

Analytical Solutions

HIGH PURITY SOLVENTS AND REAGENTS

Europe • Middle East • Africa



AVANTOR™
PERFORMANCE MATERIALS



Lab-Optimized Performance:
Enhance the separation and reproducibility,
maximize the sensitivity and detecting power
of your instrumentation

At Avantor™ Performance Materials, uncompromising performance comes from two proven brands:



J.T. Baker® brand chemicals — application-optimized and function-tested to maximize instrument performance



Macron Fine Chemicals™ brand products — providing value through consistent and reliable results for customers around the world.

Avantor high purity solvents and reagents give you the performance you need - minimizing the risk of contaminants that can limit accuracy while maximizing instrument sensitivity and detection power in key applications:

UHPLC and LC/MS analysis —where our ULTRA LC/MS products are ideal for cutting-edge applications such as proteomics, pharmacokinetics, clinical research and drug discovery while our LC/MS products are function-tested and optimized for minimal impurities and interference-free baselines, giving you performance you can trust.

HPLC analysis —where we offer our pure HPLC products you can trust to improve your processes, obtain high selectivity, reproducibility and accuracy of results.

GC analysis —where our products are fully characterized and lot controlled by ECD, FID, or other method-specific detectors to deliver the highest level of purity and lot-to-lot consistency. Low UV absorbance, residue after evaporation and low water levels will create a flat base line and extend column life in demanding gas chromatography analysis.

Spectrometry —our solvents are manufactured to minimize lot-to-lot variability and contaminants that can interfere with UV, and in some cases IR, spectra, including residue after evaporation, and acid and base concentrations.



Avantor High Purity Solvents – Grade Recommendation

Application	J.T.Baker® BAKER ANALYZED™ HPLC Reagents	J.T.Baker® BAKER ANALYZED™ LC/MS Reagents	J.T.Baker® BAKER ANALYZED ULTRA LC/MS™ Reagents	J.T.Baker® ULTRA RESI- ANALYZED™ Reagents	J.T.Baker® BAKER ANALYZED™ Pesticide Reagents	Macron™ Fine Chemicals ChromAR™ Solvents
HPLC - Conventional	+++					+++
HPLC - QC/QA	+++	+				++
Gas Chromatography (GC)				+++	+++	
HPLC - Research	+++	++	+++			+
LC/MS - QC/QA	++	+++				
LC/MS - Research		+++	++			
LC/MS - Critical Research	+	++	+++			
UHPLC - QC/QA	+++	+	+			
UHPLC - General Research	+++	+	+++			
UHPLC - Critical Research			+++			

+ Suitable

++ Preferred

+++ Ideal

General – traditional applications where quality is important, primarily assay and UV

Conventional – does not require extensive characterization of trace metals. Filtration at 0.2 um is sufficient. Assay, UV and RAE (Residue after evaporation) are important specifications. Common in open access/high volume laboratories, initial investigations and compound management

Critical – requires solvents to have characterization of trace metals, precise function testing and 0.1 um filtration for UHPLC applications
Examples of critical research are work in proteomics, small molecule drug discovery and bioanalysis.



Avantor High Purity Solvents – Testing Parameters

Testing Parameters*	J.T.Baker® BAKER ANALYZED™ HPLC Reagents	J.T.Baker® BAKER ANALYZED™ LC/MS Reagents	J.T.Baker® BAKER ANALYZED™ ULTRA LC/MS™ Reagents	J.T.Baker® ULTRA RESI- ANALYZED™ Reagents	J.T.Baker® BAKER ANALYZED™ Pesticide Reagents	Macron™ Fine Chemicals ChromAR™ Solvents
Color (APHA)		X	X			
ECD and/or FID Sensitive Impurities				X	x	
For Organic Residue Analysis				X	x	
ESI- Positive mode		X	X			
ESI- Negative mode			X			
Filtered through a 0.1 micron filter			X			
Fluorescence Trace Impurities	X	X	X			
Gradient Test	X	X	X			x
Residue after Evaporation	X	X	X	X	x	x
Substances Reducing Permanganate				X		
Trace Metal Impurities (ppb)		X	X			

* NOTE: The testing parameters are typical for the grades listed in the table.

For actual testing parameters, please refer to the product specification sheet.



UHPLC and LC/MS Analysis

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

The J.T.Baker® ULTRA LC/MS™ product line 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.



Selection guide: Application and MS Analyzer ULTRA LC/MS™ and LC/MS Solvents

Industry/Application	LC/MS	ULTRA LC/MS™ Solvents
Drug discovery		x
Drug identification	x	x
Drug formulation	x	x
Biotechnology	x	
Food	x	
High end research labs		x
University research	x	x
QC testing labs	x	x
Mass Spectrometry Analyzer	LC/MS	ULTRA LC/MS™ Solvents
Single Quadrupole	x	
Tandem Quadrupole	x	x
Ion Trap		x
MALDI-TOF		x
MS-MS Hybrids (Quadrupole Time-of-Flight)		x
FT-ICR (Fourier transform ion cyclotron resonance mass spectrometer)		x

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 ion 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.

For more routine applications, our LC/MS solvents and blends are function-tested and optimized for minimal impurities and interference-free baselines, giving you performance you can trust in the mobile phase -- every time.

J.T.Baker® LC/MS 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.

J.T.Baker® ULTRA LC/MS™ Products

Description	Product Number*
Acetonitrile, Schott® DURAN® Borosilicate glass bottle	9853
Methanol, Schott® DURAN® Borosilicate glass bottle	9863
Water, Schott® DURAN® Borosilicate glass bottle	9823

Schott® is a registered trademark of Schott
DURAN® is a registered trademark of DURAN GROUP GmbH



J.T.Baker® LC/MS Products

Description	Product Number
LC/MS Solvents	
Acetonitrile	9821
Methanol	9822
Water	9825
2-Propanol	9827
Ethyl Acetate	9828
LC/MS Blends	
0.1% Formic Acid in Acetonitrile	9824
0.1% Formic Acid in Water	9826
0.1% Trifluoroacetic Acid in Acetonitrile	9837
0.1% Trifluoroacetic Acid in Water	9838
0.1% Formic Acid in Acetonitrile	9824
0.1% Formic Acid in Water	9826
LC/MS Acids	
Formic Acid -10 x 1ml ampoules and 2 x 1ml ampoules	9820
Trifluoroacetic acid – 4l; 1l; 70ml; 10 x 1ml ampoules and 2 x 1ml ampoules	9810

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.

J.T.Baker® HPLC products are designed to provide rapid, reproducible performance and separation in research and quality control applications. For critical HPLC applications, J.T.Baker® solvents and modifiers remain the preferred choice for chemists throughout the world enabling optimum instrument performance and sensitivity.

J.T.Baker® HPLC solvents are manufactured using multi-step purification processes that produce reliable, low backgrounds free of extraneous peaks. Products are function tested for assay, water, residue after evaporation, and UV absorbance and fluorescence in critical ranges.

Selected J.T.Baker® HPLC acids, bases and ion pair reagents enhance the usefulness of HPLC as an analytical technique. Products are controlled for solubility in aqueous and organic solutions, UV transparency for optimum sensitivity and metallic impurities which can affect biological activity.

Macron Fine Chemicals™ ChromAR™ solvents are ideal for use in analytical testing in a wide variety of markets, like industrial, chemical, pharmaceutical, and agricultural, where consistency and reliability are required. These reagents are produced under strict manufacturing practices providing consistent gradient profiles for reproducible results. You can perform a variety of liquid chromatography as well as spectrometry applications, with confidence in the quality of your test results.



J.T.Baker® HPLC Acids, Salts and Ion-Pair Reagents

Description	Product Number
Acids	
Trifluoroacetic Acid	9470
Acetic Acid, Glacial	9515
Salts	
Ammonium Acetate	0599
Ammonium Dihydrogen Phosphate	0777
Sodium Acetate Trihydrate	0393
Ion-Pair Reagents	
1-Heptanesulfonic Acid Sodium Salt	2173
1-Hexanesulfonic Acid Sodium Salt	2175
1-Octanesulfonic Acid Sodium Salt	2818
1-Pentanesulfonic Acid Sodium Salt Monohydrate	2841
Tetrabutylammonium Hydrogen Sulfate (98%)	V360
Tetrabutylammonium Hydroxide, Titrant (0.4M in H ₂ O)	V365
Tetrabutylammonium Hydroxide in Water	9580
Tetrabutylammonium Phosphate	V375

J.T.Baker® BAKER ANALYZED™ HPLC Solvents

Description	Product Number
Acetone	8142
Acetone, Low Water	9003
Acetonitrile	8257
Acetonitrile, Far UV Gradient Grade	9012
Acetonitrile, Ultra Gradient Grade	9017
Chloroform (Hydrocarbon Stabilized)	9174
Chloroform (Stabilized Ethanol)	9175
Cyclohexane	9292
o-Dichlorobenzene	9233
Dichloromethane (Stabilized Amylene)	9410
Ether, Anhydrous	9237
Ethyl Acetate	9282
n-Heptane	9177
Hexanes (95% n-Hexane)	9304
Isobutyl Alcohol	9048
Methanol	8404
Methanol, Ultra Gradient Grade	8402
Methyl tert-Butyl Ether	9042
Methyl Ethyl Ketone	9214
Pentane	9331
2-Propanol	9095
Pyridine, Low Water	9393
Tetrahydrofuran	9441
Tetrahydrofuran (Stabilized)	9440
Tetrahydrofuran, Low Water	9439
1,2,4-Trichlorobenzene	9444
2,2,4-Trimethylpentane	9480
Water	4218



Macron Fine Chemicals™ ChromAR™ Solvents

Description	Product Number
1,2-Dichloroethane	6726
1,4-Dioxane	6753
1-Butanol	6724
1-Chlorobutane	6725
2,2,4-Trimethylpentane	6043
2-Butanon	6206
Acetone	2435
Acetonitrile	2856
Acetonitrile	2856
Acetonitrile	6711
Chloroform (Stabilized Amylene)	4443
Chloroform (Stabilized Ethanol)	6754
Cyclohexane	6720
Dichloromethane (Stabilized Amylene)	6714
Diethyl Ether (Stabilized BHT)	6727
Diethylamine	6728
Dimethyl Sulfoxide	2969
Ether (Stabilized Ethanol)	2854
Ethyl Acetate	H078
Heptane fraction	6751
Isopropyl Alcohol (2-Propanol)	3043
Methyl Alcohol, Anhydrous (Methanol)	3041
Methyl Alcohol, Anhydrous (Methanol)	6712
N, N - Dimethylformamide	5362
n-Butyl Acetate	6723
n-Heptane, 95%	6750
n-Heptane, 99%	5410



Description	Product Number
n-Heptane, 99.5%	5139
n-Hexane, 95%	6752
n-Hexane, 99%	6713
NMP (N-Methyl-2-pyrrolidinone)	6392
n-Pentane, 95%	6755
n-Pentane, 99%	6721
Petroleum Ether, 40-60	6756
Petroleum Ether, 60-80	6757
Propyl Alcohol (1-Propanol)	5351
Pyridine	6730
Tert-Butyl Methyl Ether	5398
Tetrachloroethylene	6759
Tetrahydrofuran	2858
Toluene	4483
Water	6795

Gas Chromatography

The rigorous demands of EPA extraction/concentration protocols inspired the development of J.T.Baker® brand solvents for GC analysis. J.T.Baker® solvents are designed, manufactured and tested to provide the best performance for any GC application. Avantor 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 start with the purest raw materials available. They pass through a combination of chemical and non-chemical purification technologies that remove reactive solvent impurities and produce higher assays and narrow solvent fronts, then are packaged to maintain purity. Inert gas blanketing throughout the manufacturing and packaging process, along with our unique stabilizer system, provides 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.

J.T.Baker® BAKER ANALYZED™ Pesticide Reagent solvents are specially developed for use in evaluation of pesticide (and insecticide) residues in food, feed, water or soil samples as suitable for all analysis of common pesticides such as 2-chlorobiphenyl, Heptachlor, Aldrin, Parathion, Dieldrin, Endrin, DDT, Dioxine etc.

They are specified to the required low residue levels (5 ppm) for use in research and quality control laboratories.

J.T.BAKER® ANALYZED ULTRA-RESI™ Solvents and Reagents

Description	Product Number
Solvents	
Acetone	9254
Acetonitrile	9255
Carbon Disulfide	E350
Chloroform (Stabilized Ethanol)	9257
Cyclohexane	9258
Dichloromethane (Stabilized)	9264
Diethylether (EPA Method 8151A)	9259
Ethyl Acetate	9260
N-Heptane	9338
Hexane (95% n-Hexane)	9262
Hexane (99 % n-Hexane)	N168
Iso-Hexane	9267
Methanol (Purge & Trap)	9077
Methanol	9263
Methyl tert-Butyl Ether	9043
N-Pentane	9333
Petroleum Ether 30°-60°C	9265
2-Propanol	9334
Tetrachloroethylene (Stabilized)	9360
Toluene	9336
2,2,4-Trimethylpentane	9335
Water	4219
Salts	
Sodium Sulfate Anhydrous	3375

J.T.Baker® BAKER ANALYZED™ Pesticide Reagents

Description	Product Number
2,2,4-Trimethylpentane	8469
2-Propanol	8468
Acetone	5276
Acetonitrile	5283
Chloroform (Stabilized Ethanol)	5285
Cyclohexane	5278
Dichloromethane (Stabilized Amylene)	5275
Diethyl Ether (Stabilized Ethanol)	8467
Ethyl Acetate	5277
Heptane, 95%	8472
Methanol	5279
n-Hexane (95% n-Hexane)	5274
n-Hexane, 99%	8473
n-Pentane	5281
Petroleum Ether 40°-60° C	5280
Toluene	8470

J.T.Baker® BAKER ANALYZED™ GC-HS Reagents have been developed for more sensitive GC-headspace analysis of volatile organic impurities. Each solvent is tested to ensure optimal performance with purity and extremely low or levels of residual solvent impurities - certificates of analysis include exact marked impurities.

The Purge and Trap process separates and concentrates volatile sample components in a sorbent trap, which is then heated rapidly to desorb the volatile components onto the GC instrument. J.T.Baker® ULTRA RESI-ANALYZED Methanol (Product Number 9077) was designed specifically for use in Purge and Trap analysis applications. In addition to the usual specifications for GC application, this product is tested for volatile organic traces that could interfere with the purge and trap analysis.

J.T.Baker® BAKER ANALYZED™ GC - HS Reagents

Description	Product Number
DMF-N,N-dimethylformamide	9753
DMSO-dimethyl sulfoxide	9754
DMA-N,N-dimethylacetamide	9755

UV/Visible/IR Spectrometry

The principle of spectrometry is fairly straightforward—that the identification and concentration of a species in solution can be determined by measuring the transmittance or absorbance of radiation passed through the solution. It's a simple concept, but to make it work you need a solvent that doesn't interfere with the measurement at the specific wavelength being measured.

J.T.Baker® PHOTREX™ solvents are recommended for use in UV, visible, and IR spectrometry applications. They are manufactured to minimize lot-to-lot variability and contaminants that can interfere with UV, and in some cases IR, spectra, including residue after evaporation, and acid and base concentrations. Function testing confirms maximum absorbance in selected wavelengths, and for PHOTREX™ solvents, 50% to 100% transmittance windows in IR wavelengths are reported.

J.T.Baker® Spectrometry Solvents

Description	Product Number
Alcohol, Anhydrous, Reagent	8029
1-Butanol	9189
Chloroform (Stabilized Ethanol)	7071
Cyclohexane	8706
1,2-Dichloroethane	9302
1,4-Dioxane	9196
Dichloromethane (Stabilized Amylene)	7305
Dimethyl Sulfoxide	7093
Ethanol, Absolute	8029
Hexane(99% N-Hexane)	8205
Methanol, Absolute	8046
Paraffin Oil	9388
Petroleum Ether, 35–60 °C	9270
2-Propanol	8235
Toluene	9456
2,2,4-Trimethylpentane	8715
Xylenes	9516

Also available from Avantor Performance Materials: J.T.Baker® brand product portfolio

Solid-phase extraction – J.T.Baker® silica- and polymer-based BAKERBOND™ SPE columns and high performance BAKERBOND Speedisk™ columns and disks improve and simplify sample clean-up and concentration

Dissolution Testing Media – J.T.Baker® dissolution media concentrates are produced in accordance to USP guidelines and containers are filled to +/- 0.5% of target fill volumes to ensure consistent, reproducible results every time. Reduce average prep time by more than 75%. Just add purified water and begin testing

Trace metal analysis reagents – full range of products to prepare your samples with the utmost consistency, highest purity and stability, offered in three different grades — ppt, ppb or ppm trace metal acids

Biosolvents — sophisticated reagents proven to expand process control, reduce variables, maximize coupling efficiencies and boost yields

Bioreagents — high purity reagents tested for use in biotechnology applications, such as electrophoresis, and liquid chromatography

General reagents – J.T.Baker® BAKER ANALYZED™ ACS solvents, acids, salts, solutions provide very high characterization and purity. For standard reagent grades of chemicals, Macron Fine Chemicals™ AR™ grade chemicals are designed to provide the best value for the price



Phillipsburg, NJ 9001:2008 & 14001:2004

Paris, KY 9001:2008

Mexico City, Mexico 9001:2008

Deventer, the Netherlands 9001:2008, 14001:2004 & 13485:2003

Gliwice, Poland 9001:2008 & 17025:2005

Selangor, Malaysia 9001:2008

Dehradun, India 9001:2008, 14001:2004 & 13485:2003

Mumbai, India 9001:2008 & 17025:2005

Avantor™ Performance Materials

Avantor Performance Materials manufactures and markets high-performance chemistries and materials around the world under several respected brand names, including the J.T.Baker®, Macron Fine Chemicals™, Rankem™, BeneSphera™ and POCH™ brands.

Avantor products are used in a wide range of industries. Our biomedical and life science solutions are used in pharmaceutical production, laboratory research for academic, industry and quality control, and in medical lab testing. Our electronics materials products are used in the manufacturing of semiconductors.

For additional information please visit www.avantormaterials.com or follow [www.twitter.com/avantor_news](https://twitter.com/avantor_news)



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