and spraying and will not crack or flake. They allow you to perform scanning densitometry with the lowest noise backgrounds for maximum range in detection. The smooth surface of the plates prevents ripples from interfering with scanning or development.

Features and Benefits

- Highly reflective surface minimizes background noise while scanning
- Superior organic binder prevents surface deterioration even when using the strongest reagent
- Uniform particle size and distribution add to efficiency by reducing band spreading
- The 60 Å pore 450 m²/g surface area provides optimum characteristics for most clinical, educational and general analytical applications. Fast development of spots with excellent resolution makes the Diamond Series plates very suitable for screening and toxicology work. They are ideal for the analysis of micro samples.

The plates will withstand most solvent systems and any applied developing reagent without silica falling off the plate or reacting with reagents. They can be charred to 180° C with cupric acetate/phosphoric acid reagents.

Because 85% of all TLC users employ fluorescent plates, Diamond Series offers the best for UV quenching and visual work. All plates are silica gel with UV-254 fluorescent indicator and available with channeling and linear preadsorbent spotting area for faster, more accurate sample application.

Ordering Information - Diamond Series TLC Plates

Catalog Number	Product Code	Plate Size (cm)	Linear-K	Channeled	Fluorescent Indicator	Quantity/Pack
Diamond Series TLC Plates (250 µm Layer)						
4500-101	MK6F	1" x 3"	-	-	Yes	500
4500-105	K6F	20 x 10	-	-	Yes	25
4500-303	LK6DF	5 x 20	Yes	4 channels	Yes	75
4500-305	LK6DF	20 x 20	Yes	19 channels	Yes	25

EH6 Extra Hard TLC Plates

Whatman EH6 series extra hard TLC plates address chromatographers' need for harder, smoother, more abrasion-resistant layers. These technologically advanced plates facilitate dipping and spraying and will not crack or flake. The plates will withstand most solvent systems and any applied visualization reagent without silica falling off the plate or reacting with the reagents. They can be charred to 180° C with cupric acetate/phosphoric acid reagents.

Each lot of EH6 TLC plates undergoes extensive quality control testing including a pendulum hardness test to ensure outstanding lot-to-lot reproducibility.

Features and Benefits

- Extra hard surface makes it easier to write on with a pen or pencil
- Highly reflective surface minimizes background noise while scanning
- Superior organic binder prevents surface deterioration even when using the strongest reagent
- Uniform particle size and distribution add to efficiency by reducing band spreading
- Available in bulk quantities

Applications

- The 60 Å pore 450 m²/g surface area silica used provides optimum characteristics for most clinical, educational and general analytical applications
- Moderate development times and bands with excellent resolution make the EH6 Series plates very suitable for screening and toxicology work
- Ultra low noise backgrounds allow you to perform scanning densitometry with maximum detection range

Ordering Information - EH6 Extra Hard TLC Plates

Catalog Number	Description	Size (cm)	Layer Thickness (µm)	Fluorescent Indicator	Quantity/Box
4841-820	EH6F	20 x 20	250	Yes	25
4841-125	EH6F	2.5 x 7.5	250	Yes	500

Flexible TLC Plates

Flexible backed TLC plates (supplied in a single 20 cm x 20 cm size) offer you economy and convenience. They can be cut with scissors to match individual separation requirements, making them ideal for applications that require rapid sample isolation or elution prior to other analytical techniques (e.g. scintillation counting).

Features and Benefits

- Silica gel 60Å flexible plates exhibit similar selectivity to the glass backed K6 plates and are widely applicable for moderately to strongly polar analytes (Available on aluminum or polyester backing material)
- Ion exchange plates (DEAE - diethylaminoethyl tertiary amine) are used for anionic species and are available on polyester backed material
- Aluminum backing is particularly useful for applications requiring charring
- Polyester backed plates can be heated up to 110° C and are compatible with mobile phases containing strong acids or bases



Ordering Information - Flexible TLC Plates

Catalog Numbers	Type	Product Code	Flexible Backing	Layer Thickness (µm)	Plate Size (cm)	Fluorescent Indicator	Quantity/Pack
4410-221	Silica Gel 60Å	PE SIL G	Polyester	250	20 x 20	-	25
4410-222	Silica Gel 60Å	PE SIL G/UV254	Polyester	250	20 x 20	Yes	25
4420-221	Silica Gel 60Å	AL SIL G	Aluminum	250	20 x 20	-	25
4420-222	Silica Gel 60Å	AL SIL G/UV254	Aluminum	250	20 x 20	Yes	25
4410-224	DEAE cellulose	PE CEL300 DEAE (Diethylaminoethyl)	Polyester	100	20 x 20	-	25

Partisil High Performance TLC Plates

Whatman HPTLC plates can be used for your most sensitive separations. These plates consist of a 4.5 µm particle size silica gel plus an inert binder in a uniform 200 µm layer on glass. They exhibit product characteristics typical of Whatman silica gel media: narrow particle size distribution, homogeneity and overall uniformity. The results are performance and reproducibility, giving you the ultimate in TLC resolution and sensitivity.



Features and Benefits

- Dense, uniform layer provides stable baseline in densitometry
- Short development distance and times
- Low band diffusion provides very compact sample bands and increased detection sensitivity
- Micro samples (nanograms and picograms) can be analyzed
- Reproducibility inherent in Whatman chromatography products

Whatman HPTLC plates are referenced in a patented procedure for fetal lung maturity testing.

Patent holders: Juan G. Alvarez and Jack Ludmir.

Ordering Information - Partisil High Performance TLC Plates

Catalog Number	Product Code	Plate Size (cm)	Linear-K	Channeled	Fluorescent Indicator	Quantity/Pack
200 µm Layer						
4807-050	HP-K	5 x 5	-	-	-	100
4802-050	HP-KF	5 x 5	-	-	Yes	100
4807-400	HP-K	10 x 10	-	-	-	100
4802-400	HP-KF	10 x 10	-	-	Yes	100
4807-425	HP-K	10 x 10	-	-	-	25
4802-425	HP-KF	10 x 10	-	-	Yes	25
4807-700	HP-K	10 x 20	-	-	-	50
4802-700	HP-KF	10 x 20	-	-	Yes	50
4805-410	LHP-K	10 x 10	Yes	-	Yes	100
4806-410	LHP-KF	10 x 10	Yes	-	Yes	100
4805-420	LHP-K	10 x 10	Yes	-	-	25
4806-420	LHP-KF	10 x 10	Yes	-	Yes	25
4805-421	LHP-KD	10 x 10	Yes	9 channels	-	25
4806-421	LHP-KDF	10 x 10	Yes	9 channels	Yes	25
4805-710	LHP-K	20 x 10	Yes	-	-	50
4806-710	LHP-KF	20 x 10	Yes	-	Yes	50
4805-711	LHP-KD	20 x 10	Yes	19 channels	-	50
4806-711	LHP-KDF	20 x 10	Yes	19 channels	Yes	50

Partisil® K6 and K5 Adsorption TLC Plates

Whatman Partisil K6 60Å and K5 150Å plates provide a choice of high-purity silica gels and polarity for normal phase separations. They give superior performance compared to silica gel 'G' through better resolution, higher sensitivity and more durability. Moderate layer hardness makes possible convenient spot recovery with the aid of a sample recovery tube.

Features and Benefits

- Excellent reproducibility; negligible moisture uptake
- Chemically and optically inert organic binder
- Outstanding layer stability
- Fast separation with excellent resolution
- Quality separation of moderately to strongly polar compounds
- Aggressive reagent resistance
- Wide applicability, including carbohydrates, antibiotics, alkaloids, amino acids and phospholipids

Ordering Information - Partisil K6 and K5 Adsorption TLC Plates

Catalog Number	Product Code	Plate Size (cm)	Linear-K Preadsorbent	Channelled	Fluorescent Indicator	Quantity/ Pack
K6 Adsorption (Silica Gel) 60Å TLC Plates (250 µm Layer)						
4861-110	MK6F	1" x 3"	-	-	Yes	500
4860-320	K6	5 x 10	-	-	-	150
4861-320	K6F	5 x 10	-	-	Yes	150
4860-620	K6	5 x 20	-	-	-	75
4861-620	K6F	5 x 20	-	-	Yes	75
4860-720	K6	10 x 20	-	-	-	50
4861-720	K6F	10 x 20	-	-	Yes	50
4860-820	K6	20 x 20	-	-	-	25
4861-820	K6F	20 x 20	-	-	Yes	25
4861-830	PK6F*	20 x 20	-	-	Yes	22
4861-840	PK6F**	20 x 20	-	-	Yes	20
4865-620	LK6	5 x 20	Yes	-	-	75
4866-620	LK6F	5 x 20	Yes	-	Yes	75
4865-621	LK6D	5 x 20	Yes	4 channels	-	75
4866-621	LK6DF	5 x 20	Yes	4 channels	Yes	75
4865-820	LK6	20 x 20	Yes	-	-	25
4866-820	LK6F	20 x 20	Yes	-	Yes	25
4865-821	LK6D	20 x 20	Yes	19 channels	-	25
4866-821	LK6DF	20 x 20	Yes	19 channels	Yes	25

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Catalog Number	Product Code	Plate Size (cm)	Linear-K Preadsorbent	Channelled	Fluorescent Indicator	Quantity/ Pack
K5 Adsorption (Silica Gel) 150Å TLC Plates (250 µm Layer)						
4851-320	K5F	5 x 10	-	-	Yes	150
4850-620	K5	5 x 20	-	-	-	75
4851-620	K5F	5 x 20	-	-	Yes	75
4850-720	K5	10 x 20	-	-	-	50
4851-720	K5F	10 x 20	-	-	Yes	50
4850-820	K5	20 x 20	-	-	-	25
4851-820	K5F	20 x 20	-	-	Yes	25
4850-830	PK5*	20 x 20	-	-	-	20
4850-840	PK5**	20 x 20	-	-	-	20
4851-830	PK5F*	20 x 20	-	-	Yes	20
4851-840	PK5F**	20 x 20	-	-	Yes	20
4855-840	PLK5**	20 x 20	Yes	-	-	20
4856-840	PLK5F**	20 x 20	Yes	-	Yes	20
4855-620	LK5	5 x 20	Yes	-	-	75
4855-621	LK5D	5 x 20	Yes	4 channels	-	75
4856-621	LK5DF	5 x 20	Yes	4 channels	Yes	75
4855-820	LK5	20 x 20	Yes	-	-	25
4856-820	LK5F	20 x 20	Yes	-	Yes	25
4855-821	LK5D	20 x 20	Yes	19 channels	-	25
4856-821	LK5DF	20 x 20	Yes	19 channels	Yes	25
4855-840	PLK5**	20 x 20	Yes	-	-	20
4856-840	PLK5F**	20 x 20	Yes	-	Yes	20

* Preparative 500 µm layer

** Preparative 1000 µm layer

Partisil® Reversed Phase TLC Plates

With reversed phase plates, Whatman provides a choice of two carbon chain lengths - C-18 and C-2 - and Multi-K dual phase layers. The chain length of the hydrocarbon functional groups primarily affects retention and the ability to accommodate the water content of solvent systems. The shorter carbon chain is used for increased polarity and affinity for aqueous solutions while the longer chains give greater retention and hydrophobicity. KC-18 plates are also available with a preadsorbent zone which facilitates sample application.

Features and Benefits

- Proven performance, quality and reliability
- Compatibility with highly aqueous solvent systems, for greater flexibility
- Ready correlation with reverse phase HPLC results

Multi-K Dual Phase for Demanding Samples

Multi-K combines silica gel and reversed phase C-18 layers side by side on the same plate. They can be successfully used for the separation of mixed polarity samples by two-dimensional chromatography utilising two different separation mechanisms. Additionally, they offer single step sample cleanup.

Ordering Information - Multi-K Dual Phase for Demanding Samples

Catalog Number	Type	Product Code	Plate Size (cm)	Linear-K Preadsorbent	Fluorescent Indicator	Quantity/Pack
Reversed Phase TLC Plates (200 µm Layer)						
4803-110	C-18 Microslide	MKC-18F	1" x 3"	-	Yes	100
4801-600	C-18	KC-18	5 x 20	-	-	75
4803-600	C-18	KC-18F	5 x 20	-	Yes	75
4801-425	C-18	KC-18	10 x 10	-	-	25
4803-425	C-18	KC-18F	10 x 10	-	Yes	25
4801-800	C-18	KC-18	20 x 20	-	-	25
4803-800	C-18	KC-18F	20 x 20	-	Yes	25
4800-600	C-18 with Linear-K	LKC-18	5 x 20	Yes	-	75
4800-620	C-18 with Linear-K	LKC-18F	5 x 20	Yes	Yes	75
4800-800	C-18 with Linear-K	LKC-18	20 x 20	Yes	-	25
4800-820	C-18 with Linear-K	LKC-18F	20 x 20	Yes	Yes	25
4800-840	C-18 with Linear-K* (Preparative)	PLKC-18F	20 x 20	Yes	Yes	20
4809-800	C-2	KC-2	20 x 20	-	-	25
4809-820	C-2	KC-2F	20 x 20	-	Yes	25
Reversed Phase TLC Plates (250 µm Layer)						
4804-820	Multi-K C-S5 Dual Phase (3 cm C-18 Strip on Silica Gel Layer)	-	20 x 20	-	Yes	25

* 1000 µm layer