Fisher Chemical

New Products for LC/MS Applications

- Mobile Phase Blends, OPTIMA LC/MS Grade
- Solvents, OPTIMA LC/MS Grade:
  Acetonitrile, Methanol, 2-Propanol (IPA) and Water
- Reagents, OPTIMA LC/MS Grade:
  Formic Acid, Trifluoroacetic Acid, Ammonium Acetate, Ammonium Formate and Acetic Acid

Mobile Phase Blends, OPTIMA® LC/MS Grade

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 and LC/UV applications.

In recent laboratory experiments, Fisher Chemical OPTIMA LC/MS solvent blends were shown to meet the stringent purity requirements of LC/MS by providing a consistent concentration of FA or TFA, a very low mass baseline (noise level), exceptionally low metal ion content, and very low LC/UV background. Moreover, the protease-free specification of the aqueous blends is important for proteomics research since peptides/proteins could be degraded if the mobile phase solution is contaminated with protease.

Fisher Chemical OPTIMA LC/MS pre-blended solvents are manufactured in facilities with an ISO 9001:2008 certified quality system to ensure optimum quality and product uniformity.

KEY FEATURES

- Extensive functional testing to ensure
  - Low mass spectrometry background noise (LC/MS)
  - Minimal metal impurities
  - Lowest impurity background using diode array detection (LC/UV)
- Lot-to-lot consistency
- OPTIMA LC/MS mobile phase extends LC/MS column life due to low impurity levels and low residue value
- Very effective in solubilizing hydrophobic polypeptides
- Only supplier to claim absence of proteases in aqueous blends

ADVANTAGES

- Ready-to-use
- Avoids the possibility of contamination that can occur with in-house blended solvents
- Eliminates the need to clean glassware or measure corrosive acids
- Eliminates batch-to-batch variation
- Reduces overhead costs associated with preparing blends
- Reduces many of the safety risks associated with storing, blending, and disposing of hazardous solvents and acids
- Avoids human error during preparation of blends

APPLICATIONS

- Proteomics
- Pharmaceutical Research
- Drug Discovery
- Biomedical Research

OPTIMA LC/MS AQUEOUS BLENDS

Cat.No.	Product Description	Pack size	Box qty
LS118-500	0.1% FA in Water, OPTIMA LC/MS	500 mL	6 x 500 mL
LS118-1	0.1% FA in Water, OPTIMA LC/MS	1 L	6 x 1 L
LS118-212	0.1% FA in Water, OPTIMA LC/MS	2.5 L	4 x 2.5 L
LS118-4	0.1% FA in Water, OPTIMA LC/MS	4 L	4 x 4 L
LS119-500	0.1% TFA in Water, OPTIMA LC/MS	500 mL	6 x 500 mL
LS119-1	0.1% TFA in Water, OPTIMA LC/MS	1 L	6 x 1 L
LS119-212	0.1% TFA in Water, OPTIMA LC/MS	2.5 L	4 x 2.5 L
LS119-4	0.1% TFA in Water, OPTIMA LC/MS	4 L	4 x 4 L

OPTIMA LC/MS ORGANIC BLENDS

Cat.No.	Product Description	Pack size	Box qty
LS120-500	0.1% FA in Acetonitrile, OPTIMA LC/MS	500 mL	6 x 500 mL
LS120-1	0.1% FA in Acetonitrile, OPTIMA LC/MS	1 L	6 x 1 L
LS120-212	0.1% FA in Acetonitrile, OPTIMA LC/MS	2.5 L	4 x 2.5 L
LS120-4	0.1% FA in Acetonitrile, OPTIMA LC/MS	4 L	4 x 4 L
LS121-500	0.1% TFA in Acetonitrile, OPTIMA LC/MS	500 mL	6 x 500 mL
LS121-1	0.1% TFA in Acetonitrile, OPTIMA LC/MS	1 L	6 x 1 L
LS121-212	0.1% TFA in Acetonitrile, OPTIMA LC/MS	2.5 L	4 x 2.5 L
LS121-4	0.1% TFA in Acetonitrile, OPTIMA LC/MS	4 L	4 x 4 L

For more information, including a white paper titled 'Optimizing Mobile Phase Solvent Purity for LCMS', go to www.FisherLCMS.com

Mobile Phase Blends, OPTIMA LC/MS Grade

OPTIMA LC/MS Aqueous Blends LS118

0.1% FA IN WATER

OPTIMA LC/MS	
Product Description	OPTIMA LC/MS Water with 0.1% (v/v) Formic Acid

Cat.No. and Pack Size:
LS118-500, 500 mL LS118-1, 1 L LS118-212, 2.5 L LS118-4, 4 L

Assay % (V/V)	0.095 to 0.105%
Color (APHA), Max	10

Optical Abs, wavelength, nm	Au, Max
254	0.01
230	0.55
220	0.85
210	1.25

LC/MS Gradient Suitability	Pass test
Residue After Evaporation (max)	1 ppm
Protease	Not Detected

Ionic Impurities	ppb, Max
Aluminum (Al)	20 ppb
Calcium (Ca)	50 ppb
Copper (Cu)	10 ppb
Iron (Fe)	10 ppb
Lead (Pb)	10 ppb
Magnesium (Mg)	10 ppb
Manganese (Mn)	10 ppb
Nickel (Ni)	10 ppb
Potassium (K)	20 ppb
Silver (Ag)	10 ppb
Sodium (Na)	50 ppb
Zinc (Zn)	20 ppb

OPTIMA LC/MS Aqueous Blends LS119

0.1% TFA IN WATER

OPTIMA LC/MS	
Product Description	OPTIMA LC/MS Water with 0.1% (v/v) Trifluoro-acetic Acid

Cat.No. and Pack Size:
LS119-500, 500 mL LS119-1, 1 L LS119-212, 2.5 L LS119-4, 4 L

Assay % (V/V)	0.095 to 0.105%
Color (APHA), Max	10

Optical Abs, wavelength, nm	Au, Max
254	0.003
230	0.06
220	0.18
210	0.55

LC/MS Gradient Suitability	Pass test
Residue After Evaporation (max)	1 ppm
Protease	Not Detected

Ionic Impurities	ppb, Max
Aluminum (Al)	20 ppb
Calcium (Ca)	50 ppb
Copper (Cu)	10 ppb
Iron (Fe)	10 ppb
Lead (Pb)	10 ppb
Magnesium (Mg)	10 ppb
Manganese (Mn)	10 ppb
Nickel (Ni)	10 ppb
Potassium (K)	20 ppb
Silver (Ag)	10 ppb
Sodium (Na)	50 ppb
Zinc (Zn)	20 ppb

OPTIMA LC/MS Organic Blends LS120

0.1% FA IN ACETONITRILE

OPTIMA LC/MS	
Product Description	OPTIMA LC/MS Acetonitrile with 0.1% (v/v) Formic Acid

Cat.No. and Pack Size:
LS120-500, 500 mL LS120-1, 1 L LS120-212, 2.5 L LS120-4, 4 L

Assay % (V/V)	0.095 to 0.105%
Color (APHA), Max	10

Optical Abs, wavelength, nm	Au, Max
254	0.03
230	0.75
220	1.25
210	1.3

LC/MS Gradient Suitability	Pass test
Residue After Evaporation (max)	1 ppm
Water (max)	0.01%

Ionic Impurities	ppb, Max
Aluminum (Al)	25 ppb
Calcium (Ca)	50 ppb
Copper (Cu)	10 ppb
Iron (Fe)	10 ppb
Lead (Pb)	10 ppb
Magnesium (Mg)	10 ppb
Manganese (Mn)	10 ppb
Nickel (Ni)	10 ppb
Potassium (K)	20 ppb
Silver (Ag)	10 ppb
Sodium (Na)	50 ppb
Zinc (Zn)	20 ppb

OPTIMA LC/MS Organic Blends LS121

0.1% TFA IN ACETONITRILE

OPTIMA LC/MS	
Product Description	Optima LC/MS Acetonitrile with 0.1% (v/v) Trifluo-roacetic Acid

Cat.No. and Pack Size:
LS121-500, 500 mL LS121-1, 1 L LS121-212, 2.5 L LS121-4, 4 L

Assay % (V/V)	0.095 to 0.105%
Color (APHA), Max	10

Optical Abs, wavelength, nm	Au, Max
254	0.03
230	0.4
220	0.55
210	0.6

LC/MS Gradient Suitability	Pass test
Residue After Evaporation (max)	1 ppm
Water (max)	0.01%

Ionic Impurities	ppb, Max
Aluminum (Al)	25 ppb
Calcium (Ca)	50 ppb
Copper (Cu)	10 ppb
Iron (Fe)	10 ppb
Lead (Pb)	10 ppb
Magnesium (Mg)	10 ppb
Manganese (Mn)	10 ppb
Nickel (Ni)	10 ppb
Potassium (K)	20 ppb
Silver (Ag)	10 ppb
Sodium (Na)	50 ppb
Zinc (Zn)	20 ppb

Catalogue Cross-References to Competitor Products

Water with 0.1% (v/v) Formic Acid				
Brand	500 mL	1 L	2.5 L	4 L
Fisher Chemical	LS118-500	LS118-1	LS118-212	LS118-4
Fluka	N/A	N/A	34673-2.5L-R	N/A
JT Baker	N/A	9834-02	N/A	9834-03
Biosolve	N/A	232441, 1 L	232441, 2.5 L	N/A
Water with 0.1% (v/v) Trifluoroacetic Acid				
Brand	500 mL	1 L	2.5 L	4 L
Fisher Chemical	LS119-500	LS119-1	LS119-212	LS119-4
Fluka	N/A	N/A	34978-2.5L-R	N/A
JT Baker	N/A	9836-02	N/A	9836-03
Biosolve	N/A	232741	N/A	N/A

Acetonitrile with 0.1% (v/v) Formic Acid				
Brand	500 mL	1 L	2.5 L	4 L
Fisher Chemical	LS120-500	LS120-1	LS120-212	LS120-4
Fluka	N/A	N/A	34668-2.5L-R	N/A
JT Baker	N/A	9832-02	N/A	9832-03
Biosolve	N/A	019341, 1 L	019341, 2.5 L	N/A
Acetonitrile with 0.1% (v/v) Trifluoroacetic Acid				
Brand	500 mL	1 L	2.5 L	4 L
Fisher Chemical	LS121-500	LS121-1	LS121-212	LS121-4
Fluka	N/A	N/A	34976-2.5L-R	N/A
JT Baker	N/A	9835-02	N/A	9835-03
Biosolve	N/A	019541, 1 L	019541, 2.5 L	N/A

Solvents, OPTIMA LC/MS Grade

The joining of liquid chromatography (LC) with mass spectrometry (MS) has become an indispensable tool for various fields of research. The value of LC/MS derives from its ability to combine separation chemistry with selective mass ion detection. As instrumentation advances lead to ever-lower analyte detection limits, it is crucial for the chromatographer to consider the level of purity when selecting appropriate solvents for use in the LC/MS mobile phase. The Fisher Chemical product line offers superior high-purity solvents designed to meet the required purity level of advanced LC/MS systems.

OPTIMA LC/MS Acetonitrile A955

Assay (by GC), min	99.9%

Optical Abs, wavelength, nm	Au, Max
280	0.005
254	0.005
230	0.01
225	0.015
220	0.015
215	0.025
210	0.03
205	0.04
200	0.05
195	0.15
190	1.00

LC/UV Gradient Suitability, nm	Single max peak (Au)
254	0.0005
210	0.002

LC/MS at Positive Mode Max	50 ppb Reserpine
LC/MS at Negative Mode Max	50 ppb Aldicarb
Water (KF) %	0.01
Residue after Evaporation, ppm Max	0.8

Trace Ionic Impurities	ppb, Max
Aluminum (Al)	25
Barium (Ba)	5
Cadmium (Cd)	5
Calcium (Ca)	25
Chromium (Cr)	5
Cobalt (Co)	5
Copper (Cu)	5
Iron (Fe)	5
Lead (Pb)	5
Manganese (Mn)	5
Magnesium (Mg)	10
Nickel (Ni)	5
Potassium (K)	10
Silver (Ag)	5
Sodium (Na)	50
Tin (Sn)	5
Zinc (Zn)	10

Titratable Acid,mEQ/g	0.008
Titratable Base, mEQ/g	0.0006

OPTIMA LC/MS Methanol A456

Assay (by GC), min	99.9%

Optical Abs, wavelength, nm	Au, Max
280	0.005
260	0.005
254	0.01
230	0.1
220	0.2
214	0.4
210	0.5

LC/UV Gradient Suitability, nm	Single max peak (Au)
254	0.001
220	0.005

LC/MS at Positive Mode Max	50 ppb Reserpine
LC/MS at Negative Mode Max	50 ppb Aldicarb
Water (KF) %	0.02
Residue after Evaporation, ppm, Max	1

Trace Ionic Impurities	ppb, Max
Aluminum (Al)	10
Barium (Ba)	10
Cadmium (Cd)	10
Calcium (Ca)	20
Chromium (Cr)	10
Cobalt (Co)	10
Copper (Cu)	10
Iron (Fe)	10
Lead (Pb)	10
Magnesium (Mg)	10
Manganese (Mn)	10
Nickel (Ni)	10
Potassium (K)	10
Silver (Ag)	10
Sodium (Na)	50
Tin (Sn)	10
Zinc (Zn)	10

Titratable Acid,mEQ/g	0.0003
Titratable Base, mEQ/g	0.0002

OPTIMA LC/MS Water W6

Optical Abs, wavelength, nm	Au, Max
280	0.005
260	0.005
254	0.005
240	0.01
230	0.01
220	0.01
210	0.01

LC/UV Gradient Suitability, nm	Single max peak (Au)
254	0.0005
210	0.005

Protease	Not Detected
LC/MS at Positive Mode Max	50 ppb Reserpine
LC/MS at Negative Mode Max	50 ppb Aldicarb
Residue after Evaporation, ppm, Max	1

Trace Ionic Impurities	ppb, Max
Aluminum (Al)	10
Barium (Ba)	10
Cadmium (Cd)	10
Calcium (Ca)	20
Chromium (Cr)	10
Cobalt (Co)	10
Copper (Cu)	10
Iron (Fe)	10
Lead (Pb)	10
Magnesium (Mg)	10
Manganese (Mn)	10
Nickel (Ni)	10
Potassium (K)	10
Silver (Ag)	10
Sodium (Na)	20
Tin (Sn)	10
Zinc (Zn)	10
Total Halogens (as chloride)	Not Detected

OPTIMA LC/MS 2-Propanol A461

Assay	99.9%

Color (APHA), Max	5

Optical Abs, wavelength, nm	Au, Max
254	0.005
230	0.05
220	0.1
210	0.4

LC/MS Suitability	Pass Test

Water (KF) %	0.05

Residue after Evaporation, ppm, Max	1

Titratable Acid or Base meq/g	0.0001

Trace Ionic Impurities	ppb, Max
Aluminum (Al)	10
Calcium (Ca)	10
Copper(Cu)	5
Iron (Fe)	5
Lead (Pb)	5
Magnesium (Mg)	5
Manganese (Mn)	5
Nickel (Ni)	5
Potassium (K)	10
Silver (Ag)	5
Sodium (Na)	50
Zinc (Zn)	10

Catalogue Cross-References to Competitor Products

Acetonitrile				
Brand	500 mL	1 L	2.5 L	4 L
Fisher Chemical	A955-500	A955-1	A955-212	A955-4
EMD	NA	AX0156-6	NA	AX0156-1
Merck	NA	1000291000	1000292500	NA
JT Baker EU	NA	98531000	NA	NA
JT Baker US	NA	9829-2	NA	9829-3
Fluka	NA	34967-1L	34967-2.5L	34967-4X4L
BioSolve	12041	12041	NA	NA
Methanol				
Brand	500 mL	1 L	2.5 L	4 L
Fisher Chemical	A456-500	A456-1	A456-212	A456-4
EMD	NA	MX0486-6	NA	MX0496-6
Merck	NA	1060351000	1060352500	NA
JT Baker	NA	98631000 9830-2	NA	NA 9830-3
Fluka	NA	34966-1L	34966-2.5L	34966-4X4L
BioSolve	136841	136841	NA	NA

2-Propanol				
Brand	500 mL	1 L	2.5 L	4 L
Fisher Chemical	A461-500	A461-1	A461-212	A461-4
EMD	NA	NA	NA	NA
Merck	NA	NA	NA	NA
JT Baker EU	NA	98301000	NA	NA
JT Baker US	NA	9627-2	NA	9627-3
Fluka	NA	34965-1L	34965-2.5L	NA
BioSolve	162641	162641	162641	NA
Water				
Brand	500 mL	1 L	2.5 L	4 L
Fisher Chemical	W6-500	W6-1	W6-212	W6-4
EMD	NA	WX0001-6	NA	WX0001-1
Merck	NA	NA	NA	NA
JT Baker	NA	98231000 9831-2	NA	NA 9831-3
Fluka	NA	39253-1L	NA	39253-4X4L
BioSolve	NA	232141	232141	NA

Reagents, OPTIMA LC/MS Grade

The Fisher Chemical OPTIMA LC/MS product line now includes neat additives such as A116 Trifluoroacetic Acid (TFA) and A117 Formic Acid (FA), coupled with their ready-to-use aqueous and organic blends. These mobile phase additives are use-tested, and our data will show that their mass baselines are very low for positive mode in TIC with single quadrupole and ion trap mass detector, very low LC-UV response using diode array detector, and exceptionally low metal ion content with ICP-MS which makes MS interpretation easier due to reduced metal adduct formation. Additionally, for proteomics research the neat additives and blends are protease free which ensures that target peptides or proteins are not destroyed by these pervasive hydrolyzing enzymes.

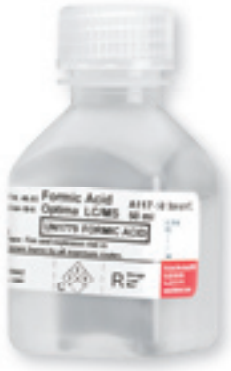
When compared to the competition, Fisher Chemical OPTIMA LC/MS Trifluoroacetic Acid (A116), Formic Acid (A117), and their associated mobile phase blends exhibit:

- Low mass spectrometry background noise
- Lowest impurity background using diode array detection (LC-UV)
- Minimal metal impurities
- Aqueous mobile phase blends free of proteases
- Lot-to-lot consistency
- Extended column life due to low impurity levels using OPTIMA LC/MS solvents and additives

Formic Acid, OPTIMA LC/MS Grade

Fisher Chemical OPTIMA LC/MS Grade Formic Acid is an ultrapure reagent used as an additive for the formulation of solvent blends for the mobile phase in LC/MS applications. Formic acid is often added to the LC/MS mobile phase due to its ability to reduce MS signal suppression and thus enhance the signal detection limit.

For preparing mobile phase blends, A117-50 Formic Acid can be used with OPTIMA LC/MS Solvents such as A955 Acetonitrile, W6 Water, and A456 Methanol.



PRODUCT SPECIFICATIONS	A117 FORMIC ACID
Appearance	**Clear, colorless, fuming liquid**
Assay	99.5% min
Color(APHA), Max	10

Optical Absorbance (0.1% aqueous), au, max	
254 nm	0.01
230 nm	0.55
220 nm	0.85
210 nm	1.25

LCMS Suitability (at 0.1% aqueous)	Pass Test

Trace Ionic Impurities (at 0.1% aqueous), ppb, max	
Aluminum (Al)	20
Calcium (Ca)	50
Copper (Cu)	10
Iron (Fe)	10
Lead (Pb)	10
Magnesium (Mg)	10
Manganese (Mn)	10
Nickel(Ni)	10
Potassium (K)	20
Silver (Ag)	10
Sodium (Na)	50
Zinc (Zn)	20

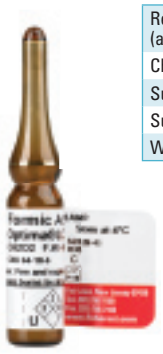
Residue after evaporation (at 0.1% aqueous)	1 ppm max
Chloride, max	5 ppm
Sulfate (SO4), max	50 ppm
Sulfite (SO3), max	20 ppm
Water (KF), max	

PACKAGING INNOVATIONS

- Safety first - packaged in HDPE bottle to avoid possible breakage of glass bottle due to pressure buildup from carbon monoxide which is a natural decomposition product of formic acid
- Proprietary surface treatment applied to HDPE bottle to create a barrier between bottle and formic acid thus preventing contamination by plasticizers

Cat.No.	Product Description	Pack Size
A117-50	Formic Acid, Optima LC/MS	50 mL

For smaller volumes we now offer Formic Acid in ampules		
Cat.No.	**Product Description**	**Pack Size**
A117-10X1AMP	Formic Acid, OPTIMA LC/MS	10 x 1 mL
A117-1AMP	Formic Acid, OPTIMA LC/MS	1 mL
A117-05AMP	Formic Acid, OPTIMA LC/MS	0.5 mL
A117-2AMP	Formic Acid, OPTIMA LC/MS	2 mL



Reagents, OPTIMA LC/MS Grade

Trifluoroacetic Acid, OPTIMA LC/MS Grade

Fisher Chemical OPTIMA LC/MS Grade Trifluoroacetic Acid is an ultrapure reagent used as an additive for the formulation of solvent blends for the mobile phase in LC/MS applications.

Trifluoroacetic Acid is often added to the mobile phase to enhance chromatographic separations. When reversed-phase chromatography is applied to protein and peptide analysis, TFA is frequently used as an ion-pairing reagent in mobile phases. Although TFA is known to suppress MS ionization, use of a low concentration of TFA can enhance retention and improve peak shape of a product during the analytical separations. For preparing mobile phase blends, A116-50 Trifluoracetic Acid can be used with OPTIMA LC/MS Solvents such as A955 Acetonitrile, W6 Water, and A456 Methanol.

TFA AND FA KEY FEATURES

- Also available in convenient 0.5 mL, 1 mL and 2 mL ampules for easy dilutions
- Ampules are prescored for easy opening - no need to file the ampule
- Minimal metal impurities
- Low mass spectrometry background noise
- Lowest impurity background using diode array detection (LC-UV)
- Extended column life due to low impurity levels using OPTIMA LC/MS mobile phase prepared with A116 Trifluoroacetic Acid and A117 Formic Acid

Cat.No.	Product Description	Pack Size
A116-50	Trifluoroacetic Acid, Optima LC/MS	50 mL

For smaller volumes we now offer Trifluoroacetic Acid in ampules		
Cat.No.	**Product Description**	**Pack Size**
A116-10X1AMP	Trifluoroacetic Acid, OPTIMA LC/MS	10 x 1 mL
A116-1AMP	Trifluoroacetic Acid, OPTIMA LC/MS	1 mL
A116-05AMP	Trifluoroacetic Acid, OPTIMA LC/MS	0.5 mL
A116-2AMP	Trifluoroacetic Acid, OPTIMA LC/MS	2 mL

PRODUCT SPECIFICATIONS	A116
	TRIFLUOROACETIC ACID
Appearance	**Clear, colorless, fuming liquid**
Assay	99.5% min
Color(APHA), Max	10

Optical Absorbance (as is), au, max	
300 nm	0.03
275 nm	0.06

Optical Absorbance (0.1% aqueous), au, max	
254 nm	0.003
230 nm	0.06
220 nm	0.18
210 nm	0.55

LCMS Suitability (at 0.1% aqueous)	Pass Test

Trace Ionic Impurities (at 0.1% aqueous), ppb, max	
Aluminum (Al)	20
Calcium (Ca)	50
Copper (Cu)	10
Iron (Fe)	10
Lead (Pb)	10
Magnesium (Mg)	10
Manganese (Mn)	10
Nickel(Ni)	10
Potassium (K)	20
Silver (Ag)	10
Sodium (Na)	50
Zinc (Zn)	20

Residue after evaporation (at 0.1% aqueous)	1 ppm max
Chloride, max	
Sulfate (SO4), max	
Sulfite (SO3), max	
Water (KF), max	0.05%

Reagents, OPTIMA LC/MS Grade

New! Acetic Acid, Ammonium Acetate, and Ammonium Formate

Achieving the full analytical potential of LC/MS instruments requires the use of highly purified solvents and ionic additives. Fisher Chemical OPTIMA LC/MS Ammonium Formate, Ammonium Acetate, and Acetic Acid are ultrapure reagents used to modify the LC/MS mobile phase in order to improve chromatographic peak shape and provide stable analyte signals in the MS detector.

PRODUCT SPECIFICATIONS	A113	A114	A115
	ACETIC ACID	AMMONIUM ACETATE	AMMONIUM FORMATE
Appearance	**Clear, colorless fuming liquid**	**White fine crystals w/ lumps**	**White fine crystals w/ lumps**
Assay, % min	99.7% min	99% min	99% min
Color (APHA), max	10 max		
Optical Absorbance, au, max			
350 nm	0.02 au max		
280 nm	0.05 au max		
255 nm	1.0 au max		
LC/MS Gradient Suitability (at 0.1% aqueous)	Pass test	Pass test	Pass test
Trace Ionic Impurities (at 0.1% aqueous), ppb, max			
Aluminum (Al)	20 ppb	20 ppb	20 ppb
Calcium (Ca)	50 ppb	50 ppb	50 ppb
Copper (Cu)	10 ppb	10 ppb	10 ppb
Iron (Fe)	10 ppb	10 ppb	10 ppb
Lead (Pb)	10 ppb	10 ppb	10 ppb
Magnesium (Mg)	10 ppb	10 ppb	10 ppb
Manganese (Mn)	10 ppb	10 ppb	10 ppb
Nickel (Ni)	10 ppb	10 ppb	10 ppb
Potassium (K)	20 ppb	20 ppb	20 ppb
Silver (Ag)	10 ppb	10 ppb	10 ppb
Sodium (Na)	50 ppb	50 ppb	50 ppb
Zinc (Zn)	20 ppb	20 ppb	20 ppb
Residue after Evaporation, ppm, max	5 ppm max		
Residue on Ignition, % max		0.01% max	0.005% max
Chloride, % max	0.00004% max	0.0005% max	0.001% max
Nitrate (NO3), % max		0.001% max	
Sulfate (SO4), % max	0.00004% max		0.005% max
Protease (at 0.1% aqueous)	Not detected	Not detected	Not detected
Water (KF), % max	0.1% max	1% max	2% max
Shelf Life	1 year	2 years	3 years

Ammonium acetate and ammonium formate are volatile salts often used for improving ionization under neutral conditions in either the positive or negative ESI-MS mode. Acetic acid is commonly used for enhancing chromatography separation under acidic conditions.

For preparing mobile phase blends, A113-50 Acetic Acid, A114-50 Ammonium Acetate, and A115-50 Ammonium Formate can be added to Fisher Chemical OPTIMA LC/MS solvents such as A955 Acetonitrile, W6 Water, and A456 Methanol.

CATALOG NO.	PRODUCT DESCRIPTION	PACK SIZE	PACKAGING
A113-50	**Acetic Acid, OPTIMA LC/MS**	50 mL	Treated HDPE
A114-50	**Ammonium Acetate, OPTIMA LC/MS**	50 g	Amber Glass
A115-50	**Ammonium Formate, OPTIMA LC/MS**	50 g	Amber Glass

KEY FEATURES

- Minimal metal impurities
- Low mass spectrometry background noise
- Lowest impurity background using diode array detection (LC/UV)
- Lot-to-lot consistency
- Extended column life due to low impurity levels using OPTIMA LC/MS mobile phase solvents and additives

PACKAGING INNOVATION

- Proprietary surface treatment applied to HDPE bottle to create a barrier between bottle and acetic acid, thus preventing contamination by plasticizers

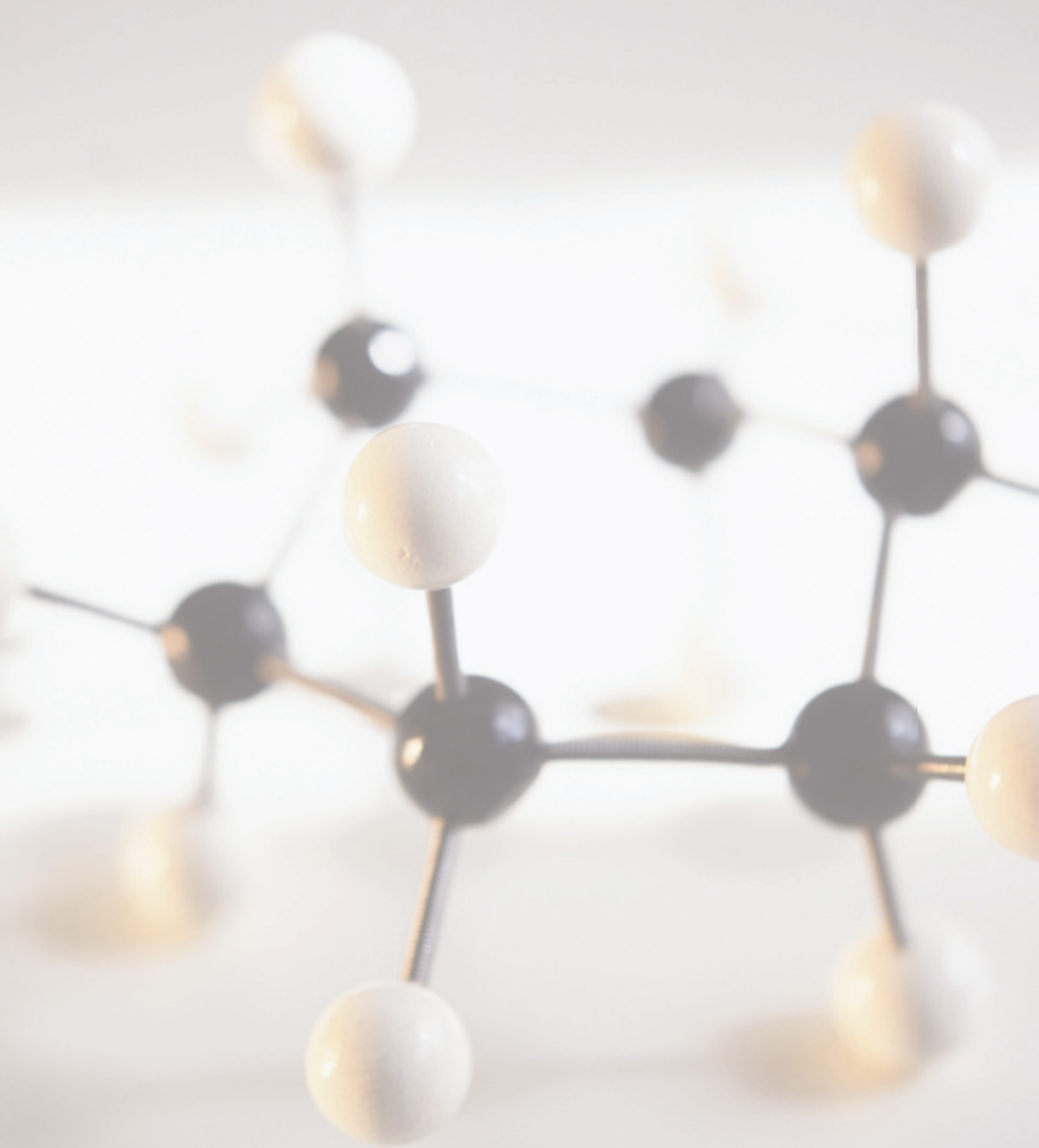
New! OPTIMA LC/MS Acetic Acid is available in convenient glass ampules

Fisher Chemical OPTIMA LC/MS Acetic Acid is now custom-packaged in amber borosilicate ampules under inert atmospheric conditions to provide the freshest additive for preparing aqueous and organic mobile phase blends.

CATALOG NO.	PRODUCT DESCRIPTION	PACK SIZE
A113-1AMP	**Acetic Acid, OPTIMA LC/MS**	1 mL ampule
A113-10X1AMP	**Acetic Acid, OPTIMA LC/MS**	10 x 1 mL ampule

ADVANTAGES

- Convenient - ready-to-use ampules in 1 ml size
- Safe - eliminates the need to measure corrosive acids
- Reproducible - reduces batch-to-batch variation since ampules are filled to +/- 0.05%
- Expedient - 1 ml ampule is used to prepare in a matter of seconds 1 L of fresh 0.1% v/v acetic acid mobile phase blend



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