# High-purity solvents and reagents

## Lab-optimized performance: Enhance separation and reproducibility, and maximize the sensitivity and detecting power of your instrumentation

Avantor J.T.Baker® 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**—J.T.Baker® ULTRA LC/MS products are ideal for cutting-edge applications, such as proteomics, pharmacokinetics, clinical research and drug discovery, while J.T.Baker® LC/MS products are function-tested and optimized for minimal impurities and interference-free baselines, giving you performance you can trust.

**HPLC analysis**—With J.T.Baker® pure HPLC products, you can improve your processes, obtain high selectivity, reproducibility and accuracy of results.

**GC analysis**—J.T.Baker® solvents and reagents 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**—J.T.Baker® solvents are manufactured for lot-to-lot consistency, and to minimize contaminants that can interfere with UV, and in some cases IR, spectra, including residue after evaporation, and acid and base concentrations.

## J.T.Baker® high-purity solvents – grade recommendations

| Application | Analyzed™ HPLC Reagents | Analyzed™ LC/MS Reagents | Analyzed™ Ultra LC/MS Reagents | Resi-Analyzed™ Reagents |
|---|---|---|---|---|
| HPLC - Conventional | XXX | X | | |
| HPLC - QC/QA | XXX | X | | |
| Gas Chromatography (GC) | | | | |
| HPLC - Research | XXX | XX | | XXX |
| LC/MS - QC/QA | XX | XXX | X | |
| LC/MS - Research | | XXX | XX | |
| LC/MS - Research | | XX | XXX | |
| UHPLC - QC/QA | XXX | X | X | |
| UHPLC - General Research | XXX | X | XXX | |
| UHPLC - Critical Research | | X | XXX | |

Key

X Suitable XX Preferred XXX 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.

## J.T.Baker® high-purity solvents – testing parameters

| Testing Parameters* | Analyzed™ HPLC Reagents | Analyzed™ LC/MS Reagents | Analyzed™ Ultra LC/MS Reagents | Resi-Analyzed™ Reagents |
|---|---|---|---|---|
| Color (APHA) | | X | X | |
| ECD and/or FID Sensitive Impurities | | | | X |
| For Organic Residue Analysis | | | | 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 | |
| Residue after Evaporation | X | X | X | X |
| Substances Reducing Permanganate | | | | X |
| Trace Metal Impurities (ppb) | | X | X | |

* 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

High-purity J.T.Baker® solvents and blends are specifically designed to ensure optimal instrument performance for LC/UV, LC/MS and Ultra High-Pressure Liquid Chromatography (UHPLC) applications.

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

ULTRA LC/MS products undergo advanced suitability testing with both electrospray positive and negative modes to optimize 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. That reduces metal adduct formation, improves analyte identification and ensures reliable, consistent and reproducible results.

For more routine applications, J.T.Baker® 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 you can have the highest confidence in solvent performance in your applications.

### J.T.BAKER® ULTRA LC/MS PRODUCTS

| Description | Product Number |
|---|---|
| Acetonitrile | **JT9853-2** |
| Methanol | **JT9863-2** |
| Water | **JT9823-2** |

### J.T.BAKER® LC/MS PRODUCTS

| Description | Grade | Product Number |
|---|---|---|
| Acetonitrile | LC/MS | **JT9829-3** |
| Acetonitrile - 0.1% Formic Acid | LC/MS | **JT9832-3** |
| Acetonitrile - 0.1% Trifluoroacetic Acid | LC/MS | **JT9835-3** |
| Ethyl Acetate | LC/MS | **JT9828-3** |
| Methanol | LC/MS | **JT9830-3** |
| Water - 0.1% Formic Acid | LC/MS | **JT9834-3** |
| Water - 0.05% Trifluoroacetic Acid | LC/MS | **JT9839-3** |
| Water - 0.1% Trifluoroacetic Acid | LC/MS | **JT9836-3** |
| 2-Propanol | LC/MS | **JT9827-3** |

Multiple package sizes are available. Contact your sales representative for details.

| Industry/Application | LC/MS | ULTRA LC/MS Solvents |
|---|---|---|
| Drug discovery | | X |
| Drug identification | X | X |
| Drug formulation | X | |
| Biotechnology | X | |
| Food | X | |
| High-end research labs | | X |
| University research | 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 |

## High performance liquid chromatography (HPLC) analysis

Liquid chromatography (LC) is the most widely used chromatographic technique in most laboratories. For optimum HPLC performance, you need the right solvents and reagents.

J.T.Baker® HPLC products are designed to provide rapid, reproducible performance and separation. For critical HPLC applications, J.T.Baker® solvents and modifiers are the preferred choice for chemists around 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 that can affect biological activity.

### J.T.BAKER® HPLC ACIDS, SALTS AND ION-PAIR REAGENTS

| Description | Grade | Product Number |
|---|---|---|
| Trifluoroacetic Acid | HPLC | **JT9470-2** |
| Acetic Acid, Glacial | HPLC | **JT9515-3** |
| Ammonium Acetate | HPLC | **JT0599-8** |
| Ammonium Phosphate Monobasic | HPLC | **JT0777-8** |
| Sodium Acetate Trihydrate | HPLC | **JT4009-4** |
| 1-Heptanesulfonic Acid Sodium Salt | HPLC | **JT2173-5** |
| 1-Hexanesulfonic Acid Sodium Salt | HPLC | **JT2175-5** |
| 1-Octanesulfonic Acid Sodium Salt | HPLC | **JT2818-5** |
| 1-Pentanesulfonic Acid Sodium Salt Monohydrate | HPLC | **JT2841-6** |
| Tetrabutylammonium Hydrogen Sulfate (98%) | HPLC | **JTV360-7** |
| Tetrabutylammonium Hydroxide, Titrant (0.4M in $H_2O$) | HPLC | **JTV365-7** |
| Tetrabutylammonium Phosphate | HPLC | **JTV375-3** |

Multiple package sizes are available. Contact your sales representative for details.

### J.T.BAKER® BAKER ANALYZED™ HPLC SOLVENTS

| Description | Grade | Product Number |
|---|---|---|
| Acetone | HPLC | **JT9002-3** |
| Acetone, Low Water | HPLC | **JT9003-3** |
| Acetonitrile | HPLC | **JT9012-3** |
| Acetonitrile, Ultra Gradient Grade | HPLC | **JT9017-3** |
| Chloroform (Hydrocarbon Stabilized) | HPLC | **JT9174-3** |
| Chloroform (Ethanol Stabilized) | HPLC | **JT9175-3** |
| Cyclohexane | HPLC | **JT9292-3** |
| o-Dichlorobenzene | HPLC | **JT9233-3** |
| Ether, Anhydrous | HPLC | **JT9237-3** |
| Ethyl Acetate | HPLC | **JT9282-3** |
| n-Heptane | HPLC | **JT9177-3** |
| Hexanes (95% n-Hexane) | HPLC | **JT9304-3** |
| Methanol | HPLC | **JT9093-3** |
| Methyl tert-Butyl Ether | HPLC | **JT9042-3** |
| Methylene Chloride | HPLC | **JT9315-3** |
| Methyl Ethyl Ketone | HPLC | **JT9214-3** |
| Pentane | HPLC | **JT9331-3** |
| 2-Propanol | HPLC | **JT9095-3** |
| Pyridine, Low Water | HPLC | **JT9393-3** |
| Tetrahydrofuran | HPLC | **JT9441-3** |
| Tetrahydrofuran (Stabilized) | HPLC | **JT9440-3** |
| Tetrahydrofuran, Low Water | HPLC | **JT9439-3** |
| 1,2,4-Trichlorobenzene | HPLC | **JT9444-5** |
| 2,2,4-Trimethylpentane | HPLC | **JT9480-3** |
| Water | HPLC | **JT4218-3** |

Multiple package sizes are available. Contact your sales representative for details.

## 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. They are tested and controlled for optimum purity and lot-to-lot consistency for reproducible results.

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, they are packaged to maintain purity. A unique stabilizer system provides unmatched product stability and interference-free results.

Products are function-tested on high resolution capillary GC instruments and proven suitable to the ppt/ppb level on both ECD and FID detectors. J.T.Baker® ULTRA RESI-ANALYZED™ solvents 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® ULTRA RESI-ANALYZED™ SOLVENTS AND REAGENTS

| Description | Grade | Product Number |
|---|---|---|
| Acetone | Ultra Resi-Analyzed | JT9254-3 |
| Acetonitrile | Ultra Resi-Analyzed | JT9255-3 |
| Chloroform (Stabilized) | Ultra Resi-Analyzed | JT9257-3 |
| Cyclohexane | Ultra Resi-Analyzed | JT9258-3 |
| Methylene Chloride (Stabilized) | Ultra Resi-Analyzed | JT9264-3 |
| Ether | Ultra Resi-Analyzed | JT9259-3 |
| Ethyl Acetate | Ultra Resi-Analyzed | JT9260-3 |
| N-Heptane | Ultra Resi-Analyzed | JT9338-3 |
| Hexane (95% n-Hexane) | Ultra Resi-Analyzed | JT9262-3 |
| Hexane (99 % n-Hexane) | Ultra Resi-Analyzed | JTN168-8 |
| Methanol (Purge & Trap) | Ultra Resi-Analyzed | JT9077-2 |
| Methanol | Ultra Resi-Analyzed | JT9263-3 |
| Methyl tert-Butyl Ether | Ultra Resi-Analyzed | JT9043-3 |
| Pentane | Ultra Resi-Analyzed | JT9333-3 |
| Petroleum Ether 30°-60°C | Ultra Resi-Analyzed | JT9265-3 |
| 2-Propanol | Ultra Resi-Analyzed | JT9334-3 |
| Tetrachloroethylene | Ultra Resi-Analyzed | JT9360-3 |
| Toluene | Ultra Resi-Analyzed | JT9336-3 |
| 2,2,4-Trimethylpentane | Ultra Resi-Analyzed | JT9335-3 |
| Water | Ultra Resi-Analyzed | JT4219-3 |
| Sodium Sulfate Anhydrous | Ultra Resi-Analyzed | JT3375-1 |

Multiple package sizes are available. Contact your sales representative for details.

### ULTREX™ II ACIDS

| Description | Grade | Product Number |
|---|---|---|
| Acetic Acids, Glacial | ULTREX™ II | JT6903-5 |
| Ammonium Hydroxide, 20% | ULTREX™ II | JT4807-5 |
| Hydrochloric Acid, 500 mL | ULTREX™ II | JT6900-5 |
| Hydrochloric Acid, 2 L | ULTREX™ II | JT6900-2 |
| Hydrofluoric Acid | ULTREX™ II | JT6904-5 |
| Hydrogen Peroxide, 30% | ULTREX™ II | JT5155-1 |
| Nitric Acid, 500 mL | ULTREX™ II | JT6901-5 |
| Nitric Acid, 1 L | ULTREX™ II | JT6901-1 |
| Nitric Acid, 2 L | ULTREX™ II | JT6901-2 |
| Perchloric Acid, 70% | ULTREX™ II | JT4806-1 |
| Phosphoric Acid | ULTREX™ II | JT6908-4 |
| Sulfuric Acid | ULTREX™ II | JT6902-5 |
| Water | ULTREX™ II | JT6906-2 |
| ULTREX™ Acids Bottle Top Dispenser | ULTREX™ II | JT6910-1 |

Multiple package sizes are available. Contact your sales representative for details.

### J.T.BAKER® ULTRA LC/MS SOLVENTS

| Description | Grade | Product Number |
|---|---|---|
| Water | ULTRA LC/MS | JT9823-2 |
| Acetonitrile | ULTRA LC/MS | JT9853-2 |
| Methanol | ULTRA LC/MS | JT9863-2 |

Multiple package sizes are available. Contact your sales representative for details.

## UV/visible/IR spectrometry

The principle of spectrometry is fairly straightforward—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 maximize lot-to-lot consistency and minimize contaminants, 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 | JT9229-3 |
| 1-Butanol | JT9189-1 |
| 1,2-Dichloroethane | JT9302-1 |
| p-Dioxane | JT9196-2 |
| Methylene Chloride | JT9329-3 |
| Petroleum Ether, 35–60 °C | JT9270-3 |
| 2-Propanol | JT9083-3 |
| Toluene | JT9456-1 |

Multiple package sizes are available. Contact your sales representative for details.

# Also available: J.T.Baker® 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 with 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** — A full range of products to prepare your samples with the utmost consistency, highest purity and stability, are offered in three grades — ppt, ppb or ppm trace metal acids.

**Biopharmaceutical Solvents** — 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 and solutions provide very high characterization and purity.

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