Analytical Methods
Analytical Chromatography

In the world of analytical chemistry, chromatography has become the most widely used analytical technique due to the convenience, speed of separations, reproducibility, and quantitative accuracy of results that are inherent to the techniques. As instrument sensitivity continues to improve, suitable high purity solvents for the mobile phase and an effective sorbent stationary phase are becoming even more vital to success in the laboratory.

At Avantor, we manufacture chromatography media, develop proprietary bonding chemistries, offer innovative products to support diverse separation techniques and applications, and produce high purity solvents to maximize separation performance in all your chromatography applications.

High Performance Liquid Chromatography (HPLC) Analysis

Liquid chromatography (LC) is the most widely used chromatographic technique being done in most laboratories in operation today. The reasons are many—ease of use, speed, separation reproducibility, and accuracy of results. LC is also generally non-destructive to the sample components, allowing them to be recaptured as they come off the instrument. For optimum HPLC performance, you need the right solvents and reagents. Whatever your analytical application, Avantor offers the products you need to be successful.

Solvents, Acids, Bases, and Ion Pair Reagents

J.T.Baker HPLC grade and Macron Fine Chemicals ChromAR and UltimAR grade products are recommended for use in HPLC applications.

For critical HPLC applications, J.T.Baker solvents remain the preferred choice for chemists throughout the world. Continuing a decades-long tradition of innovation, purity and consistency, these solvents represent years of research and manufacturing excellence to help today's HPLC instruments achieve optimum results.

Macron Fine Chemicals ChromAR and UltimAR solvents offer excellent performance in HPLC applications along with the economy of a "universal" solvent suitable for multiple applications. ChromAR solvents meet ACS specifications. UltimAR

J.T.Baker HPLC Solvents

Product	Product Number
Acetone	9002
Acetone, Low Water	9003
Acetonitrile	9012
Acetonitrile*	9017
Chloroform, Hydrocarbon Stabilized	9174
Chloroform	9175
Cyclohexane	9292
o-Dichlorobenzene	9233
Ether, Anhydrous	9237
Ethyl Acetate	9282
n-Heptane	9177
Hexanes (95% n-hexane)	9304
Isobutyl Alcohol	9048
Methanol	9093
Methyl tert-Butyl Ether	9042
Methylene Chloride	9315
Methyl Ethyl Ketone	9214
Pentane	9331
2-Propanol	9095
Pyridine, Low Water	9393
Tetrahydrofuran	9441
Tetrahydrofuran (Stabilized)	9440
Tetrahydrofuran, Low Water	9439
Toluene	9351
1,2,4-Trichlorobenzene	9444
2,2,4-Trimethylpentane	9480
Water	4218

*ULTRA Gradient

For product specifications, packaging, and prices, please see the J.T.Baker brand A to Z section (pages 107-422) of this catalog or visit our web site at www.avantormaterials.com

Analytical Methods

J.T.Baker HPLC Acids and Buffers

Product	Product Number
Acetic Acid, Glacial	9515
Ammonium Acetate	0599
Ammonium Carbonate	0651
Ammonium Phosphate, Monobasic, Crystal	0777
Sodium Bicarbonate, Powder	3508
Trifluoroacetic Acid	9470

J.T.Baker Ion Pair Reagents

Product	Product Number
1-Heptanesulfonic Acid, Sodium Salt	2173
1-Hexanesulfonic Acid, Sodium Salt	2175
1-Octanesulfonic Acid, Sodium Salt	2818
1-Pentanesulfonic Acid, Sodium Salt	2841
Tetrabutylammonium Hydrogen Sulfate (98%)	V360
Tetrabutylammonium Hydroxide, Titrant (0.4 M in H_2O)	V365
Tetrabutylammonium Hydroxide in Water	9580
Tetrabutylammonium Phosphate	V375

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solvents meet ACS specifications for HPLC and UV spectrophotometry applications.

Our HPLC solvents are manufactured using multi-step purification processes that produce reliable, low backgrounds free of extraneous peaks. Statistical Quality Control (SQC) and Statistical Process Control (SPC) of our processes provide unmatched lot-to-lot consistency. Products are function tested for assay, water, residue after evaporation, and UV absorbance and fluorescence in critical ranges.

Select J.T.Baker acids, bases and ion pair reagents are also available in HPLC grade. These products enhance the usefulness of HPLC as an analytical technique. Products are controlled for solubility in aqueous and organic solutions, UV transparency, and metallic impurities.

Macron Fine Chemicals UltimAR Universal Solvents

Product	Product Number
Acetone	H451
Acetonitrile	H454
Chloroform	V551
Cyclohexane	V552
Dichloromethane	H485
Ether	V326
Ethyl Acetate	V553
Heptane	V554
Hexanes (95% n-Hexane)	H487
Isopropyl Alcohol	V555
Methyl Alcohol	H488
Pentane	V557
Petroleum Ether, 35°-60°C	H489
Tetrahydrofuran	V558
Toluene	V560
2,2,4-Trimethylpentane	V559

For product specifications, packaging, and prices, please see the Macron Fine Chemicals brand A to Z product listing section (pages 423-568) of this catalog or visit our web site at www.avantormaterials.com.

Macron Fine Chemicals ChromAR Liquid Chromatography Solvents

Product	Product Number	Product	Product Number
Acetic Acid, Glacial	V155	Ethyl Acetate*	H078
Acetone	2435	Heptane	5139
Acetonitrile	2856	Isopropyl Alcohol	3043
Acetonitrile*	H076	Methyl Alcohol, Anhydrous	3041
Chlorobenzene	4426	Methyl Alcohol, Anhydrous*	H080
Chloroform	H407	Methyl tert-Butyl Ether	5398
Chloroform	4443	Methyl Ethyl Ketone	6206
Dichloromethane	4879	Methyl Isobutyl Ketone	5923
Dichloromethane*	H077	NMP (N-Methyl-2-pyrrolidinone)	6392
N,N-Dimethylacetamide	5407	n-Propyl Alcohol	5351
N,N-Dimethylformamide	5356	Tetrahydrofuran	2858
Dimethyl Sulfoxide	2969	Toluene	4483
Ether	2854	2,2,4-Trimethylpentane	6043
Ethyl Acetate	3442	Water	6795

*SAFEMORE Container

For product specifications, packaging, and prices, please see the Macron Fine Chemicals brand A to Z product listing section (pages 423-568) of this catalog or visit our web site at www.avantormaterials.com.

Analytical Methods

Sorbents and Pre-Packed Columns

In addition to high-performance solvents, Avantor manufactures chromatography media for use in HPLC separations. J.T.Baker BAKERBOND sorbents are synthesized using trifunctional silane chemistry, which results in highly efficient and effective media.

J.T.Baker BAKERBOND Sorbents Trifunctional Silane Chemistry

Feature	Benefit
Increased resistance to hydrolysis	Longer column life
Greater stability at pH extremes	Broader effective pH use range
Reduced silanol interactions	Higher recoveries and less "tailing"
More consistent ligand density	Increased resolution and increased column lifetime versus monofunctional bonded phases

In the broadest terms, our sorbents include bonded phases on narrow-pore and wide-pore spherical or irregular silica and spherical polymer media. Our silica based BAKERBOND media are available in pre-packed columns or in bulk form for small and large molecule separations.

J.T.Baker Pre-Packed Analytical Columns

Description	Column Size	Particle Size	Particle Shape	Pore Size	Product Number	Price
Narrow-Pore—Reverse Phase						
Octadecyl (C_{18})	4.6 × 150 mm	5 µm	Spherical	120 Å	7098-01	$868.50
	4.6 × 250 mm	5 µm	Spherical	120 Å	7098-00	858.40
Octyl (C_8)	4.6 × 250 mm	5 µm	Spherical	120 Å	7109-00	1016.60
Cyano (CN)	4.6 × 250 mm	5 µm	Spherical	120 Å	7111-00	1024.20
Narrow-Pore—Normal Phase						
Cyano (CN)	4.6 × 250 mm	5 µm	Spherical	120 Å	7111-00	1024.20
Wide-Pore—Reverse Phase						
WP Butyl (C_4)	4.6 × 250 mm	5 µm	Spherical	300 Å	7116-00	786.20
WP Octyl (C_8)	4.6 × 100 mm	5 µm	Spherical	300 Å	7105-01	863.70
WP Octadecyl (C_{18})	4.6 × 100 mm	5 µm	Spherical	300 Å	7104-01	845.10
	4.6 × 250 mm	5 µm	Spherical	300 Å	7104-00	789.40
WP QUAT (strong anion exchanger)	4.6 × 50 mm	5 µm	Spherical	300 Å	7158-05	1263.30
	7.75 × 100 mm	5 µm	Spherical	300 Å	7158-06	1506.80
WP CBX (weak cation exchanger)	4.6 × 250 mm	5 µm	Spherical	300 Å	7114-00	1108.00
WP CARBOXY-SOLFON	4.6 × 250 mm	5 µm	Spherical	300 Å	7159-00	1113.70

Please inquire for additional sizes, configurations or functional groups.

J.T.Baker BAKERBOND Analytical Sorbents

Description	Package Size	Particle Size	Particle Shape	Pore Size	Product Number	Price
Narrow-Pore—Ion Exchange						
Propyl Sulfonic Acid (SO_3H)	10 g	5 µm	Spherical	120 Å	7081-01	$676.50
Narrow-Pore—Normal Phase						
Amino (NH_2)	10 g	5 µm	Spherical	120 Å	7070-01	628.70
Narrow-Pore—Reverse Phase						
Octadecyl (C_{18})	10 g	5 µm	Spherical	120 Å	7067-01	471.10

Please inquire for additional sizes, configurations or functional groups.

Ion Chromatography

As chromatography applications spread to separation of biomolecules, such as proteins and peptides, ion chromatography became a widely used technique. In this technique, the separation is due to ionic interactions between opposite charges in the molecules, sorbent, and liquid phase.

Ion chromatography is further subdivided into cation exchange and anion exchange chromatography. Change of pH or ionic concentration of the mobile phase is generally used to cause elution of the analyte.

Avantor manufactures a number of sorbents on spherical or irregular silica for use in ion exchange chromatography of both small and large molecules. J.T.Baker BAKERBOND spherical silica media exhibits higher mechanical strength than irregular silica and incorporates our proprietary surface chemistry in a variety of particle and pore sizes. Our online Technical Library at www.avantormaterials.com contains a selection of application notes for ion exchange applications.

J.T.Baker BAKERBOND Ion Chromatography Media

Description	Package Size	Particle Size	Particle Shape	Pore Size	Product Number	Price
Narrow Pore Media						
Propyl Sulfonic Acid (SO_3H)	10 g	5 µm	Spherical	120 Å	7081-01	$676.50
	100g	40 µm	Irregular	60 Å	7045-00	386.40
Quaternary Amine (N^+)	100 g	40 µm	Irregular	60 Å	7043-00	391.90
	1 kg	40 µm	Irregular	60 Å	7043-01	1824.90
Aromatic Sulfonic Acid ($C_6H_5SO_3H$)	100 g	40 µm	Spherical	60 Å	7046-00	519.40
	1 kg	40 µm	Spherical	60 Å	7046-01	3840.50
Carboxylic Acid (COOH)	100 g	40 um	Irregular	60 Å	7044-00	386.40
DEAM	100 g	10 um	Spherical	120 Å	7316-00	640.10
	1 kg	10 um	Spherical	120 Å	7316-01	5120.70
	500g	20 um	Spherical	120 Å	7317-05	2814.00
Wide Pore Media						
ABx (antibody exchanger)	10 g	40 µm	Irregular	275 Å	7269-02	132.90
	100 g	40 µm	Irregular	275 Å	7269-00	579.70
	500 g	40 µm	Irregular	275 Å	7269-05	2560.40
	1 kg	40 um	Irregular	275 Å	7269-01	4830.80
	10 g	15 um	Spherical	300 Å	7157-02	135.40
	100 g	15 um	Spherical	300 Å	7157-00	652.30
	500 g	15 um	Spherical	300 Å	7157-05	2867.60
	10 g	40 um	Irregular	500 Å	7369-02	134.70
	100 g	40 um	Irregular	500 Å	7369-00	640.10
	500 g	40 um	Irregular	500 Å	7369-05	2853.60
Abx Plus (antibody exchanger)	10 g	40 um	Irregular	275 Å	7254-02	132.90
	100 g	40 um	Irregular	275 Å	7254-00	579.70
	500 g	40 um	Irregular	275 Å	7254-05	2294.70

Analytical Methods

J.T.Baker BAKERBOND Ion Chromatography Media

Description	Package Size	Particle Size	Particle Shape	Pore Size	Product Number	Price
WP PEI (weak anion exchanger)	10 g	40 um	Irregular	275 Å	7264-02	$160.00
	100 g	40 um	Irregular	275 Å	7264-00	579.70
	500 g	40 um	Irregular	275 Å	7264-05	2294.70
	10 g	15 um	Spherical	300 Å	7180-02	134.70
	100 g	15 um	Spherical	300 Å	7180-00	640.10
	500 g	15 um	Spherical	300 Å	7180-05	2866.20
	10 g	40 um	Irregular	500 Å	7368-02	132.90
	100 g	40 um	Irregular	500 Å	7368-00	640.10
	500 g	40 um	Irregular	500 Å	7368-05	2814.00
WP DEAM (weak anion exchanger)	10 g	40 um	Irregular	275 Å	7473-02	132.90
	100 g	40 um	Irregular	275 Å	7473-00	579.70
	500 g	40 um	Irregular	275 Å	7473-05	2294.70
	1 kg	40 um	Irregular	275 Å	7473-01	4589.40
	100 g	5 um	Spherical	300 Å	7471-00	5289.00
	10 g	15 um	Spherical	300 Å	7472-02	132.90
	1 kg	15 um	Spherical	300 Å	7472-01	Inquire
WP QUAT (Strong Ion Exchanger)	10 g	40 um	Irregular	275 Å	7251-02	132.90
	100 g	40 um	Irregular	275 Å	7251-00	579.70
	10 g	15 um	Spherical	300 Å	7183-02	135.40
WP CBX (weak cation exchanger)	10 g	40 um	Irregular	275 Å	7263-02	188.10
	100 g	40 µm	Irregular	275 Å	7263-00	820.50
	500 g	40 µm	Irregular	275 Å	7263-05	3247.70
	1 kg	40 µm	Irregular	275 Å	7263-01	6495.50
	10 g	15 µm	Spherical	300 Å	7181-02	135.40
	500 g	15 µm	Spherical	300 Å	7181-05	2867.60
WP CARBOXY-SULFON (weak cation exchanger)	10 g	40 µm	Irregular	275 Å	7252-02	184.70
	100 g	40 µm	Irregular	275 Å	7252-00	579.70
	500 g	40 µm	Irregular	275 Å	7252-05	2294.70
	1 kg	40 µm	Irregular	275 Å	7252-01	4589.40
	10 g	15 µm	Spherical	300 Å	7184-02	132.90
	500 g	15 µm	Spherical	300 Å	7184-05	2814.00
WP SULFONIC (strong cation exchanger)	10 g	40 µm	Irregular	275 Å	7489-02	132.90
	100 g	40 µm	Irregular	275 Å	7489-00	579.70
	500 g	40 µm	Irregular	275 Å	7489-05	2294.70

LC/MS and UHPLC Analysis

The rapid growth of LC/UV and LC/MS and the development of Ultra High-Pressure Liquid Chromatography (UHPLC) technology have created a need for suitable solvents for use in these applications. Avantor has responded by applying our many years of experience in purification, distillation, and blending to develop a line of high quality J.T.Baker solvents and solvent blends to ensure optimal instrument performance.

Solvents and Solvent Blends

The new J.T.Baker ULTRA LC/MS line of products was developed for the most demanding UHPLC and mass spectrometry (MS) applications, such as proteomics, drug discovery, pharmacokinetics, and clinical research. ULTRA LC/MS solvents are designed to extend the useful life of UHPLC columns by significantly reducing particles and minimizing the occurrence of erroneous peaks caused by the formation of metal adducts or the presence of organic impurities, such as phthalates or polyethylene glycol.

Solvents and Solvent Blends for UHPLC and LC/MS Applications

J.T.Baker ULTRA LC/MS Solvents

Product	Product Number
Acetonitrile	9853
Methanol	9863
Water	9823

J.T.Baker LC/MS Solvents and Blends

Product	Product Number
Acetonitrile	9829
Acetonitrile-0.1% Formic Acid	9832
Acetonitrile-0.1% Trifluoroacetic Acid	9835
Ethyl Acetate	9828
Methanol	9830
2-Propanol	9827
Water	9831
Water-0.05 % Formic Acid	9837
Water-0.1% Formic Acid	9834
Water-0.15% Formic Acid	9838
Water-0.05% Trifluoroacetic Acid	9839
Water-0.1% Trifluoroacetic Acid	9836
Water-0.15% Trifluoroacetic Acid	9840

For product specifications, packaging, and prices, please see the J.T.Baker brand A to Z section (pages 107-422) of this catalog or visit our web site at www.avantormaterials.com

ULTRA LC/MS products undergo advanced suitability testing with both electrospray positive and negative modes to strengthen detection of extraneous organic impurities. The result is minimal baseline noise, reduced ionization suppression, and improved sensitivity to both small and large molecule detection. Solvents are packaged in borosilicate bottles to minimize leaching of trace metal impurities over time, which reduces metal adduct formation, improves analyte identification and ensures reliable, consistent, and reproducible results.

J.T.Baker LC/MS grade solvents and blends are optimized to provide low particulates, polyethylene glycol, phthalates and amides, and extremely low levels of metal ions and non-volatile residue. Products are function tested for LC/MS suitability, ESI+, UV-Vis absorbance, trace metals, residue after evaporation, and assay. Interference-free baselines ensure users can have the highest confidence in solvent performance in their applications.

Analytical Methods

Products for Gas Chromatography (GC) Analysis

The rigorous demands of EPA extraction/concentration protocols drove the development of J.T.Baker and Macron Fine Chemicals brand solvents for GC analysis. J.T.Baker solvents are designed, manufactured and tested to provide the best performance on any GC. Macron Fine Chemicals solvents are tested and controlled for optimum purity and lot-to-lot consistency for reproducible results at an economical price.

J.T.Baker ULTRA RESI-ANALYZED Solvents

Product	Product Number
Acetone	9254
Acetonitrile	9255
Carbon Disulfide	E350
Chloroform	9257
Cyclohexane	9258
Dichloromethane	9264
Ether	9259
Ethyl Acetate	9260
n-Heptane	9338
Hexanes (95% n-Hexane)	9262
Hexanes (99% n-Hexane)	N168
Methanol	9263

Product	Product Number
Methanol (for Purge & Trap analysis)	9077
Methyl tert-Butyl Ether	9043
Methylene Chloride	9264
Pentane	9333
Petroleum Ether	9265
2-Propanol	9334
Sodium Sulfate Anhydrous (12-60 Mesh)	3375
Tetrachloroethylene	9360
Toluene	9336
2,2,4-Trimethylpentane (Iso-octane)	9335
Water	4219

For product specifications, packaging, and prices, please see the J.T.Baker brand A to Z section (pages 107-422) of this catalog or visit our web site at www.avantormaterials.com

Macron Fine Chemicals UltimAR Solvents

Product	Product Number
Acetone	H451
Acetonitrile	H454
Chloroform	V551
Cyclohexane	V552
Dichloromethane (Methylene Chloride)	H485
Ether	V326
Ethyl Acetate	V553
Heptane	V554

Product	Product Number
Hexanes (95% n-Hexane)	H487
Isopropyl Alcohol	V555
Methanol	H488
Pentane	V557
Petroleum Ether, 35-60 °C	H489
Tetrahydrofuran	V558
Toluene	V560
2,2,4-Trimethylpentane	V559
Water	V564

For product specifications, packaging, and prices, please see the Macron Fine Chemicals brand A to Z product listing section (pages 423-568) of this catalog or visit our web site at www.avantormaterials.com.

Solvents

J.T.Baker ULTRA RESI-ANALYZED solvents and Macron Fine Chemicals UltimAR solvents are recommended for use in GC applications.

J.T.Baker ULTRA RESI-ANALYZED solvents start with the finest raw materials available, pass through a combination of chemical and non-chemical purification technologies that remove reactive solvent impurities, producing higher assays and narrow solvent fronts, and are packaged to maintain purity. Inert gas blanketing throughout the manufacturing and packaging processes, and our unique stabilizer systems provide unmatched product stability and interference-free results.

Products are then function-tested on high resolution capillary GC and proven suitable to the ppt/ppb level on both ECD and FID detectors. Products are tested to meet EPA requirements for extraction/concentration procedures and AOAC requirements for pesticide residue analysis. They are also performance-tested to purity levels below the Lower Level of Quantitation (LLQ) for trace analyte detection by standard EPA methods.

Macron Fine Chemicals UltimAR solvents are manufactured using advanced multi-step purification processes to assure dependable, consistent solvent performance. These solvents are tested for use in extraction/concentration protocols for trace level organic residue analysis. Low UV absorbance, residue after evaporation, and water levels provide flat base lines and extend column life, while consistent gradient profiles deliver reproducible results. The versatility of UltimAR universal solvents eliminates the need to inventory multiple grades of solvents for different applications.

Thin-Layer Chromatography and Flash Chromatography Analysis

The techniques of Thin Layer Chromatography (TLC) and Flash Chromatography can be carried out with very simple apparatus, yet produce very effective separations of compounds. Both types of chromatography offer an opportunity to utilize efficient and economical technology to achieve excellent separation results. Both techniques can be used for preliminary characterization of samples for processing in HPLC instrumentation without putting an expensive column at risk. Other common uses include process development, organic synthesis monitoring, and sample component separations for further analysis or processing

Thin-Layer Chromatography

J.T.Baker Thin-Layer Chromatography (TLC) plates and polyester-backed sheets are configured with and without fluorescent indicators using a variety of sorbents and layer thicknesses. Some glass plates are configured with individual channels (4 or 19) to prevent crossover of samples during processing. Polyester-backed sheets can be easily cut to remove a section of the sheet containing a sample component of interest.

J.T.Baker Hard Layer, Glass-Backed TLC Plates

		Without Fluorescent Indicator			With Fluorescent Indicator		
Plate Size (cm)	**Qty**	**Description**	**Product Number**	**Price**	**Description**	**Product Number**	**Price**
10 µm SILICA GEL PLATES, 250 µm Analytical Layer							
20 x 20	25	BAKER Si250	7000-04	$177.15	BAKER Si250F	7001-04	$177.15
10 x 20	50	BAKER Si250	7000-03	241.10	BAKER Si250F	7001-03	241.10
5 x 20	100	—	—	—	BAKER Si250F	7001-00	256.70
1 x 3 (inch)	100	—	—	—	BAKER Si250F	7001-01	231.10
5 x 10	150	—	—	—	BAKER Si250F	7001-02	313.55
10 µm SILICA GEL PLATES, 500 µm Analytical Layer							
20 x 20	20	—	—	—	BAKER Si500F	7002-05	327.60
5 µm SILICA GEL PLATES, High Performance TLC, 200 µm Preparative Layer							
10 x 20	50	—	—	—	BAKER SiHPF	7011-03	657.80
5 µm SILICA GEL PLATES, 1000 µm Preparative Layer							
20 x 20	20	—	—	—	BAKER Si1000F-PA (19C)	7130-10	549.75
10 µm SILICA GEL PLATES, 250 µm Analytical Layer							
20 x 20	25	BAKER Si250-PA	7003-04	230.10	BAKER Si250F-PA	7004-04	284.95
20 x 20	25	BAKER Si250 (19C)	7005-04	201.45	BAKER Si250F (19C)	7007-04	201.45
20 x 20	25	BAKER Si250-PA (19C)	7009-04	253.80	BAKER Si250F-PA (19C)	7010-04	242.00
5 x 20	100	—	—	—	BAKER Si250F (4C)	7008-00	299.30
10 µm SILICA GEL PLATES, Reverse Phase, Octadecyl Silica (C_{18}), 200 µm Analytical Layer							
20 x 20	25	BAKER Si-C_{18}	7012-04	575.05	BAKER Si-C_{18}F	7013-04	575.05

Note: PA in description indicates preadsorbent spotting area. (19C) in description indicates a 19-channel plate. (4C) in description indicates a 4-channel plate.

J.T.Baker Baker-flex Polyester-Backed TLC Sheets

		Without Fluorescent Indicator			With Fluorescent Indicator		
Plate Size (cm)	**Qty/Box**	**Description**	**Product Number**	**Price**	**Description**	**Product Number**	**Price**
ALUMINUM OXIDE SHEETS, 200 µm Analytical Layer							
2.5 x 7.5	200	Aluminum Oxide 1B	4466-02	$170.90	Aluminum Oxide 1B-F	4467-02	$171.25
5 x 20	50	—	—	—	Aluminum Oxide 1B-F	4467-00	175.65
20 x 20	25	—	—	—	Aluminum Oxide 1B-f	4467-04	292.95

Analytical Methods

J.T.Baker Baker-flex Polyester-Backed TLC Sheets

		Without Fluorescent Indicator			With Fluorescent Indicator		
Plate Size (cm)	Qty/Box	Description	Product Number	Price	Description	Product Number	Price
Cellulose Sheets, 250 µm Analytical Layer							
5 x 20	50	—	—	—	Cellulose F	4469-00	198.90
20 x 20	25	Cellulose	4468-04	$332.80	—	—	—
5 x 20	50	Cellulose PEI	4473-00	228.60	Cellulose PEI-F	4474-00	198.90
20 x 20	25	Cellulose PEI	4473-04	389.25	Cellulose PEI-F	4474-04	337.70
5 x 20	50	Cellulose DEAE	4477-00	207.60	—	—	—
20 x 20	25	Cellulose Microcrystalline	4480-04		—	—	—
Silica Gel, 250 µm Analytical Layer							
2.5 x 7.5	200	Silica Gel IB2	4448-02	175.50	Silica Gel IB2-F	4449-02	175.50
5 x 20	50	Silica Gel IB2	4448-00	178.95	Silica Gel IB2-F	4449-00	173.90
20 x 20	25	Silica Gel IB2	4448-04	305.05	Silica Gel IB2-F	4449-04	264.00
Silica Gel, 250 µm Analytical Layer							
2.5 x 7.5	200	Silica Gel IB	4462-02	177.85	Silica Gel IB-F	4463-02	164.30
5 x 20	50	Silica Gel IB	4462-00	182.45	Silica Gel IB-F	4463-00	178.50
20 x 20	25	Silica Gel IB	4462-04	293.35	Silica Gel IB-F	4463-04	270.10

Flash Chromatography

Avantor offers spherical silica media for flash chromatography that provide separation performance comparable to HPLC. Most flash chromatography media on the market today is irregular shaped silica. Additional advantages of using J.T.Baker flash chromatography media include higher adsorption capacity, improved reproducibility of separations, higher flow rates for improved productivity, and higher mechanical strength for longer column life.

For the best economy, we recommend Macron Fine Chemicals SilicAR irregular media, available in a large variety of sizes. This media is ideal for academic or industrial applications where you pack your own columns.

J.T.Baker Flash Chromatography Products

Description	Size	Particle Size	Pore Size	Product Number	Price
BAKERBOND Spherical Flash Silica Gel					
	500 g	50 µm	60 Å	7620-01	$238.25
	1 kg	50 µm	60 Å	7620-02	398.25
	5 kg	50 µm	60 Å	7620-03	1344.15

Macron Fine Chemicals Flash Chromatography Products

Description	Size	Particle Size	Pore Size	Product Number	Price
Macron SilicAR Silica					
Silica Gel 60 (40–63 microns) SilicAR	1 kg	47-61 µm	55-77 Å	V150-10	$506.80

Silica Gels for Preparative (Low Pressure) Chromatography

J.T.Baker silica gels are available in either 60 or 150 Å pore sizes for use in low pressure preparative chromatography. Most have mesh specifications to ensure there is not an excess of fines in the product, which can affect flow rates and separation performance.

Macron Fine Chemicals SilicAR silica gels are an excellent value for laboratory, pilot plant, and production facility purifications. High surface area of these sorbents improves productivity by increasing loading capacity and yield per liter of solvent consumed. Narrow-pore size distribution sharpens peaks and improves resolution. Lot-to-lot consistency provides predictable separations whether you are using gram or kilogram quantities of sorbent.

J.T.Baker Silica Gels for Preparative (Low Pressure) Chromatography

Description	Package Size	Particle Size	Particle Shape	Pore Size	Product Number	Price
Silica Gel – Flash	500 g	40 µm	Irregular	60 Å	7024-05	$142.35
	1 kg	40 µm	Irregular	60 Å	7024-01	236.00
	12 kg	40 µm	Irregular	60 Å	7024-02	1332.00
	25 kg	40 µm	Irregular	60 Å	7024-25	2025.10
Silica Gel (60-200 mesh)	500 g	—	—	150 Å	3405-01	247.45
	2.5 kg	—	—	150 Å	3405-05	581.35
	4 x 2.5 kg	—	—	150 Å	3405-05	2325.40
	25 kg	—	—	150 Å	3405-25	3637.10
Silica Gel (40-140 Mesh)	500 g	—	—	60 Å	3404-01	151.50
Silica Gel (170-400 Mesh)	25 kg	63 µm	Irregular	60 Å	7605-25	1352.60
Silanized Glass Wool	50 g	—	—	—	7084-05	102.30
Sand	500 g	—	—	—	7023-01	33.85

Macron Fine Chemicals SilicAR Silica Gels for Preparative (Low Pressure) Chromatography

Description	Size	Particle Size	Particle Shape	Pore Size	Product Number	Price
Silica Gel 30	250 g	75 – 150 µm	Irregular	30 Å	V152-02	$141.90
	4 x 250 g	75 – 150 µm	Irregular	30 Å	V152-02	454.00
	2.3 kg	75 – 150 µm	Irregular	30 Å	V152-13	1075.00
	4 x 2.3 kg	75 – 150 µm	Irregular	30 Å	V152-13	2925.20
Silica Gel 60	1 kg	40-63 µm	—	60 Å	V150-10	506.80
	5 kg	40-63 µm	—	60 Å	V150-64	1030.80
	25 kg	40-63 µm	—	60 Å	V150-23	2848.85
Silica Gel Type 60 Å	250 g	250-500 µm	—	60 Å	6462-02	127.75
Silica Gel Type 60 Å	250 g	150-250 µm	—	60 Å	6451-02	172.60
Silica Gel Type 60 Å	250 g	75-150 µm	—	60 Å	6447-02	158.70
Silica Gel Grade 62	250 g	75-250 µm	—	150 Å	6551-02	164.95
Silica Gel Grade 62	2.5 kg	75-250 µm	—	150 Å	6551-05	624.90
Silica Gel Type 150 Å	250 g	75-150 µm	—	150 Å	6512-02	159.90
SilicAR CC-4	500 g	75-250 µm	—	60 Å	7086-12	530.00

Analytical Methods

Sample Preparation Products

For as long as scientists have been analyzing compounds, there has been a need for sample preparation to extract and purify sample components. Today's technology for sample preparation is Solid Phase Extraction (SPE), pioneered by Avantor scientists in the 1970's. SPE is grounded in the principles of chromatography—differential interaction between a liquid sample and a solid sorbent that can separate the sample components. Advantages of today's SPE over other wet chemistry methods, such as liquid/liquid extraction, include increased speed, reduced hazardous solvent use and exposure, and improved reproducibility of the separation.

We offer a wide range of J.T.Baker silica- and polymer-based SPE columns and unique, high performance *Speedisk* columns and disks. Columns are available in a wide variety of sorbents to improve and simplify sample cleanup and concentration. Our polymer sorbents are highly rigid, water-wettable, and stable over pH range 1–14.

The Avantor online technical library at www.avantormaterials.com contains many Application Notes concerning specific use of our products in applications.

Our SPE products are available in a variety of formats and configurations.

Avantor also offers J.T.Baker vacuum and positive-pressure processors for SPE columns, disks, and plates.

The guide on the following page can help you select appropriate sorbents and solvents for separations based on sample type and separation parameters.

J.T.Baker SPE Product Formats

Format	Description
BAKERBOND SPE Columns	Standard BAKERBOND SPE 1, 3, and 6 mL columns, round-rimmed and ear shaped in ultraclean polypropylene and glass.
Speedisk Columns	*Speedisk* 1, 3 and 6 mL columns are configured to run 9 times faster than traditional SPE columns, operating with smaller solvent volumes and having higher capacity per milligram sorbent than conventional SPE columns.
Speedisk 96 Columns	Rimless 20 mg *Speedisk* columns made for insertion in a *Speedisk* 96 column holder for use on a microplate processor.
Speedisk 96 Well Plate	A one-piece molded 96 well plate that is pre-assembled with the silica or polymer sorbent of your choice. The plate was designed with standard geometries to adapt to most popular automated liquid handling systems.
Speedisk Extraction Disks	50 mm disks that are the correct choice for samples from 200 mL to 2 L. They are neither cartridge nor membrane. A thin bed of BAKERBOND sorbent microparticles is supported in a laminar structure to maintain speed and capacity and enhance reproducibility of adsorption.

Selection Guide for SPE Sorbents and Solvents

SAMPLE SOLUBILITY	Organic Solvent Soluble			Ionic		Water Soluble		
						Non-ionic / Ion paired		
SAMPLE MATRIX	Organic	Organic	Aqueous	Aqueous		Aqueous	Aqueous	Aqueous
	Polar	Moderately Polar	Non Polar	Anionic	Cationic	Non Polar	Moderately Polar	Polar
MECHANISM[1]	NPC	LSC	RPC	IEC	IEC	RPC	LSC	NPC
	H_2O-Philic DVB	H_2O-Phobic DVB	H_2O-Phobic DVB	H_2O-Phobic WA-DVB	H_2O-Phobic SC-DVB	H_2O-Phobic DVB	H_2O-Phobic DVB	H_2O-Philic DVB
SPE PHASE	Cyano	H_2O-Philic DVB	H_2O-Philic DVB	H_2O-Philic SA-DVB	H_2O-Philic SC-DVB	H_2O-Philic DVB	H_2O-Philic DVB	Cyano
RECOMMENDED[2]	Diol	Silica gel	SA-DVB	Amino	Cyano	SDB-1/SDB-2	Silica Gel	Diol
	Amino	Florisil	SDB-1/SDB-2	1,2 Amino	Carboxylic Acid	Octadecyl	Florisil	Amino
	1,2 Amino	Alumina	Octadecyl	Quaternary Amine	Sulfonic Acid	Octyl	Alumina	1,2 Amino
			Octyl			Cyclohexyl		
			Cyclohexyl			Phenyl		
			Phenyl			Cyano		
			Cyano					
SOLVENTS[3,4]	Hexane	Hexane	Hexane	Acids, buffers	Acids, bases, buffers	Hexane	Hexane	Hexane
	Chloroform	Chloroform	Methylene Chloride			Methylene Chloride	Chloroform	Chloroform
	Methylene Chloride	Methylene Chloride	Acetone			Acetone	Methylene Chloride	Methylene Chloride
	Acetone	Acetone	Acetonitrile			Acetonitrile	Ethyl Acetate	Acetone
	Methanol	Methanol	Methanol			Methanol	Methanol	Methanol
			Water			Water		

[1] Separation Mechanism

LSC: Liquid Solid Chromatography (Adsorption)

NPC: Normal Phase Chromatography (Bonded Phase Partition)

RPC: Reverse Phase Chromatography (Bonded Phase Partition)

IEC: Ion Exchange Chromatography (Bonded Phase Ion-Exchange)

SDB: styrene divinylbenzene

DVB: divinylbenzene

H_2O-Phobic WA-DVB: Weak anion exchanger

H_2O-Phobic SC-DVB: Strong cation exchanger

H_2O-Philic SA-DVB: Strong anion exchanger

H_2O-Philic SC-DVB: Strong cation exchanger

[2] Bonded phases listed in order of increasing polarity

[3] Eluting solvents listed in order of increasing polarity

[4] Selective elution can be performed by combining two or more miscible solvents to achieve various degrees of polarity

[3,4] Solvents:

9254 Acetone, ULTRA RESI-ANALYZED

9255 Acetonitrile, ULTRA RESI-ANALYZED

9257 Chloroform, ULTRA RESI-ANALYZED

9260 Ethyl Acetate, ULTRA RESI-ANALYZED

9262 Hexane, ULTRA RESI-ANALYZED

9264 Methylene Chloride, ULTRA RESI-ANALYZED

9077 Methanol, ULTRA RESI-ANALYZED

4219 Water, ULTRA RESI-ANALYZED

Analytical Methods

Silica Columns

With J.T.Baker BAKERBOND SPE and *Speedisk* columns, you can choose the column that best fits your sample size and performance requirements. We recommend BAKERBOND SPE columns when standard performance with good economy is needed. *Speedisk* columns are recommended when higher levels of speed and performance are required. Following is a performance comparison between a BAKERBOND SPE column and a *Speedisk* column for a typical separation.

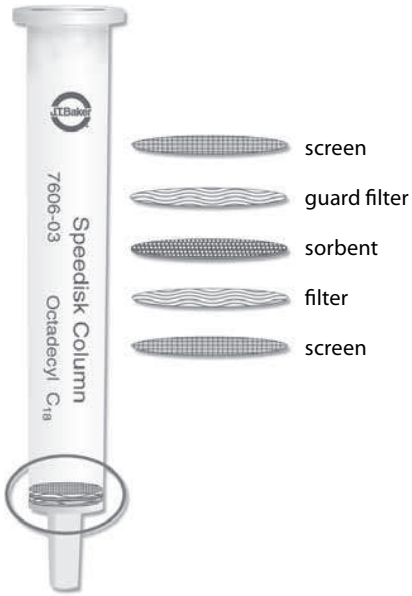
The following tables list the various sorbents that we offer pre-packed in J.T.Baker BAKERBOND SPE and *Speedisk* columns. Also included is the functional mode that the column works in and the type of general applications for which the column is used.

J.T.Baker BAKERBOND SPE and *Speedisk* Columns Performance Comparison

Attribute	BAKERBOND SPE	*Speedisk* Columns
Recommended sample size of 0.2 mL to 10 mL	•	
Recommended sample size of 35 µL to 10 mL		•
Fastest processing time (9x faster than conventional SPE columns)		•
Silica based sorbents	•	•
Polymer based sorbents		•
Smaller solvent volumes		•
Higher sorbent capacity per mg		•
Standard speed, recovery and final concentration	•	
High speed, recovery and concentration		•
Optimized, round-rimmed tube and frits made from ultrapure polymers	•	•
Tubes fit all popular processors and racks	•	•
Tube inlet adapters are available for use with Gilson ASPEC	•	•
"Rimless" 1 mL tube is available for close tube spacing, such as in a 96-position rack		•
Fit manual vacuum processors	•	•
Fit for use in positive pressure processors		•

J.T.Baker BAKERBOND SPE and *Speedisk* Columns Analysis Comparison

Typical Separation	BAKERBOND SPE	*Speedisk*
Column size / sorbent	1 mL/100 mg	1 mL/20 mg
Particle size	40 µm	25 µm
Sample volume	2 mL	1 mL
Column conditioning	2 mL	0.5 mL
	(20–40 sec)	(5–10 sec)
Sample addition	2 mL	50 µL–0.5 mL
	(100 sec)	(2–5 sec)
Washing	1.5 mL	0.4 mL
	(15–20 sec)	(2–5 sec)
Elution	1–2 mL	0.3–0.6 mL
	(15–20 sec)	(2–5 sec)
Sample concentration/evaporation	3–10 minutes	Reduced or eliminated



Speedisk columns offer microparticulate silica on a unique bed support system that ensures higher levels of performance than standard SPE columns.

J.T.Baker BAKERBOND SPE Columns

Description	Functional Mode	General Applications	Sorbent Weight	Column Size	Qty per Box	Product Number	Price
Octadecyl (C_{18})	Reverse Phase	Non-ionic, non-polar to moderately polar analytes	100 mg	1 mL	100	7020-01	$202.00
Jumbo Pack			100 mg	1 mL	400	7020-21	736.90
			200 mg	3 mL	50	7020-02	138.40
Jumbo Pack			200 mg	3 mL	400	7020-22	966.10
			500 mg	3 mL	50	7020-03	149.80
Jumbo Pack			500 mg	3 mL	400	7020-23	1056.10
			500 mg	6 mL	30	7020-06	99.90
Jumbo Pack			500 mg	6 mL	250	7020-26	660.70
		Meets requirements for EPA Method 525.2	1000 mg	6 mL	30	7020-07	139.20
Jumbo Pack		Meets requirements for EPA Method 525.2	1000 mg	6 mL	250	7020-27	933.00
Octadecyl (C_{18}) LightLoad, Non-endcapped	Reverse Phase	Non-ionic, non-polar to polar analytes	100 mg	1 mL	100	7189-01	217.90
			200 mg	3 mL	50	7189-02	148.00
			500 mg	3 mL	50	7189-03	155.60
			500 mg	6 mL	30	7189-06	104.70
PolarPlus Octadecyl (C_{18})	Reverse Phase	Non-ionic, basic, non-polar to polar analytes	500 mg	6 mL	30	7466-06	110.90
			1000 mg	6 mL	30	7466-07	145.90
			2000 mg	6 mL	30	7466-08	188.90
Octyl (C_8)	Reverse Phase	Non-ionic, non-polar to moderately polar analytes	100 mg	1 mL	100	7087-01	220.00
			200 mg	3 mL	50	7087-02	146.50
			500 mg	3 mL	50	7087-03	177.80
			500 mg	6 mL	30	7087-06	163.40
Jumbo Pack			500 mg	6 mL	250	7087-26	1050.20
Ethyl (C_2)	Reverse Phase	Polar and Basic Analytes	100 mg	1 mL	100	7273-01	258.40
Phenyl (C_6H_5)	Reverse Phase	Polar from non-polar/polar solvents using hydrogen bonding like mechanisms	100 mg	1 mL	100	7095-01	214.00
			500 mg	3 mL	50	7095-03	176.20
Cyclohexyl (C_6H_{11})	Reverse Phase	Non-ionic, non-polar analytes	500 mg	3 mL	50	7212-03	227.10
Cyano (CN)	Reverse Phase/ Normal Phase	Non-ionic, non-polar to polar analytes	100 mg	1 mL	100	7021-01	265.80
			500 mg	3 mL	50	7021-03	221.70
			1000 mg	6 mL	30	7021-07	199.20
Diol (COHCOH)	Normal Phase	Non-ionic, polar analytes	500 mg	3 mL	50	7094-03	215.80
Amino (NH_2)	Normal Phase/Ion Exchange	Lipids (fatty acids, cholesterol)	500 mg	3 mL	50	7088-03	214.00
			1000 mg	6 mL	30	7088-07	183.70
Diamino (NH_2/NH_2)	Normal Phase/Ion Exchange	Lipids (fatty acids, cholesterol)	500 mg	3 mL	50	7089-03	224.50
Quaternary Amine (N^+)	Strong Anion Exchange	Ionic, acidic analytes	500 mg	3 mL	50	7091-03	220.00
Aromatic Sulfonic Acid ($C_6H_5SO_3H$)	Strong Cation Exchange	Ionic, basic analytes	100 mg	1 mL	100	7090-01	276.80
			500 mg	3 mL	50	7090-03	206.80
Jumbo Pack			500 mg	6 mL	400	7090-29	1757.50
			1000 mg	6 mL	30	7090-07	187.50
Carboxylic Acid (COOH)	Weak Cation Exchange	Ionic, basic analytes	500 mg	3 mL	50	7211-03	206.40
Florisil (Mg_2SiO_3)	Adsorption	Adsorbs low to moderately polar analytes from nonaqueous solutions	500 mg	3 mL	50	7213-03	112.60
			500 mg	6 mL	30	7213-06	105.80
			1000 mg	6 mL	30	7213-07	132.00

Analytical Methods

J.T.Baker BAKERBOND SPE Columns

Description	Functional Mode	General Applications	Sorbent Weight	Column Size	Qty per Box	Product Number	Price
Florisil (Mg_2SiO_3) Jumbo Pack			1000 mg	6 mL	250	7213-27	$798.90
Silica Gel (SiOH)	Adsorption	Adsorbs polar analytes from non-polar solvents like hydrocarbons and less polar esters and ethers	100 mg	1 mL	100	7086-01	186.60
			500 mg	3 mL	50	7086-03	141.80
Jumbo Pack			500 mg	3 mL	400	7086-23	1279.30
			500 mg	6 mL	30	7086-06	119.10
Jumbo Pack			500 mg	6 mL	250	7086-26	801.00
			1000 mg	6 mL	30	7086-07	137.30
Jumbo Pack			1000 mg	6 mL	250	7086-28	832.50
narc-1 (Δ9-carboxy THC)	Mixed	Carboxy-tetrahydrocannabinol (THC)	500 mg	3 mL	50	7221-03	168.30
narc-2 (Cocaine, BEC)	—	Hydrophobic/basic analytes (Cocaine, Benzoylecgonine)	125 mg	3 mL	50	7225-04	178.80
Jumbo Pack			125 mg	3 mL	400	7225-24	701.10
			250 mg	6 mL	30	7225-05	148.90
			500 mg	6 mL	30	7225-06	173.30

J.T.Baker *Speedisk* Columns

Description	Functional Mode	General Applications	Sorbent Weight	Column Size	Qty per Box	Product Number	Price
Octadecyl (C_{18})	Reverse Phase	Non-ionic, non-polar to moderately polar analytes	20 mg	1 mL	100	7606-01	$266.90
			50 mg	3 mL	50	7606-04	183.30
			100 mg	3 mL	50	7606-06	188.90
			200 mg	6 mL	30	7606-09	181.30
Rimless Column			20 mg	1 mL	96	7606-11	297.60
Octadecyl (C_{18}) Lightload	Reverse Phase	Non-ionic, non-polar to polar analytes	20 mg	1 mL	100	8151-01	262.40
			35 mg	1 mL	100	8151-02	269.60
			50 mg	3 mL	50	8151-04	174.90
			100 mg	3 mL	50	8151-06	181.90
			100 mg	6 mL	30	8151-08	154.00
			200 mg	6 mL	30	8151-09	171.40
Octadecyl (C_{18}) PolarPlus	Reverse Phase	Non-ionic, basic, non-polar to polar analytes	20 mg	1 mL	100	8153-01	252.30
			35 mg	1 mL	100	8153-02	272.10
			35 mg	3 mL	50	8153-03	173.30
			50 mg	3 mL	50	8153-04	181.10
			100 mg	3 mL	50	8153-06	183.60
			200 mg	6 mL	30	8153-09	173.00
Octyl (C_8)	Reverse Phase	Non-ionic, non-polar to moderately polar analytes	35 mg	1 mL	100	8154-02	272.10
			50 mg	3 mL	50	8154-04	180.00
			100 mg	3 mL	50	8154-06	183.60
			200 mg	6 mL	30	8154-09	173.00
Rimless Column			20 mg	1 mL	96	8154-11	279.50
Phenyl (C_6H_5)	Reverse Phase	Polar from non-polar/polar solvents using hydrogen bonding like mechanisms	35 mg	1 mL	100	8160-02	351.40
			50 mg	3 mL	50	8160-04	173.00
			100 mg	3 mL	50	8160-06	163.60
			200 mg	6 mL	30	8160-09	173.00

J.T.Baker *Speedisk* Columns

Description	Functional Mode	General Applications	Sorbent Weight	Column Size	Qty per Box	Product Number	Price
Quanternary Amine (N^+)	Strong Ion Exchange	Ionic, acidic analytes	35 mg	1 mL	100	8168-02	$272.10
			35 mg	3 mL	50	8168-03	173.30
			50 mg	3 mL	50	8168-04	176.60
			100 mg	3 mL	50	8168-06	183.60
			200 mg	6 mL	30	8168-09	173.00
Amino (NH_2)	Ion Exchnage/Normal Phase	Lipids (fatty acids, cholesterol)	35 mg	1 mL	100	8165-02	266.90
			35 mg	3 mL	50	8165-03	173.30
			50 mg	3 mL	50	8165-04	176.60
			100 mg	3 mL	50	8165-06	183.60
			200 mg	6 mL	30	8165-09	173.00
Aromatic Sulfonic Acid	Strong Ion Exchange	Ionic, basic analytes	35 mg	1 mL	100	8170-02	266.90
			50 mg	3 mL	50	8170-04	176.60
			100 mg	3 mL	50	8170-06	183.60
			100 mg	6 mL	30	8170-08	155.50
			200 mg	6 mL	30	8170-09	173.00
Carboxylic Acid	Weak Cation Exchange	Ionic, basic analytes	100 mg	3 mL	50	8172-06	175.10
			50 mg	6 mL	30	8172-07	146.90
			200 mg	6 mL	30	8172-09	164.90
Silica	Adsorption	Adsorbs polar analytes from non-polar solvents like hydrocarbons and less polar esters and ethers	20 mg	1 mL	100	8163-01	249.90
			35 mg	1 mL	100	8163-02	269.60
			35 mg	3 mL	50	8163-03	171.70
			50 mg	3 mL	50	8163-04	174.90
			100 mg	3 mL	50	8163-06	181.90
			200 mg	6 mL	30	8163-09	171.40
narc-1 (Δ9-carboxy THC)	Mixed	Carboxy-tetrahydrocannabinol (THC)	50 mg	3 mL	50	8174-04	176.60
			100 mg	3 mL	50	8174-06	183.60
			100 mg	6 mL	30	8174-08	155.50
narc-2 (Cocaine, BEC)	-	Hydrophobic/basic analytes (Cocaine, Benzoylecgonine)	35 mg	1 mL	100	8175-02	272.10
			35 mg	3 mL	50	8175-03	173.30
			50 mg	3 mL	50	8175-04	176.60
			100 mg	3 mL	50	8175-06	183.60
			200 mg	6 mL	30	8175-09	173.00

Special Application Columns

We offer a number of SPE columns for specific applications. These columns are generally configured for an application with either a specific sorbent, volume of sorbent, or special column.

Drugs of Abuse Testing Columns

For drug testing applications, we offer narc-1 and narc-2 columns. narc-1 columns are formulated for rapid, reproducible extraction of Δ9 THC-carboxylic acid from urine without co-extracting many other common drugs. narc-2 columns contain a mixed-mode sorbent for the extraction of basic compounds, such as opiates, LSD, phencyclidine, amine-based drugs, cocaine, and others. narc-2 columns can be used for basic drug screening, as well as acidic/neutral drugs. Both sorbents are available in J.T.Baker BAKERBOND SPE and *Speedisk* formats. Application Notes for use of these products are available in our Technical Library at www.avantormaterials.com.

Proteins and Polynucleotides Columns

For large biomolecule separations, we offer SPE columns packed with J.T.Baker BAKERBOND wide-pore media designed specifically for this use. For methods development or optimization, our sorbent selection kit contains columns with a variety of sorbents. See the Sorbent Selection Kits section, on page 39 for more information on these kits.

BAKERBOND SPE Columns—Drugs of Abuse

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
narc-1 (Δ9-carboxy THC)	500 mg	3 mL	50	7221-03	$168.30
narc-2 (Cocaine, BEC)	125 mg	3 mL	50	7225-04	178.80
Jumbo Pack	125 mg	3 mL	400	7225-24	701.10
	250 mg	6 mL	30	7225-05	148.90
	500 mg	6 mL	30	7225-06	173.30

***Speedisk* Silica Columns—Drugs of Abuse**

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
narc-1 (Δ9-carboxy THC)	50 mg	3 mL	50	8174-04	$176.60
	100 mg	3 mL	50	8174-06	183.60
	100 mg	6 mL	30	8174-08	155.50
narc-2 (Cocaine, BEC)	35 mg	1 mL	100	8175-02	272.10
	35 mg	3 mL	50	8175-03	173.30
	50 mg	3 mL	50	8175-04	176.60
	100 mg	3 mL	50	8175-06	183.60
	200 mg	6 mL	30	8175-09	173.00

BAKERBOND SPE Columns—Protein, Polynucleotide Sample Prep

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
Sorbent Selection Kits—Proteins and Large Molecules*	500 mg	6 mL	15	7239-09	$184.40
Wide-Pore Butyl (C_4) Jumbo Pack	300 mg	3 mL	250	7216-23	815.60
	500 mg	6 mL	30	7216-06	175.80
Wide-Pore CBX (COOH)	500 mg	6 mL	30	7217-06	194.80
Wide-Pore PEI (NH)	500 mg	6 mL	30	7218-06	175.80
Wide-Pore HI-Propyl (C_3)	500 mg	6 mL	30	7238-06	202.50
Sephadex G-25	1000 mg	6 mL	30	7219-07	168.80

*Contains 3 of each of CBX, PEI, HI-Propyl, Butyl, and Sephadex G-25.

BAKERBOND SPE Columns—Wide-Mouth, 19 mL

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
Octadecyl (C_{18})	500 mg	19 mL	50	7020-13	$177.30
Jumbo Pack	500 mg	19 mL	250	7020-33	695.80
Carboxylic Acid (COOH)	500 mg	19 mL	50	7211-13	229.70

J.T.Baker SPE Columns for EPA Method 525.2

Description	Sorbent Weight	Column Size	Quantity per Box	Product Number	Price
Octadecyl (C_{18})	1000 mg	6 mL	30	7020-07	$139.20
	500 mg	19 mL Wide-Mouth	30	7020-13	177.30
Jumbo Pack	1000 mg	6 mL	250	7020-27	933.00
Jumbo Pack	500 mg	19 mL Wide-Mouth	250	7020-33	695.80

BAKERBOND SPE Columns—Sorbent Selection Kits

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
Small Molecules[1]	500 mg	3 mL	60	7096-00	$226.00
Proteins and Large Molecules[2]	500 mg	6 mL	15	7239-09	184.40

1. Contains 5 each of Octadecyl, Octyl, Phenyl, Silica, Cyano, Amino, Diol, Quaternary, Amine, Diamino, Aromatic Sulfonic Acid, Carboxylic Acid.

2. Contains 3 each of CBX, PEI, HI-Propyl, Butyl, Sephadex G-25.

Speedisk Polymer Columns

Description	Functional Mode	General Applications
H_2O-Philic DVB	Adsorption	Polar to non-polar analytes
H_2O-Philic SC-DVB	Cation Exchange (strong)	Ionic, basic analytes
H_2O-Phobic DVB	Adsorption	Slightly polar to non-polar analytes
H_2O-Phobic SC-DVB	Cation Exchange (strong)	Ionic, basic analytes
H_2O-Philic SA-DVB	Anion Exchange (strong)	Ionic, acidic analytes
H_2O-Phobic WA-DVB	Anion Exchange (weak)	Ionic, acidic analytes

Wide-Mouth Columns

For robotics or large sample volumes, we offer a 19 mL wide-mouth column with a wide inlet. Please inquire for the availability of sorbents in wide-mouth columns not listed in the product list.

EPA Method 525.2 Columns

We offer two versions of J.T.Baker BAKERBOND SPE Octadecyl (C_{18}) columns that are suitable for use in the above referenced EPA method for determination of organic compounds in drinking water. Our standard 6 mL column is packed with 1,000 mg of sorbent for this application. A wide-mouth 19 mL column packed with 500 mg of sorbent for robotic systems or larger sample volumes is also available.

Sorbent Selection Kits

J.T.Baker BAKERBOND SPE sorbent selection kits are available for small molecules and for proteins and large molecules. These kits are ideal for method development or optimization. Both kits contain a variety of sorbents in an appropriate column size.

Polymer Columns

J.T.Baker BAKERBOND polymer columns are packed with polymer resins, which are products of our ultra clean polymer microparticle technology. These resin particles have a large surface area, are highly rigid, are stable over pH range 1–14, are water-wettable and are not impacted by sorbent drying. Columns are available in hydrophobic, hydrophilic, and ion exchange forms. We recommend these columns when advanced detection methods will be used.

Analytical Methods

Speedisk Polymer Columns—Hydrophilic

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
H_2O-Philic DVB	20 mg	1 mL	100	8108-01	$295.40
	35 mg	1 mL	100	8108-02	302.30
	35 mg	3 mL	50	8108-03	192.40
	50 mg	3 mL	50	8108-04	206.10
	100 mg	3 mL	50	8108-06	224.20
	100 mg	6 mL	30	8108-08	185.80
	200 mg	6 mL	30	8108-09	208.70
Rimless	20 mg	1 mL	96	8108-11	295.40

Speedisk Polymer Columns—Hydrophobic

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
H_2O-Phobic DVB	20 mg	1 mL	100	8109-01	$291.30
	35 mg	3 mL	50	8109-03	189.20
	50 mg	3 mL	50	8109-04	203.90
	100 mg	3 mL	50	8109-06	218.50
	100 mg	6 mL	30	8109-08	169.90
	200 mg	6 mL	30	8109-09	194.30
Rimless	20 mg	1 mL	96	8109-11	291.30

Speedisk Polymer Columns—Ion Exchange

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
H_2O-Phobic SC-DVB (SO_3)	35 mg	1 mL	100	8196-02	$323.60
	35 mg	3 mL	50	8196-03	205.90
	50 mg	3 mL	50	8196-04	220.50
	100 mg	3 mL	50	8196-06	235.30
	100 mg	6 mL	30	8196-08	198.50
	200 mg	6 mL	30	8196-09	209.00
Rimless	20 mg	1 mL	96	8196-11	316.20
H_2O-Phobic WA-DVB (NH_2)	35 mg	1 mL	100	8115-02	323.60
	50 mg	3 mL	50	8115-04	220.50
Rimless	20 mg	1 mL	96	8115-11	309.80

Speedisk Polymer Columns—Mixed Mode

Description	Sorbent Weight	Column Size	Quantity Per Box	Product Number	Price
H_2O-Philic SC-DVB (SO_3)	20 mg	1 mL	100	8111-01	$316.20
	35 mg	1 mL	100	8111-02	323.60
	35 mg	3 mL	50	8111-03	201.70
	50 mg	3 mL	50	8111-04	220.50
	100 mg	3 mL	50	8111-06	235.30
	200 mg	6 mL	30	8111-09	209.00
Rimless	20 mg	1 mL	96	8111-11	316.20
H_2O-Philic SA-DVB (N^+)	35 mg	1 mL	100	8113-02	323.60
	35 mg	3 mL	50	8113-03	205.90
	50 mg	3 mL	50	8113-04	220.50
	100 mg	6 mL	30	8113-08	194.70
	200 mg	6 mL	30	8113-09	219.10
Rimless	20 mg	1 mL	96	8113-11	316.20

J.T.Baker *Speedisk* 96 Columns and *Speedisk* 96-Well Plates

For method development, you can place up to 96 rimless 1 mL, 20 mg *Speedisk* 96 columns in the *Speedisk* 96 column holder (Product Number 8150-00), and the disposable assembly is ready for placement on a microplate processor, such as our *Speedisk* 96 processor. You can remove unneeded columns from the holder and assemble custom trays for efficient method development.

Once method development is complete, you can use the *Speedisk* 96-well plate, a one-piece, molded plate that is pre-assembled with your sorbent of choice. The plate was designed with standard geometries to adapt to the most popular automated liquid handling systems. Inquire about more than 15 functionalities of silica and polymer-based sorbents for either *Speedisk* 96 columns or well plates.

Speedisk 96-Well Plates—Polymer Sorbents

Description	Functional Mode	General Applications	Product Number	Price
H_2O-Philic DVB	Adsorption	Polar to non-polar analytes	8077-96	$304.10
H_2O-Philic SC-DVB	Adsorption	Polar to non-polar analytes	8132-96	312.20

Speedisk 96 Polymer Columns

Description	Functional Mode	General Applications	Sorbent Mass	Product Number	Price
H_2O-Philic DVB	Adsorption	Polar to non-polar analytes	20 mg	8108-31	$397.00
H_2O-Phobic SC-DVB	Cation Exchange (strong)	Ionic, basic analytes	20 mg	8196-31	443.20
H_2O-Phobic WA-DVB	Anion Exchange (weak)	Ionic, acidic analytes	20 mg	8115-31	397.00
Speedisk 96 Column Holder	—	—	—	8150-00	56.30

Speedisk 96 Silica Columns

Description	Functional Mode	General Applications	Sorbent Mass	Product Number	Price
Octadecyl C_{18}	RP	Non-ionic, non-polar to moderately polar analytes	20 mg	7606-31	$322.50
Speedisk 96 Column Holder	—	—	—	8150-00	56.30

Analytical Methods

J.T.Baker BAKERBOND *Speedisk* Extraction Disks

Our 50 mm extraction disks are designed primarily for environmental samples. The laminar configuration provides filtration capacity and inlet characteristics that maximize access of analyte molecules to the microparticulate sorbent. The design resists clogging and ensures high throughput, even when samples contain solids. Capacity, recovery, and precision are high due to the unique disk configuration and the performance of our BAKERBOND sorbents. Products can be used with J.T.Baker extraction stations or inexpensive adapters are available for use with other brands of extraction stations.

For a complete list of EPA methods that our *Speedisk* extraction disks are suitable for, along with application notes for each method, please visit our web site at: www.avantormaterials.com

J.T.Baker BAKERBOND *Speedisk* 50 mm Extraction Disks

Product	General Applications	Quantity per Box	Product Number	Price
Disks for Manual Extraction Stations				
BAKERBOND *Speedisk* C_{18}	For use in EPA Methods 500 Series, 608, SW 846/3535 and with slightly polar to non-polar industrial samples	20	8055-06	$170.70
		20 (high capacity)	8055-07	191.60
BAKERBOND *Speedisk* C_{18} XF	For dirty samples: EPA Methods 608, 846, and slightly polar to non-polar industrial samples	20	8056-06	184.30
BAKERBOND *Speedisk* C_8	For diquat, paraquat, EPA Method 549.1	20	8057-06	167.50
BAKERBOND *Speedisk* SAX	For EPA Method 552.1, haloacetic acids and Dalapon	20	8058-06	237.30
BAKERBOND *Speedisk* DVB	For chlorinated acids, EPA Method 515.2. Slightly polar to non-polar analytes	20	8068-06	215.50
BAKERBOND *Speedisk* DVB	For SW846 H_2O-phobic to slightly H_2O-philic compounds	20	8072-06	220.20
		20 (high capacity)	8072-07	279.80
BAKERBOND *Speedisk* Oil & Grease	For use with slightly polar to non-polar hydrocarbons, EPA Method 1664, Rev. A	20	8060-06	196.30
BAKERBOND *Speedisk* PolarPlus C_{18}	For extraction of slightly polar to moderately polar compounds, such as sulfonylureas, phenols, chlorophenoxy acids, and urones	20	8061-06	170.90
Disks for Automated Extraction Stations				
BAKERBOND *Speedisk* C_{18}	For use in EPA Methods 500 Series, 608, SW 846/3535 and with slightly polar to non-polar industrial samples	32	8062-06	275.50
		32 (High Capacity)	8062-07	309.60
BAKERBOND *Speedisk* DVB	For chlorinated acids, EPA Method 515.2. Slightly polar to non-polar analytes	32	8069-06	339.20
BAKERBOND *Speedisk* Oil & Grease	For use with slightly polar to non-polar hydrocarbons, EPA Method 1664, Rev. A	32	8064-06	314.30

Processors and Accessories

We offer a variety of J.T.Baker processors for use with our sample preparation line of products. These include vacuum processors for use with standard SPE and *Speedisk* columns and *Speedisk* 50 mm disks. We also offer positive-pressure processors for use with *Speedisk* 96 columns and well plates in a configuration for processing 48 or 96 columns simultaneously.

SPE Column Processors

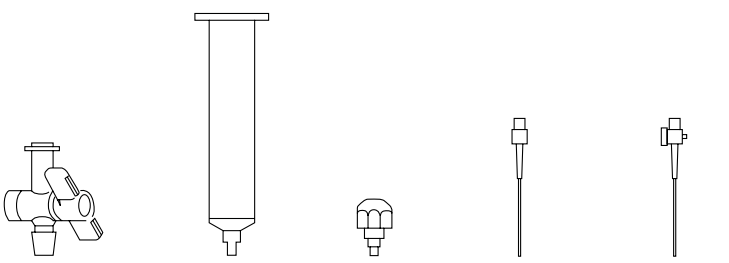
The J.T.Baker BAKER SPE-12G is a 12-port system for processing up to 12 SPE columns at the same time. The processor comes complete with a glass vacuum basin, a cover with luer fittings and gasket, individual flow control stopcocks, polypropylene needles, a sample collection rack, height-adjustable shelves, and a vacuum gauge/controller. The BAKER SPE-24G is a 24-port system with the same components as the SPE-12G.

Replacement parts and accessories for both processors are available as detailed in the adjacent table.

Extraction Column Processors

Description	Quantity per Box	Product Number	Price
BAKER SPE-12G Column Processor Complete—Includes 12-port vacuum manifold, sample collection rack, height adjustable shelves, vacuum gauge/controller	1	7018-00	$919.10
BAKER SPE-24G Column Processor Complete—Includes 24-port vacuum manifold, sample collection rack, height adjustable shelves, vacuum gauge/controller	1	7208-00	1254.90
Extraction Column Processor Replacement Parts and Accessories			
BAKER SPE-12G Glass Vacuum Chamber	1	7421-00	178.20
Lid (with luer connectors)	1	7424-00	271.00
Rack Set	1	7427-00	189.70
Polyethylene Gasket Seals	2	7430-00	27.30
Neoprene Gasket Seals	2	7433-00	25.30
Waste Liner	5	7237-00	106.00
BAKER SPE-24G Glass Vacuum Chamber	1	7423-00	209.60
Lid (with luer connectors)	1	7426-00	545.50
Rack Set	1	7429-00	230.40
Polyethylene Gasket Seals	2	7432-00	28.70
Neoprene Gasket Seals	2	7435-00	31.60
Polypropylene Needles	12	7436-00	23.00
Plugs for Female Luer	30	7327-00	64.30
Vacuum Gauge/Controller Assembly	1	7437-00	160.90
Stopcocks, T-turn, Nylon and PE	12	7166-00	54.90
Stopcocks	10	7241-00	63.00
Inert Needle Flowpath Liner[1]	12	7422-00	11.50
	150	7422-01	147.40
Inert Flow Control Valves[1]	12	7425-00	67.80
Reservoirs, 15 mL[1]	10	7119-01	37.80
Reservoirs, 75 mL[1]	10	7120-03	44.10
Luer Connector, Female	12	7145-00	58.40
Luer Connector, Male	12	7146-00	61.20
Adapter for Attaching Reservoir or Luer Tip[1,2]	10	7122-00	39.70
Support Posts, Processor Lid	4	7147-00	27.40
Stainless Steel Needles	12	7152-00	123.20

1. See illustration below for visual identification of these parts.
2. Syringe to extraction column.



Stopcock *(7166-00 or 7241-01)*; Reservoir *(7119-01 or 7120-03)*; Adapter *(7122-00)*; Inert Needle Flowpath Liner *(7422-00 or 7422-01)*; Inert Flow Control Valve *(7425-00)*

Parts and accessories for 12 and 24 port processors

Analytical Methods

J.T.Baker *Speedisk* 50 mm Extraction Disk Processors

We offer three different configurations of vacuum processors for use with *Speedisk* extraction disks.

Replacement parts and accessories for all three processors are available as detailed in the below table.

J.T.Baker *Speedisk* 96 Positive-Pressure Processors

Positive-pressure processors have been shown to provide better reproducibility of results than vacuum manifolds. This is due in part to the constant applied pressure forcing the solvent through the sorbent in the columns. With vacuum manifolds, if a column runs dry, the flow of other columns will decrease, causing variability in the processing time, and ultimately, the analyte recovery.

The positive-pressure processor gasket seals the column opening to prevent any crossover between columns. Our processors are formatted for processing either 48 or 96 columns simultaneously and arrive complete with collection trays, sealing gasket, column holders, gas supply adapters, and tubing. Replacement parts and accessories for both processors are available as listed in the tables on the next page.

Processor	Product Number	Number of Ports	Footprint	1 L Sample Reservoir Capacity
Speedisk Single Extraction Station	8093-01	1	Square 4.5" × 5.65" × 2.20"	1
Speedisk Compact Extraction Station	8094-06	6	Hexagonal 17.5" × 5.65" × 2.20"	3
Speedisk Expanded Extraction Station	8095-06	6	Rectangular 25" × 5.65" × 2.20"	6
DISKMATE II Rotary Extraction Station	7463-06	6	Circular 15" Diameter	6

Manual Extraction Stations and Accessories for *Speedisk* Extraction Disks

Description	Quantity per Box	Product Number	Price
***Speedisk* Expanded Extraction Station:** Six-port processing system for direct sample loading. Rectangular footprint and inter-port spacing to accommodate six side-by-side 1 L sample reservoirs.	1	8095-06	$1146.90
***Speedisk* Compact Extraction Station:** Six-port processing system. Reduced inter-port spacing and footprint. Load samples through remote sample adapter or mount up to three 1 L reservoirs directly onto the disks.	1	8094-06	1208.10
***Speedisk* Single Extraction Station:** Single-port processing system. Vacuum platform for a *Speedisk* extraction disk and any sample loading technique.	1	8093-01	374.20
DISKMATE II Rotary Extraction Station: Six-port processing station. Vacuum manifold mounted on a convenient turntable with full spacing for direct mounting of six 1 L containers.	1	7463-06	1518.00
Remote Sample Adapter: For transfer of sample from remote container to BAKERBOND *Speedisk* extraction disk.	6	8099-06	194.60
Flask Adapter: Single port with #8 stopper. Accepts disk or collection chamber.	1	8070-01	42.10
Adapter Ring: For 40-35 tapered outer joint. Accepts disk or collection chamber.	6	8100-06	108.30
1 L Glass Reservoir: Fits directly into BAKERBOND *Speedisk* extraction disk.	1	8098-01	155.80
Collection Chamber	2	8096-02	283.80
185 mL Reservoir: Fits directly into BAKERBOND *Speedisk* extraction disk. Also supports inverted, 1 L sample bottle.	6	8097-06	55.80
Sample Tray: Holds up to four 1 L bottles at a tilt to ensure complete sample uptake by remote sample adapter suction tube.	1	8101-01	38.80
O-ring, Auto: Seals extraction disk base in disk holder of Horizon SPE-DEX Extractor.	3	8027-01	23.80
Oil and Grease Standards Kit: 51 mL/bottle mixture of 2 mg/mL Stearic Acid and 2 mg/mL n-Hexadecane in ULTRA RESI-ANALYZED Acetone. Bottles have a rubber stopper and are foil sealed.	4	8030-00	106.40
100 mm/EPA Sample Jar Adapter: Enables inverted feed directly to extraction disk from sample jar and eliminates need to transfer sample to another container.	4	8028-04	241.90
70 mm/Mason Jar Adapter: Enables inverted feed directly to extraction disk from sample jar and eliminates need to transfer sample to another container.	4	8102-04	247.70

Vacuum and Positive-Pressure Processors and Accessories for Extraction Columns

Speedisk 96 Processor and Accessories

Description	Quantity per pack	Product Number	Price
Speedisk 96 Positive-Pressure Processor Complete—includes 1 mL x 96 collection tray, 2 mL x 96 collection tray, 96-column sealing gasket, *Speedisk* 96 column holder, gas supply adapter and tubing.	1	8129-00	$4870.20
10 mL x 24-Well Collection Tray	1	8197-24	14.70
1 mL x 96-Well Collection Tray	1	8188-96	14.70
2 mL x 96-Well Collection Tray	1	8131-96	15.30
96-Column Sealing Gasket	1	8130-01	61.00
Gas Supply Adapter, 6 ft. length of ¼" tubing and ⅛"– ¼" adapter fittings.	1	8128-01	18.40

Speedisk 48 Processor and Accessories

Description	Quantity per pack	Product Number	Price
Speedisk 48 Positive-Pressure Processor Complete—Includes 3 mL SPE column rack, collection tube rack for 12 x 75 mm tubes, waste bin, gas supply adapter and tubing, 48-column sealing gasket.	1	8118-00	$5446.30
Speedisk 48 Positive Pressure Processor (with waste bin)	1	8118-20	2944.20
Rack for 1 mL SPE Columns	1	8122-01	294.40
Rack for 3 mL SPE Columns	1	8123-01	291.50
Rack for 6 mL SPE Columns	1	8124-01	288.70
Collection Tube Rack, 12 x 75 mm Tubes	1	8119-01	297.10
Collection Tube Rack, 13 x 100 mm Tubes	1	8120-01	291.50
Collection Tube Rack, 16 x 100 mm Tubes	1	8121-01	311.40
Collection Vial Rack, 12 x 32 mm Auto-Sampler	1	8125-01	297.10
Waste Bin	1	8126-01	329.60
48-Column Sealing Gasket	1	8127-01	90.50
Gas Supply Adapter, 6 ft. length of ¼" tubing and ⅛"– ¼" adapter fittings.	1	8128-01	18.40