

Find the perfect chemicals for
your Chromatography applications

Solvents, blends and reagents



Reliability.
Purity.
Certainty.

Introduction

Achieve maximum performance in liquid chromatography

Research, quality control or routine analysis – whatever the field of activity, our range of solvents meet the challenges of chromatography from HPLC to UHPLC-MS applications. We can supply the type of solvents, blends and reagents you need, in the grades, sizes and packaging that meet your requirements.

We offer a range of solutions for laboratories engaged in liquid chromatography to meet the most challenging applications, including:

- Forensic toxicology
- Environmental analysis
- Pharmaceutical and Biopharmaceutical research
- Proteomics and Metabolomics
- Clinical research

Manufacturing Capabilities

Utilizing our chemicals manufacturing sites, we can tailor-make solvents to meet the specifications you provide for your application. Our experience in manufacturing, processing and testing high-purity solvents enables customization to your specifications.

In addition, our dedicated solvent mixing facilities produce high-purity blends specified by our customers.

Take advantage of our long-standing expertise and experience in distillation, processing, testing and packaging high purity solvents to make Fisher Chemical your brand of choice for your chromatography applications.

Explore More Chromatography Solutions

Thermo Scientific offers innovative analytical instruments, consumables, lab equipment and specialty diagnostics that provide rapid and accurate results for customers in research, clinical and applied markets.

Table of Contents:

	Page no.
UHPLC-MS	3
LC-MS	4
LC-MS (Blends and Reagents)	5-6
UHPLC-UV	7
HPLC gradient	8
Specialized HPLC applications	9
Solvents, Blends and Reagents Selection Guide	10-12
Custom blends and specifications	13
Packaging innovations	14
High Volume Solvent Delivery Systems	15

UHPLC-MS

Reach the highest level of UHPLC-MS performance

NEW solvent grade targeted for trace analysis by UHPLC-MS.

UHPLC-MS Optima™ are **ultra-high purity solvents** specifically qualified for Mass Spec instrumentation.

Designed to ensure **low metal ion adduct formation, reduce column clogging and improve peak profiles.**

Key Features

- Solvent specification based on S/N ratio of the propazine product ion from MS/MS fragmentation
- LC-UV Gradient Suitability specification is tested in the full 200–400 nm range
- Borosilicate glass significantly reduces leaching of metal cations (Na⁺ and K⁺)



Advantages

- Designed to ensure low metal ion adduct formation and improve peak profiles
- Submicron filtration reduces instrument, column and check valves clogging
- Providing a smooth baseline with minimal interference

Application example

Designed with innovative technology and fine detail, the Thermo Scientific™ Vanquish™ UHPLC System delivers a new standard in high-end UHPLC – more results with better separations and easier interaction simultaneously, without compromise. Conceived for the uniquely efficient 1.5µm solid core particle Thermo Scientific Accucore Vanquish C18 UHPLC column, this fully integrated and biocompatible system features high sample capacity for high-throughput workflows, industry-leading pumping performance, amazingly low S/N and linearity, two-mode thermostating, active preheating and more, in a system that's driven by the gold-standard CDS software.

For more information go to,

www.thermoscientific.com/Vanquish

Solvent	Filter size	Product Code
Acetonitrile	0.1 µm	A956
Methanol	0.1 µm	A458
Water	0.03 µm	W8
Packaging: 1L Borosilicate glass		

To view the full range of solvents, see pages 10-12.



Thermo Scientific Vanquish UHPLC System

LC-MS

Meet the stringent purity requirements of LC-MS

The certified performance of our Optima LC-MS solvents offers the most reliable solutions for today's scientist. For consistent, reproducible performance in the mobile phase of LC-MS, choose Optima LC-MS grade products:

- Solvents
- Mobile Phase Blends
- Reagents & Additives

Key Features – Optima LC-MS Solvents

- Higher signal intensity & lower metal ion content (up to 17 metals level tested)
- Innovative LC-UV Gradient test with Photo Diode Array detector
- Sub-micron filtration for maximum purity



Advantages

- Ensure extremely low levels of UV-absorbing impurities – Peak Height with PDA (from 200 to 400 nm) with 2mAU max
- Range of pack sizes available to suit application requirements
- Lower particulate levels < 0.1 μ filtration to protect columns and components from clogging

Application example

From forensic toxicology to environmental analysis to pharmaceutical research, a constant in almost every field is the need for greater productivity; to quantify more samples in less time with greater reliability and confidence, and to do it all on ever tighter budgets. The Thermo Scientific Endura™ Triple Quadrupole Mass Spectrometer meets these needs with unsurpassed value. It delivers best-in-class sensitivity run after run and day after day regardless of sample type or matrix, and does so with an ease-of-use that takes the worry out of method development and operation.

For more information go to,

www.thermoscientific.com/en/product/tsq-endura-triple-quadrupole-mass-spectrometer.html

Solvent	Filter size	Product Code
Acetonitrile	0.1 μ m	A955
Methanol	0.1 μ m	A456
Water	0.03 μ m	W6
Packaging: 500ml, 1L, 2.5L and 4L Amber glass		

To view the full range of solvents, see pages 10-12.



Thermo Scientific Endura Triple Quadrupole Mass Spectrometer

LC-MS

Blends that meet the stringent purity requirements of LC-MS

Fisher Chemical Optima LC-MS solvents have set the standard of excellence for consistent, reproducible performance in the mobile phase of LC-MS. Now these same high purity solvents are pre-blended with Optima LC-MS modifiers, such as formic acid (FA) or trifluoroacetic acid (TFA), to provide ready to use aqueous and organic mobile phase blends for LC-MS applications.

Key Features

- Low mass spectrometry background noise (LC-MS)
- Minimal metal impurities
- Lowest impurity background using diode array reduction (LC-UV)

Advantages

- Safety risks associated with storing, blending and disposing of hazardous solvents
- Overhead costs associated with preparing blends
- Eliminates the need to clean glassware or measure corrosive acids
- Extend LC-MS column life due to low impurity level and low residue value

Optima LC-MS Blends	Filter size	Product Code
Acetonitrile with 0.1% Formic Acid	0.2 μ m	LS120
Acetonitrile with 0.1% Trifluoroacetic Acid	0.2 μ m	LS121
Water with 0.1% Formic Acid	0.2 μ m	LS118
Water with 0.1% Trifluoroacetic Acid	0.2 μ m	LS119
Packaging: 500ml, 1L, 2.5L and 4L Amber glass		



Fisher Chemical specialized solvent blends have been developed for use in liquid chromatography mass spectrometry and are ideal for cutting-edge research applications in areas such as proteomics, metabolomics, clinical chemistry and drug discovery.

Specialized Solvent Blends	Filter size	Product Code
Methanol with 10 nM Ammonium formate + 0.05% Formic Acid	0.2 μ m	MB122
Water with 10 nM Ammonium formate + 0.05% Formic Acid	0.2 μ m	MB123
45% Acetonitrile + 45% IPA + 10% Acetone	0.2 μ m	MB124
Packaging: 1L Borosilicate glass		



To view the full range of blends, see pages 10-12.

LC-MS

Reagents and additives that meet the stringent purity requirements of LC-MS

Optima LC-MS grade reagents are used as ultra-pure additives in the formulation of solvent blends for the mobile phase of LC-MS applications. Our mobile phase additives are use-tested to ensure suitability and are also protease-free.

Key Features

- Low spectrometry background noise
- Minimal metal impurities
- Lowest impurity background using diode array detection (LC-UV)

Advantages

- Available in ampules for small volumes and HDPE bottles for larger quantities
- Convenient, ready to use ampules for easy dilution
- Ampules are pre-scored for easy opening – no need to fill the ampules



Reagent	Packaging	Product Code
Acetic Acid	50ml HDPE and 1 ml ampules	A113
Ammonium Acetate	50g amber glass	A114
Ammonium Formate	50g amber glass	A115
Formic Acid	50ml HDPE and 0.5, 1 and 2ml ampules	A117
Trifluoroacetic acid	50ml HDPE and 0.5, 1 and 2ml ampules	A116

Chromatography Columns and Consumables

Thermo Scientific columns and consumables are applicable in a wide-range of markets offering solutions for our pharmaceutical, food and beverage, forensic and toxicology, proteomics, clinical, and environmental customers.

- Sample preparation - a broad range of manual and semi-automated SPE consumable solutions, as well as systems for automated solvent extraction, solid phase extraction and evaporation. All designed to reduce time and repetitive functions.
- Columns - get reliable, reproducible results with our comprehensive selection of LC and BioLC columns to meet all of your analysis needs
- Vials and closures - choose from a large selection of vials and closures to match your application and autosampler requirements.



For more information go to

www.separatedbyexperience.com

UHPLC-UV

Develop performance in routine liquid chromatography

The UHPLC (Ultra High Pressure Liquid Chromatography) pump has become an indispensable instrument to get shorter run times while maintaining chromatography integrity. In addition to low filtration, our solvents display a remarkably high UV transmission rate making them the ideal solvent for UHPLC applications using UV detection.

For those working at high pressure, where high sensitivity and a fast run rate are key to successful analysis we have raised the bar by providing solvents that are ideally specified for this application.

Key Features

- Outstanding high UV transmission - interference free
- Low acidity & alkalinity level
- Filtered to 0.1 μm

Advantages

- Ensure an extremely low baseline noise at 210nm and 254nm
- Improved UV resolution
- Lower particulate levels protecting columns and components from clogging



Application example

The UltiMate[®] 3000 HPLC system offers UHPLC compatibility across all modules, ensuring maximum performance for all users and all laboratories. Covering flows from 20 nL/min to 10 mL/min and offering a wide range of pumping, sampling, and detection modules, the UltiMate 3000 series provides solutions for all your chromatography needs.

For more information go to,

www.thermoscientific.com/en/products/standard-sd-systems.html

Solvent	Filter size	Product Code
Acetonitrile	0.1 μm	A/0650
Methanol	0.1 μm	M/4070
Water	0.1 μm	W/0120
Packaging: 1L and 2.5L plastic coated glass bottle		

To view the full range of solvents, see pages 10-12.



Thermo Scientific UltiMate 3000
Standard System

Gradient HPLC

Achieve maximum performance in routine liquid chromatography

HPLC Gradient Grade: Suitable for HPLC gradient grade pumps for essential and routine analysis. For everyday use and technical applications, these solvents are the benchmark that ensure we can meet the needs of all of our end users. Several packaging innovations, such as Contain™ plastic coated bottles and 5L aluminium cans have ensured that we maintain a reputation for providing customers with enhanced safety features and flexibility.

Key Features

- High UV transmission
- Low acidity/alkalinity level
- Filtered to 0.2 μm

Advantages

- Wide range of packaging styles available to suit customer requirements
- Actual LOT analysis is printed on label for ease of reference



Application example

The Thermo Scientific Vanquish Flex system is a biocompatible UHPLC system, ideally suited for the biopharmaceutical industry. The Vanquish Flex system provides state-of-the-art quaternary solvent blending, while the Vanquish UHPLC platform sets new benchmarks on accuracy, precision, and sensitivity in liquid chromatography. As a new part of this family, the Vanquish Flex system shares all Vanquish-inherent values, such as a design focus on uptime, robustness and reliability. Multiple detection options as well as Viper connections throughout the system will give you the performance you need with the ease of use you want.

For more information go to,

www.thermoscientific.com/vanquish

Solvent	Filter size	Product Code
Acetonitrile	0.2 μm	A/0627
Methanol	0.2 μm	M/4058
Water	0.2 μm	W/0106

To view the full range of solvents, see pages 10-12.



Thermo Scientific Vanquish Flex UHPLC System

Additional HPLC Applications

Fisher Chemical offers a wide range of solvents and reagents to meet the specific challenges of chromatography

Diverse chromatographer requirements have led us to look for ways to improve our purification processes and to develop a series of solvents and buffers that meet the needs of specific instrumentation. To support the many different applications we also offer a diverse range of solvents, all specified and tested for HPLC:

- HPLC grade
- Advanced Gradient Grade featuring a very low baseline drift for method development
- HPLC grade for electrochemical detection
- HPLC grade for fluorescence detection
- GPC (Gel Permeation Chromatography) grade

Advantages

- Broad range of solvents, blends, buffers, additives and other reagents
- Developed and guaranteed according to specific detector requirement
- Wide range of packaging styles available to suit customer requirements
- Actual LOT analysis is printed on label for ease of reference



To view the full range of solvents, see pages 10-12.



GHS information



Product specific information



LOT analysis

Solvents, Blends and Reagents Selection Guide

Select the suitable Fisher Chemical Solvents, Blends and Reagents grade for your application!

SOLVENTS AND BLENDS							
Designation	Isocratic HPLC	Gradient HPLC	UHPLC-UV	LC-MS	Optima™ LC-MS	Optima™ UHPLC-MS	Other specific grade
Acetone	A/0606						
Acetonitrile	A/0626	A/0627	A/0650	A/0638	A955	A958	A/0632 & A/0635 & A/0630
Acetonitrile with 0,1 % Trifluoroacetic acid (v/v)		FE/0200			LS121		
Acetonitrile with 0,1% Formic acid (v/v)		FE/1100			LS120		
1-Chlorobutane	C/4756						
Chloroform, stabilized with amylene	C/4966						
Cyclohexane	C/8936						
1,2-Dichloroethane	D/1756						
Dichloromethane, stabilized with amylene	D/1856						
Dichloromethane, stabilized with methanol	D/1859						
Dichloromethane, unstabilized	D/1857						
Diethyl ether, stabilized with ethanol	D/2506						
Dimethyl sulfoxide	D/4125						
Dimethylformamide	D/3846						
1,4-Dioxane, stabilized with BHT	D/4556						
Ethanol absolute	E/0665						
Ethanol absolute, duty free	E/0665DF						
Ethyl acetate	E/0906						
Ethyl acetate, dried with water content <100pm	E/0907						
Heptane, approx. 99% n-Heptane	H/0106						H/0107
Hexanes, 95% n-Hexane approx.	H/0406						H/0409
Isohexane, contains <5% n-Hexane	H/0405						H/0410
Iso-propanol	P/7507	P/7508			A461		P/7509
Methanol	M/4056	M/4058	M/4070	M/4062	A456	A458	M/4060 & M/4059 & M/4057

Solvents, Blends and Reagents Selection Guide

SOLVENTS AND BLENDS							
Designation	Isocratic HPLC	Gradient HPLC	UHPLC-UV	LC-MS	Optima™ LC-MS	Optima™ UHPLC-MS	Other specific grade
Methanol with 0,1% Formic acid (v/v)		FE/1300					
Methyl-tert-butyl ether	M/4496						
Pentane, mixed isomers	P/1006						
Propan-1-ol	P/7486						
Tetrahydrofuran, unstabilized	T/0706						
Toluene	T/2306						
2,2,4-Trimethylpentane	T/3606						
Water		W/0106	W/0120	W/0112	W6	W8	W/0110 & W/0107 & W/0108
Water with 0,1% Formic acid (v/v)		FE/1200			LS118		
Water with 0,1% Trifluoroacetic acid (v/v)		FE/0100			LS119		
Solvents Starter kit			UHPLCKIT		LCMSKIT		

REAGENTS			
Designation	Isocratic HPLC	Optima™ LC-MS	HPLC for ECD
Acetic acid	A/0406	A113	A/0407
Ammonia solution, 35%	A/3295		
Ammonia solution 0,25M	J/0100		
Ammonium acetate	A/3446	A114	A/3450
Ammonium acetate solution 0,25M	J/0200		
Ammonium carbonate	A/3686		
1-Butane sulfonic acid sodium salt	B/4791		
Di-n-butylamine	D/1338		
Di-n-butylamine phosphate solution 1,0 M	D/1341		
Citric acid monohydrate			C/6230
Ethylenediaminetetraacetic acid, disodium salt			J/3710
Formic acid		A117	
Formic acid solution 0.25M	J/4200		
Orthophosphoric acid, 85%			O/0515

Solvents, Blends and Reagents Selection Guide

REAGENTS			
Designation	Isocratic HPLC	Optima™ LC-MS	HPLC for ECD
Orthophosphoric acid solution 1M	J/5655		
Perchloric acid 60%	P/1290		
Potassium dihydrogen orthophosphate	P/4806		
Potassium dihydrogen orthophosphate			P/4810
Sodium acetate trihydrate	S/2046		S/2052
Sodium chloride	S/3165		
tri-Sodium citrate dihydrate			S/3380
Sodium dihydrogen orthophosphate dihydrate			S/3770
Sodium dihydrogen orthophosphate 0.25M solution	J/7600		
Sodium formate	S/4086		
di-Sodium hydrogen orthophosphate dihydrate			S/4460
di-Sodium hydrogen orthophosphate, 0.25M solution	J/7650		
Sodium hydrogen carbonate	S/4246		
Sodium hydroxide, 46-48% solution			S/4940
Sodium perchlorate	S/5966		
Tetrabutyl ammonium bromide	T/0476		
Tetra-n-butyl ammonium hydroxide, solution 0.5M	T/0481		
Tetra-n-butyl ammonium hydroxide, 0.1M solution phosphate buffered	T/0486		
Tetradecyltrimethylammonium bromide	T/0611		
Tetraethylammonium bromide	T/0621		
Tetramethylammonium chloride	T/0931		
Tetramethyl ammonium hydrogen sulfate	T/0935		
Triethylamine	T/3203		
Trifluoroacetic acid	T/3258	A116	
Trifluoroacetic acid 1% solution	J/8800		
Tri-n-hexylamine	T/3296		

Custom Blends and Specifications

Take advantage of solvents, reagents and solutions tailored to individual needs

We enable our customers to optimize their own resources with our secure and validated global supply chain; global sourcing capabilities; and manufacturing, quality control and packaging expertise.

Our Specialized Chemical Services (SCS) team serves customers who require something different:

- Semi-bulk and bulk chemicals
- Tailored solvents and solvent blends
- Special solutions
- Additional testing services
- Customized packaging and labeling



Custom Blending Process

We can tailor make solvents to meet your specifications for your application. In addition, our dedicated solvent-mixing facilities are available to produce high-quality blends. Solvents are charged by weight, through a 0.2-micron filter, by air-driven pump and/or by nitrogen pressure. Small amounts of solid and liquid additives are added via charge-ports.

All blending and mixing operations are carried out according to written procedures. The mixing vessels are cleaned (CIP) before and after the mixing/blending operation and are left in a dry condition, filled with nitrogen, between operations.

Quality and Testing

For 'bespoke' products, a sample will be prepared and the specification finalised before production commences. This specification will be formally defined in a document called a 'quality schedule'. The quality schedule will be a full description of the customer's quality requirements, including packaging and labelling.

On manufacture, the components are charged and blended, and the resulting material is sampled to ensure the product quality. The material is then discharged into the final product containers by nitrogen pressure. The final product containers are then re-sampled and subjected to final testing and approval.

Packaging

The final product can be supplied in packaging from 1L glass bottles to stainless steel containers up to 1000L.

Packaging Innovations

Excellence in packaging through Innovation

Fisher Chemical products come in a variety of innovative packaging options designed for safety, environmental protection, convenient handling and storage, and preservation of product integrity. Our packaging is compliant with all government regulations.



Amber Glass and Borosilicate Glass Bottles - Quality and Reliability

Amber glass is used to package photosensitive chemicals to protect them from light. Borosilicate glass significantly reduces leaching of metal cations.



HDPE Plastic Bottles - Safety and Chemical Stability

Proprietary surface treatment applied to HDPE bottles to create a barrier between the bottle and chemical, thus preventing contamination by plasticizers.



Ampules - Reproducibility and Convenience

Fisher Chemical Optima LC-MS additives are now custom-packaged in amber borosilicate ampules, available in sizes from 0.5ml to 2ml, under inert atmospheric conditions to provide the freshest additives for preparing aqueous and organic mobile phase blends.



Aluminium Bottles - Quality and Reliability

Providing optimum material characteristics to avoid interactions between solvents and packaging material. Lightweight bottles allow easy handling and low transport costs.



High Volume Solvent Delivery Systems

We offer environmentally friendly solvent handling solutions in 10L to 1000L containers.



High Volume Solvents Delivery Systems

Safety, efficiency and convenience

High-volume solvent delivery systems, available in 10L to 1000L, offer environmentally friendly solvent handling solutions for your applications, enhancing safety and improving productivity within your lab.

Enhanced solvent safety

High-volume solvent delivery systems incorporate safety features to protect the lab and the environment by offering a combination of mechanical and manual controls to prevent unwanted solvent flow. The bottle-free, closed system eliminates the potential for glass bottle breakage and makes the risk of spills and exposure to vapors negligible.

Reduce lab-operating costs

Increase lab efficiency by eliminating:

- Repeated solvent testing
- Multiple lots of material
- Bottle rinsing
- Disposal costs

Environmentally friendly solution

- Reduce the amount of solid waste generated in your laboratory
- Minimize the release of flammable or toxic solvent liquids and vapors
- Eliminate bottle rinsing – empty containers are returned, cleaned and refilled

For your applications

- High-performance liquid chromatography (HPLC)
- Preparative chromatography and high-volume gas chromatography sample preparation
- Process synthesis and extractions



Optimize chromatography performance by choosing the most suitable Fisher Chemical solvent grade

Chromatography Application	Instrument and Detector Type	Fisher Chemical Solvent Grade
UHPLC-MS	UHPLC coupled with Mass detector	Optima UHPLC-MS
High HPLC-MS	LC and UHPLC coupled with Mass detector	Optima LC/MS
HPLC-MS	LC coupled with Mass detector	LC/MS grade
UHPLC	UHPLC coupled with UV detector	UHPLC gradient grade
High HPLC Gradient Grade	LC gradient grade coupled with UV detector	HPLC advanced grade
HPLC Gradient Grade	LC gradient grade coupled with UV detector	HPLC gradient grade
HPLC	LC coupled with UV detector	HPLC grade

To place an order, contact your local distributor.



©2015 Thermo Fisher Scientific Inc. All rights reserved.
All other trademarks are the property of Thermo Fisher Scientific Inc. and its subsidiaries.

Thermo Fisher Scientific
ENA 23, Zone 1, nr 1350
Janssen Pharmaceuticaaan 3a
2440 Geel
Belgium
www.acros.com