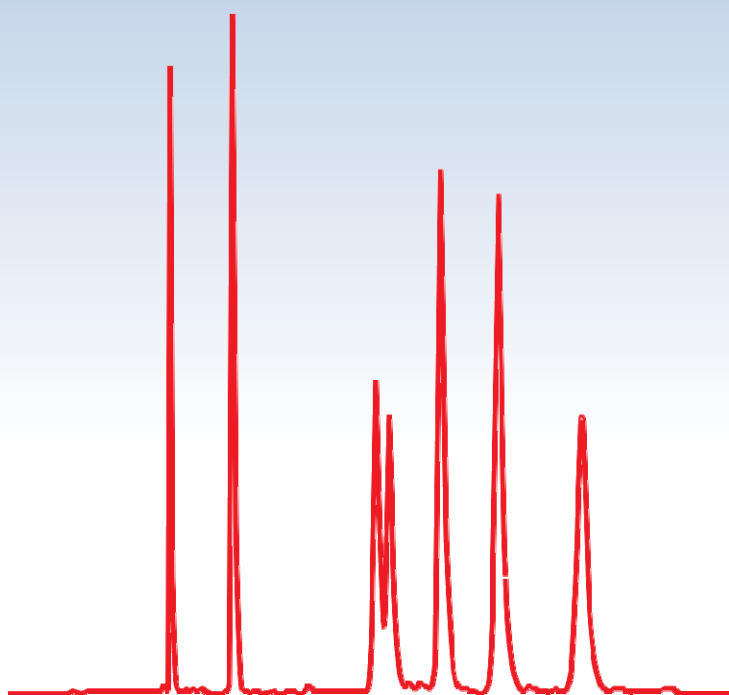


Solvents and Reagents for Liquid Chromatography



Solvents for HPLC, LC-MS, LC-MS/MS
HLC-SOL / HLC-SOL Plus

Solvents for Preparative LC
Prepsol



KANTO CHEMICAL CO., INC.

HLC-SOL

High Purity Solvents for HPLC

HLC-SOL is a solvent series which is purified by our special technology and is uniformed of chromatographic properties. Since the UV absorbance and the lot-to-lot variation are controlled and minimized, HLC-SOL improves the chromatographic reproducibility and increases detection sensitivity.

Guaranteed properties

UV Absorbance

Guaranteed absorbance at major wavelengths where the solvent itself absorbs. Absorbance at 254 nm is a guide for selecting the solvent for using the UV detector.

Relative fluorescence intensity

Guarantee amount of fluorescent impurities as relative fluorescence intensity using quinine sulfate as standard.

Refractive Index (n_D^{20})

In case of using the differential refractometer, detection sensitivity improves that the difference between sample and refractive index are huge.

Non-Volatile matter

This is an important factor when isolating target substances by preparative liquid chromatography or preparative thin-layer chromatography.

Peroxide / Acidity

This factor is important for separation analysis of the substances which easily decomposed by acids.

Water Content

The maximum value of the water content, which is the important factor to prevent column degradation and obtain a stable chromatogram, in Normal Phase Chromatography.

Stabilizer

For solvents with relatively poor chemical stability (chloroform, dichloromethane, 1,4-dioxane), add stabilizers that do not interfere with chromatography. Stabilizers are also indicated on the product label.

Solvent	Stabilizer
Chloroform	Amylene
Dichloromethane	Amylene
1,4-Dioxane	2,6-Di-tert-butyl-4-methylphenol
Tetrahydrofuran	Dibutyl hydroxytoluene(BHT)

Gradient Grade : For Acetonitrile, Distilled water

“Gradient Grade” is a baseline guaranteed solvents grade in gradient analysis. Figures 1 to 3 show the baseline fluctuation. By combining HLC-SOL acetonitrile and HLC-SOL distilled water, a stable baseline can be obtained during gradient elution.

Chromatographic Condition	
Column	Mightysil RP-18GP 150-4.6 (5 μ m)
Temp.	Room Temp.
Flow rate	1.0 mL/min
Detection	UV210 nm
Range	0.32 AUFS
Eluent	A; Acetonitrile B; Distilled Water

Time (min)	A %	B %
0 ~ 10	0	100
10 ~ 50	0→100	100→0
50 ~ 70	100	0

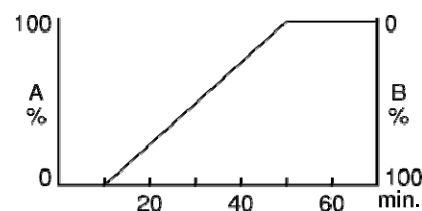


Figure 1
HLC-SOL Acetonitrile
HLC-SOL Distilled water

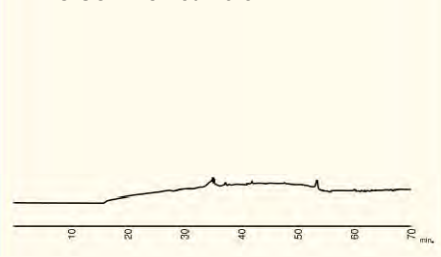


Figure 2
HLC-SOL Acetonitrile
Ion-Exchange Water

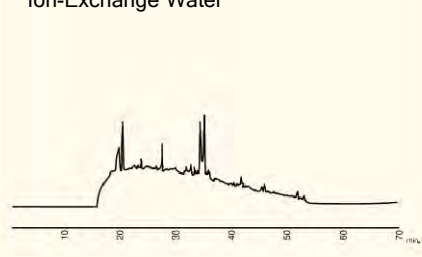
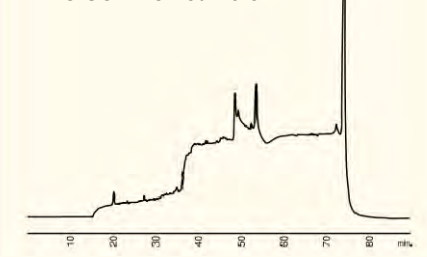


Figure 3
GR Acetonitrile
HLC-SOL Distilled water



HLC-SOL

High Purity Solvents for HPLC

HLC-SOL Plus / for LC-MS Plus Series : Guaranteed Particle Amount

Acetonitrile, Methanol, Distilled water, 2-Propanol

We have achieved numerical guarantee of particles (fine particles) in solvents with "Plus -Series". It is a best choice for ultra-high-speed, high-pressure HPLC (UHPLC) systems, used stationary phase particle size of 2 μm or less with more sensitive various detectors.

①Extend column lifetime

[Reduction of the risk of raising back pressure]



③Reduction of running cost

[Reduction of the frequency of consumable parts under low pressure operation]

②Improvement of stability and reproducibility

[Improvement of detection sensitivity]

Plus Series	Acetonitrile	Methanol	2-Propanol	Distilled Water
	01031-1B 1L 01031-2B 3L	25183-1B 1L 25183-2B 3L	32435-1B 1L 32435-2B 3L	11307-1B 1L 11307-2B 3L
Particle (0.3μm UP)	max. 100 pcs/mL	max. 100 pcs/mL	-	-
Particle (0.5μm UP)	max. 50 pcs/mL	max. 50 pcs/mL	max. 100 pcs/mL	max. 50 pcs/mL

Bottle



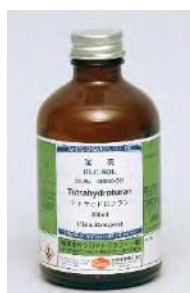
3L Glass
(Polypropylene cap)



3L Glass (for LC/MS)
(Aluminum cap)



1L Glass
(Polypropylene cap)



200mL Glass
(Aluminum cap)



25mL Glass (S)
(Screw cap)



25mL (A)
Ample



1mL (A) ×5
Ample

HLC-SOL

High Purity Solvents for HPLC

□ Specification

	Acetone	Acetonitrile -Plus-	Benzene
	01026-1B 1L 01026-2B 3L	01031-1B 1L 01031-2B 3L	04084-1B 1L
Specifications		Conform to JP specification	
Purity (GC)	min. 99.7 %	min. 99.9%	min. 99.7%
Density (20°C)	0.789~0.792 g/mL	0.780~0.784 g/mL	0.877~0.879 g/mL
Refractive index n_D^{20}	1.358~1.360	1.343~1.346	1.499~1.502
Water	max. 0.2 %	max. 0.03 %	max. 0.03 %
Non-volatile matter	max. 5 ppm	max. 5 ppm	max. 0.001 %
Acid (as CH ₃ COOH)	max. 0.001 %	max. 5 ppm	-
Acid (as HCl)	-	-	max. 4 ppm
Peroxide (as H ₂ O ₂)	max. 5 ppm	max. 5 ppm	max. 5 ppm
Gradient test	-	to pass test	-
Absorbance (1cm cell reference : water)			
λ (nm)	max.	max.	max.
200	-	0.050	-
210	-	0.030	-
220	-	0.015	-
225	-	0.010	-
230	-	0.010	-
240~	-	0.009	-
280	-	-	0.70
290	-	-	0.10
300	-	-	0.05
330	1.00	-	-
340	0.10	-	-
330~	-	-	0.01
350~	0.01	-	-
Relative fluorescence intensity	-	to pass test	-
Particle (>0.3 μm)	-	max. 100 pcs/mL	-
Particle (>0.5 μm)	-	max. 50 pcs/mL	-

	1-Butanol	<i>tert</i> -Butyl methyl ether
	04354-1B 1L	04418-1B 1L
Specifications		
Purity (GC)	min. 99.7 %	min. 99.8%
Density (20°C)	0.808~0.812 g/mL	0.738~0.744 g/mL
Refractive index n_D^{20}	1.398~1.400	1.366~1.372
Water	max. 0.1 %	max. 0.1 %
Non-volatile matter	max. 5 ppm	max. 3 ppm
Acid (as C ₃ H ₇ COOH)	max. 0.002 %	-
Acid (as CH ₃ COOH)	-	max. 0.001 %
Acid (as HCl)	-	-
Free chlorine	-	-
Peroxide (as H ₂ O ₂)	max. 5 ppm	max. 5 ppm
Absorbance (1cm cell reference : water)		
λ (nm)	max.	max.
210	-	1.00
230	0.20	0.40
240	0.10	-
254	0.03	0.10
265	-	-
270	-	-
270~	0.01	-
280	-	-
280~	-	0.01
290	-	-
295~	-	-
Relative fluorescence intensity	to pass test	to pass test

HLC-SOL

High Purity Solvents for HPLC

Specification

	Chloroform	Cyclohexane	1,2-Dichloroethane
	07278-1B 1L 07278-2B 3L	07547-1B 1L 07547-2B 1L	10149-1B 1L
Specifications			
Purity (GC)	min. 99.7 %	min. 99.7%	min. 99.7%
Density (20°C)	1.487~1.497 g/mL	0.778~0.779 g/mL	1.251~1.260 g/mL
Refractive index n_D^{20}	1.445~1.448	1.425~1.427	1.442~1.446
Water	max. 0.03 %	max. 0.01 %	max. 0.03 %
Non-volatile matter	max. 0.001 %	max. 0.001 %	max. 0.001 %
Acid (as HCl)	max. 0.001 %	max. 0.001 %	max. 2 ppm
Free chlorine	max. 1 ppm	-	max. 1 ppm
Peroxide (as H ₂ O ₂)	-	max. 5 ppm	max. 0.001 %
Absorbance (1cm cell reference : water)			
λ (nm)	max.	max.	max.
210	-	1.00	-
220	-	0.50	-
230	-	0.20	-
235	-	-	0.15
240	-	0.10	-
245	1.00	-	-
254	0.20	0.02	0.02
260	0.10	-	-
260~	-	0.01	-
270	0.03	-	-
270~	-	-	0.01
275~	0.01	-	-
Relative fluorescence intensity	to pass test stabilized with Amylene	to pass test	to pass test

	Dichloromethane	<i>N,N</i> -Dimethylformamide	1,4-Dioxane
	10158-1B 1L 10158-2B 3L	10344-1B 1L 10344-2B 3L	10425-1B 1L
Specifications		Conform to JP specification	
Purity (GC)	min. 99.5 %	min. 99.7%	min. 99.5%
Density (20°C)	1.320~1.330 g/mL	0.947~0.952 g/mL	1.030~1.035 g/mL
Refractive index n_D^{20}	1.423~1.426	1.428~1.432	1.421~1.423
Water	max. 0.05 %	max. 0.05 %	max. 0.1 %
Non-volatile matter	max. 0.001 %	max. 0.002 %	max. 0.001 %
Acid (as CH ₃ COOH)	-	-	max. 0.001 %
Acid (as HCOOH)	-	max. 0.003 %	-
Acid (as HCl)	max. 0.001 %	-	-
Free chlorine	to pass test	-	-
Peroxide (as H ₂ O ₂)	-	max. 0.001 %	max. 0.01 %
Absorbance (1cm cell reference : water)			
λ (nm)	max.	max.	max.
220	-	-	0.70
230	-	-	0.50
235	0.70	-	-
240	0.25	-	0.40
254	0.02	-	0.20
260~	0.01	-	-
270	-	0.60	-
275	-	0.20	-
280	-	0.15	0.10
300	-	0.05	-
330~	-	0.01	0.01
Relative fluorescence intensity	to pass test stabilized with Amylene	to pass test	- stabilized with 2,6-Di- <i>tert</i> -butyl-4-methylphenol

HLC-SOL

High Purity Solvents for HPLC

□ Specification

	Distilled Water -Plus-	Ethanol (99.5)	Ethyl Acetate
	11307-1B 1L 11307-2B 3L	14033-1B 1L 14033-2B 3L	14029-1B 1L 14029-2B 3L
Specifications			
Purity (GC)	-	min. 99.5 %	min. 99.7 %
Density (20°C)	0.996~1.000 g/mL	0.789~0.791 g/mL	0.898~0.902 g/mL
Refractive index n_D^{20}	1.332~1.334	1.360~1.363	1.370~1.373
pH	to pass test	-	-
Water	-	max. 0.3 %	max. 0.1 %
Non-volatile matter	max. 0.001 %	max. 5 ppm	max. 0.001 %
Acid (as CH ₃ COOH)	-	max. 0.001 %	max. 0.005 %
Peroxide (as H ₂ O ₂)	max. 1 ppm	max. 5 ppm	max. 5 ppm
Gradient test	to pass test	-	-
Absorbance (1cm cell reference : water)			
λ (nm)	max.	max.	max.
210	-	0.70	-
210~	0.01	-	-
220	-	0.40	-
230	-	0.20	-
240	-	0.10	-
254	-	0.02	1.00
260	-	-	0.30
260~	-	0.01	-
270	-	-	0.10
280	-	-	0.02
290~	-	-	0.01
Relative fluorescence intensity	to pass test	to pass test	-
Particle (>0.3 μ m)	-	-	-
Particle (>0.5 μ m)	max. 50 pcs/mL	-	-

	Heptane	1,1,1,3,3,3-Hexafluoro-2-propanol	Hexane
	18005-1B 1L	18529-1B 100mL 18529-2B 500mL	18041-1B 1L 18041-2B 3L
Specifications			Conform to JP specification
Purity (GC)	min. 99.0 %	min. 99.7 %	min. 96.0 %
Density (20°C)	0.682~0.686 g/mL	1.615~1.619 g/mL	0.658~0.662 g/mL
Refractive index n_D^{20}	1.387~1.389	-	1.374~1.376
Water	max. 0.01 %	max. 0.03 %	max. 0.01 %
Non-volatile matter	max. 0.001 %	max. 0.001 %	max. 0.001 %
Acid (as CH ₃ COOH)	max. 0.001 %	-	max. 0.001 %
Acid (as HF)	-	max. 0.001 %	-
Peroxide (as H ₂ O ₂)	max. 5 ppm	max. 5 ppm	max. 5 ppm
Absorbance (1cm cell reference : water)			
λ (nm)	max.	max.	max.
200	-	0.05	-
210	0.35	-	0.30
220	0.15	0.03	0.15
230	0.05	-	0.05
240	0.03	0.02	0.03
250~	-	-	0.01
254~	0.01	-	-
270~	-	0.01	-
Relative fluorescence intensity	to pass test	to pass test	to pass test

HLC-SOL

High Purity Solvents for HPLC

Specification

	Methanol -Plus-	N-Methyl-2-pyrrolidinone	2-Propanol -Plus-
	25183-1B 1L 25183-2B 3L	25336-79 1L	32435-1B 1L 32435-2B 3L
Specifications	Conform to JP specification		Conform to JP specification
Purity (GC)	min. 99.8 %	min. 99.0 %	min. 99.7 %
Density (20°C)	0.791~0.793 g/mL	1.030~1.034 g/mL	0.784~0.786 g/mL
Refractive index n_D^{20}	1.327~1.330	1.467~1.472	1.376~1.378
Water	max. 0.05 %	max. 0.1 %	max. 0.1 %
Non-volatile matter	max. 5 ppm	-	max. 0.001 %
Acid (as C ₂ H ₅ COOH)	-	-	max. 0.001 %
Acid (as HCOOH)	max. 0.001 %	-	-
Acid (as HCl)	-	max. 5 ppm	-
Peroxide (as H ₂ O ₂)	max. 5 ppm	-	max. 5 ppm
Absorbance (1cm cell reference : water)			
λ (nm)	max.	max.	max.
210	0.70	-	0.70
220	0.30	-	-
230	0.15	-	0.15
240	0.07	-	-
250	-	-	0.02
254	0.02	-	-
260~	0.01	-	0.01
285	-	0.70	-
300	-	0.35	-
320~600	-	0.10	-
Relative fluorescence intensity	to pass test	-	-
Particle (>0.3 μm)	max. 100 pcs/mL	-	-
Particle (>0.5 μm)	max. 50 pcs/mL	-	max. 100 pcs/mL

	Tetrahydrofuran		Toluene	2,2,4-Trimethylpentane
	Stabilizer Free	With BHT		
	40060-3B 0.2 L 40060-5B 0.5 L 40060-1B 1L 40060-2B 3L	41120-79 1L 41120-76 3L	40180-1B 1L 40180-2B 3L	31005-1B 1L
Specifications	Conform to JP spec.			
Purity (GC)	min. 99.8 %	min. 99.5 %	min. 99.7 %	min. 99.0 %
Density (20°C)	0.884-0.889 g/mL	0.884-0.889 g/mL	0.864~0.868 g/mL	0.690~0.693 g/mL
Refractive index n_D^{20}	1.406~1.408	1.406~1.409	1.496~1.498	1.390~1.392
Water	max. 0.05 %	max. 0.05 %	max. 0.03 %	max. 0.01 %
Non-volatile matter	max. 0.001 %	-	max. 0.001 %	max. 0.001 %
Acid (as CH ₃ COOH)	max. 0.001 %	-	-	max. 0.001 %
Acid (as HCl)	-	-	max. 0.001 %	-
Peroxide (as H ₂ O ₂)	max. 0.01 %	max. 0.005 %	max. 5 ppm	max. 5 ppm
Absorbance (1cm cell reference : water)				
λ (nm)	max.	max.	max.	max.
210	-	-	-	0.50
215	0.70	-	-	-
220	-	-	-	0.20
230	0.40	-	-	0.08
240	0.30	-	-	-
254	0.20	-	-	-
254~	-	-	-	0.01
280	0.03	-	-	-
285	-	-	1.00	-
290	0.02	-	0.50	-
300	-	-	0.15	-
300~	0.01	1.00	-	-
320~600	-	0.05	-	-
330	-	-	0.03	-
350~	-	-	0.01	-
Relative fluorescence intensity	-	-	-	to pass test

HLC-SOL

High Purity Solvents for HPLC (for Pharmaceutical Analysis)

We offer the best solvents for pharmaceutical QA / R&D analysis meeting the requirements of Reag.JP, Reag.USP and Reag.Ph Eur. These solvents can be used for pharmaceutical analysis globally. In addition, the warranty period is displayed on the label, which is useful for QC process.

- Meeting the requirements of Reag.JP, Reag.USP and Reag.Ph Eur.
- Expiry (YY / MM / DD) is indicated on the label.
- Test date (YY / MM / DD) is indicated on COA.

Acetonitrile -Plus- for Pharmaceutical Analysis

Specifications	Acetonitrile -Plus-		
	Reag.JP ^{※1}	01858-79 1L 01858-76 3L Reag.USP ^{※2}	Reag.Ph Eur
Purity (Assay)	min. 99.9 % (GC)	min. 99.5 % ^{※3}	min. 99.9 % ^{※7}
Appearance	colorless clear	clear ^{※3}	colorless clear ^{※5}
Color (APHA)	-	max. 10 ^{※3}	-
Density (20°C)	0.780~0.784 g/mL	-	-
Specific gravity	-	-	about 0.78 ^{※5}
Refractive index d_{20}^{20}	1.343~1.346	-	about 1.344 ^{※5}
Water n_D	max. 0.03 %	max. 0.3 % ^{※3}	-
Non-volatile matter	max. 5 ppm	max. 0.005 % ^{※3}	-
Distillation range (80°C~82°C)	-	-	min. 95 % ^{※5}
Acid	max. 5 ppm (as CH ₃ COOH)	max. 8 µeq/g ^{※3}	-
Base	-	max. 0.6 µeq/g ^{※3}	-
Peroxide (as H ₂ O ₂)	max. 5 ppm	-	-
pH	-	-	A 100 g/L solution is neutral to litmus paper
Gradient test	to pass test	to pass test ^{※4}	-
Absorbance			
λ (nm)	max.	max.	max.
190	-	1.00 ^{※4}	-
200	0.050	-	0.10 ^{※7}
205	-	-	-
210	0.030	-	-
220	0.015	0.05 ^{※4}	-
225	0.010	-	-
230	0.010	-	-
240	0.009	-	0.008 ^{※6}
250	-	-	-
254	-	0.01 ^{※4}	-
Relative fluorescence intensity	to pass test	-	-
Particle (>0.3 µm)		max. 100 pcs/mL	
Particle (>0.5 µm)		max. 50 pcs/mL	
	※1: Reag.JP + KANTO Original specification	※2: ACS ※3: ACS General Use ※4: ACS Specific Use	※5: EP Reagent Acetonitrile ※6: EP Reagent Acetonitrile for chromatography ※7: EP Reagent AcetonitrileR1

HLC-SOL

High Purity Solvents for HPLC (for Pharmaceutical Analysis)

Methanol -Plus- for Pharmaceutical Analysis

Specifications	Methanol -Plus-		
		25190-79 1L	25190-76 3L
	Reag.JP ^{※1}	Reag.USP ^{※2}	Reag.Ph Eur
Purity (Assay)	min. 99.8 % (GC)	min. 99.8 % ^{※3}	min. 99.8 % ^{※7}
Appearance	colorless clear	clear ^{※3}	colorless clear ^{※5}
Substances darkened by sulfuric acid	-	to pass test ^{※3}	-
Substances reducing permanaganate	-	to pass test ^{※3}	-
Solubility in water	-	to pass test ^{※3}	-
Boiling point	-	-	64~65 °C ^{※5}
Color (APHA)	-	max. 10 ^{※3}	-
Density (20°C)	0.791~0.793 g/mL	-	-
Specific gravity d_{20}^{20}	-	-	0.791~0.793 g/mL ^{※5}
Refractive index n_D^{20}	1.327~1.330	-	-
Water	max. 0.05 %	max. 0.1 % ^{※3}	-
Non-volatile matter	max. 5 ppm	max. 0.001 % ^{※3}	-
Carbonyl compounds (Acetone)	-	max. 0.001 % ^{※3}	-
(Formaldehyde)	-	max. 0.001 % ^{※3}	-
(Acetaldehyde)	-	max. 0.001 % ^{※3}	-
Acid	max. 0.001 % (as HCOOH)	max. 0.3 µeq/g ^{※3}	-
Base	-	max. 0.2 µeq/g ^{※3}	-
Peroxide (as H ₂ O ₂)	max. 5 ppm	-	-
Gradient test	-	to pass test ^{※4}	-
Absorbance			
λ (nm)	max.	max.	max.
205	-	1.00 ^{※4}	-
210	0.70	0.80 ^{※4}	0.698 ^{※6}
220	0.30	0.40 ^{※4}	0.301 ^{※6}
225	-	-	0.17 ^{※7}
230	0.15	0.20 ^{※4}	0.124 ^{※6}
240	0.07	0.10 ^{※4}	-
250	-	-	0.022 ^{※6}
254	0.02	-	-
260~	0.01	-	0.008 ^{※6}
260	-	0.04 ^{※4}	-
280~400	-	0.01 ^{※4}	-
Relative fluorescence intensity	to pass test	-	-
Particle (>0.3 µm)		max. 100 pcs/mL	
Particle (>0.5 µm)		max. 50 pcs/mL	

Tetrahydrofuran for Pharmaceutical Analysis

Specifications	Tetrahydrofuran, stabilizer free	
		40060-76 3L
	Reag.JP ^{※1}	Reag.USP ^{※2}
Purity (Assay)	min. 99.8 % (GC)	min. 99.0 % ^{※3}
Appearance	-	colorless clear ^{※3}
Color (APHA)	-	20 ^{※3}
Density (20°C)	0.884~0.889 g/mL	-
Refractive index n_D^{20}	1.406~1.408	-
Water	max. 0.05 %	max. 0.05 % ^{※3}
Non-volatile matter	max. 0.001 %	max. 0.03 % ^{※3}
Acid	max. 0.001 % (as CH ₃ COOH)	-
Peroxide (as H ₂ O ₂)	max. 0.01 %	max. 0.015 % ^{※3}
Absorbance		
λ (nm)	max.	max.
215	0.70	-
230	0.40	-
240	0.30	-
254	0.20	-
280	0.03	-
290	0.02	-
300~	0.01	-

※1: Reag.JP + KANTO Original specification

※2: ACS

※3: ACS General Use

※4: ACS Specific Use

※5: EP Reagent Acetonitrile

※6: EP Reagent Acetonitrile for chromatography

※7: EP Reagent AcetonitrileR1

Solvents for LC/MS

The feature of LC/MS analysis is that the target ion can be analyzed without being affected by background noise. On the other hand, there is a case the impurities derived from the eluent and reagent interfere with the ionization efficiency and quantification of the target substance. We offer "LC/MS" series solvent as a new grade that is more suitable for advanced LC/MS or LC/MS/MS analysis. We also offer products that contribute to improving the reliability and workability of LC / MS analysis, such as high-purity formic acid packed in ampoules, or acetonitrile mixed with formic acid.



Features:

- Metal cap
- Specially treated bottle with low metal elution
- Suitability Test for LC/MS
- Guaranteed Metal impurity
- Guaranteed particle amount

Comparison with conventional LC Solvents ① Baseline fluctuation in gradient

Impurities derived from the eluent cause baseline fluctuations and impurity peaks, affect the LC / MS analysis results. The following figure shows the UV detection result in the low wavelength (210 nm) which is sensitive to impurities, and the baseline fluctuation due to MS (TIC, ionization condition is the instrument default). In the case of an analysis of the purpose of quantifying the minimum amount in the single ion mode, the amount of impurities detectable by TIC may disturb the detection. This indicates that there is a limit in the conventional HPLC solvent quality assurance.

Acetonitrile

Chromatographic Condition

Column	Mightysil RP-18 GP 150-2 (5 μ m)	
Temp.	40 °C.	
Flow rate	0.2 mL/min	
Eluent	A; Acetonitrile B; Water for HPLC	

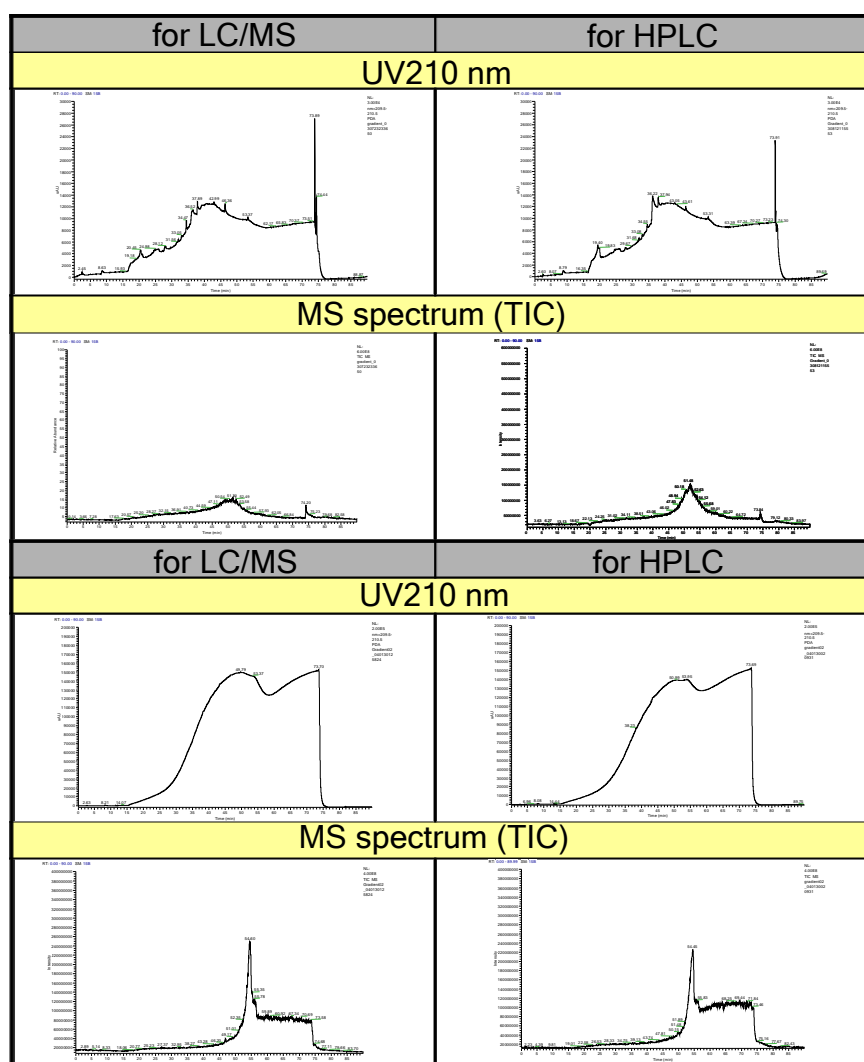
Time (min)	A %	B%
0 ~ 10	0	100
10 ~ 50	0→100	100→0
50 ~ 70	100	0

Methanol

Chromatographic Condition

Column	Mightysil RP-18 GP 150-2 (5 μ m)	
Temp.	40 °C.	
Flow rate	0.2 mL/min	
Eluent	A; Methanol B; Water for HPLC	

Time (min)	A %	B%
0 ~ 10	0	100
10 ~ 50	0→100	100→0
50 ~ 70	100	0



Solvents for LC/MS

The solvent quality can be confirmed by direct infusion into MS. "LC / MS grade" solvents have achieved high purity by optimizing treatment of bottles or our manufacturing process. In addition, we manage impurities for each lot by this method, and you can use with peace of mind for LC/MS analysis, always and everywhere.

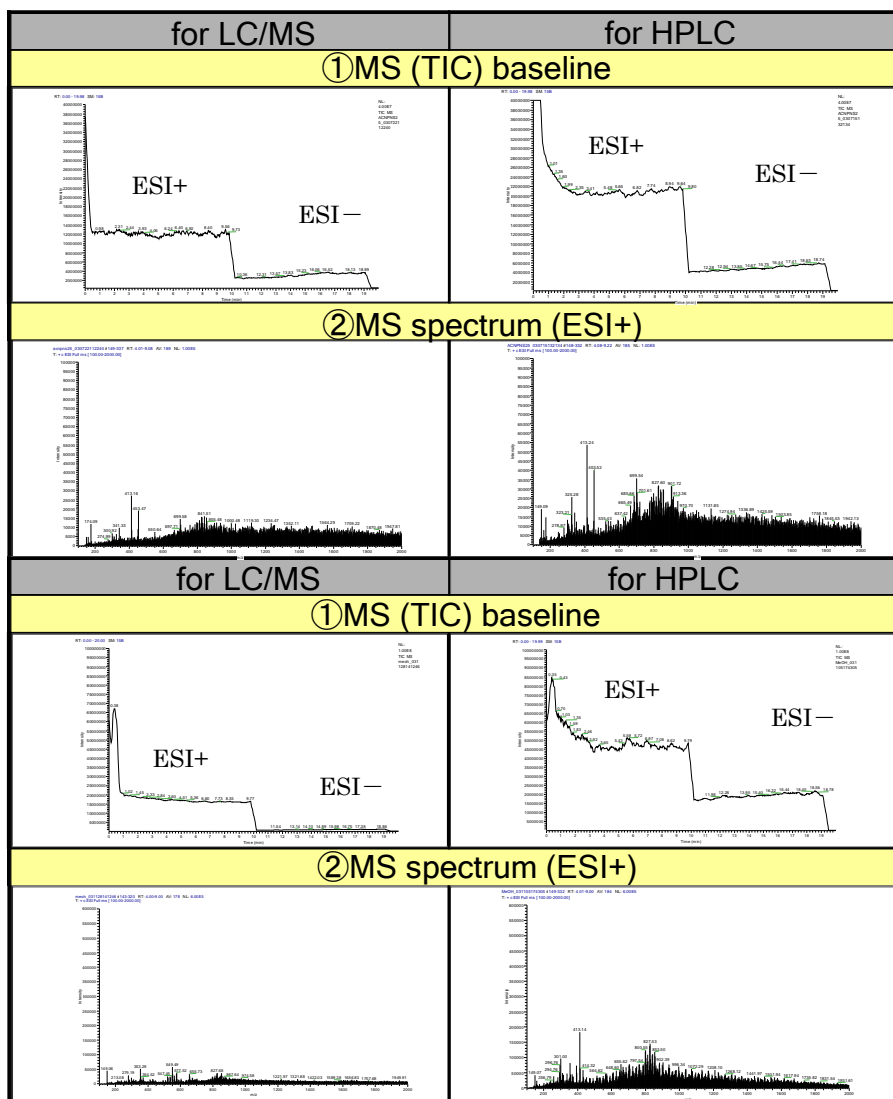
Comparison with conventional solvents ② Base line of MS Infusion

Acetonitrile

MS infusion result

① : Baseline of direct infusion each solvent into MS (TIC, ESI+/- mode).

② : Accumulated MS spectrum averaged for 5 minutes (ESI+ mode).



Methanol

MS infusion result

① : Baseline of direct infusion each solvent into MS (TIC, ESI+/- mode).

② : Accumulated MS spectrum averaged for 5 minutes (ESI+ mode).

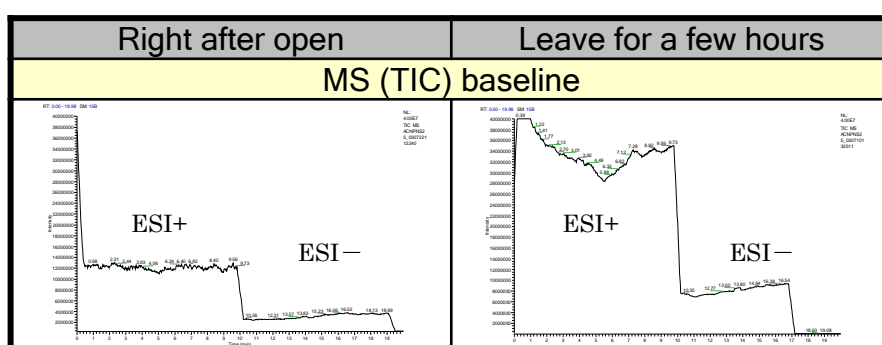
Column : Contamination from analysis environment

After solvent is opened, if it leave as it is, causes contamination from environment circumstances. This contaminant will be observed as an increase in the MS baseline. We recommend to use LC/MS solvents immediately after opening, to maintain it's high purity.

Methanol

MS infusion result

Baseline of direct infusion each solvent into MS (TIC, ESI+/- mode).



Solvents for LC/MS

Specification

	Acetonitrile -Plus-	Distilled Water -Plus-	Methanol -Plus-	2-Propanol -Plus-
	01033-79 1L 01033-76 3L 01033-23 200mL*	11307-79 1L 11307-76 3L 11307-23 200mL*	25185-79 1L 25185-76 3L 25185-23 200mL*	32435-79 1L 32435-76 3L 32435-12 200mL*
Specifications	Conform to JP specification		Conform to JP specification	Conform to JP specification
Purity (GC)	min. 99.9 %	min. 99.0 %	min. 99.7 %	
Density (20°C)	0.780~0.784 g/mL	0.996~1.000 g/mL	0.791~0.793 g/mL	0.784~0.786 g/mL
Refractive index n_D^{20}	1.343~1.346	1.332~1.334	1.327~1.330	1.376~1.378
pH (5.5~7.5)	-	to pass test	-	-
Water	max. 0.03 %		max. 0.05 %	max. 0.1%
Non-volatile matter	max. 5 ppm	max. 0.001 %	max. 5 ppm	max. 0.001 %
Acid (as C ₂ H ₅ COOH)	-	-	-	max. 0.001 %
Acid (as CH ₃ COOH)	max. 5 ppm	-	-	-
Acid (as HCOOH)	-	max. 0.001 %	max. 0.001 %	-
Peroxide (as H ₂ O ₂)	max. 5 ppm	max. 1 ppm	max. 5 ppm	max. 5 ppm
Barium (Ba)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Calcium (Ca)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Cadmium (Cd)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Cobalt (Co)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Chromium (Cr)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Copper (Cu)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Iron (Fe)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Potassium (K)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Magnesium (Mg)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Manganese (Mn)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Sodium (Na)	max. 0.02 ppm	max. 0.01 ppm	max. 0.02 ppm	-
Nickel (Ni)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Lead (Pb)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Zinc (Zn)	max. 0.01 ppm	max. 0.01 ppm	max. 0.01 ppm	-
Gradient test	to pass test	to pass test	-	-
Absorbance (1cm cell reference : water)				
λ (nm)	max.	max.	max.	max.
200	0.050	-	-	-
210	0.030	-	0.70	0.70
210~	-	0.01	-	-
220	0.015	-	0.30	-
225	0.010	-	-	-
230	0.010	-	0.15	0.15
240	-	-	0.07	-
240~	0.009	-	-	-
254	-	-	0.02	-
250	-	-	-	0.02
260~	-	-	0.01	0.01
Relative fluorescence intensity	to pass test	to pass test	to pass test	to pass test
Suitability for LAS	-	-	to pass test	-
Suitability for LC/MS	to pass test	to pass test	to pass test	to pass test
Particle (>0.3 μm)*	max. 100 pcs/mL*	-	max. 100 pcs/mL*	-
Particle (>0.5 μm)*	max. 50 pcs/mL*	max. 50 pcs/mL*	max. 50 pcs/mL*	max. 100 pcs/mL*

*Particle is not guaranteed for 200mL packaged products.

Reagents & Pre-mixed solvents for LC/MS

High Purity Reagents for LC/MS

Reagents maintain high purity guarantee high sensitivity analysis. We also supply single-use ample packaging.

	Acetic acid	Formic acid	Trifluoroacetic acid	Phosphoric acid
	01021-96 1mL×5 Ample 01021-97 25mL	16233-96 1mL×5 Ample 16233-97 25mL	40578-1B 1mL×5 Ample 40578-2B 25mL	32187-96 25mL
Specifications				
Purity (GC)	min. 99.7 %	min. 98.0 %	min. 99.8 %	min. 85.0 %
Absorbance (1cm cell reference : water) (25% Solution)				
λ (nm)	max.	max.	max.	max.
220	-	-	-	0.03
260	0.1	0.5	-	0.02
270	-	-	0.03	-
280	0.02	0.1	-	0.01
300	0.01	0.07	0.003	0.01
360	-	-	0.001	-
Relative fluorescence intensity	to pass test	to pass test	to pass test	to pass test
	1 mol/L Ammonium acetate solution		1 mol/L Ammonium formate solution	
	01969-23 100mL		01298-23 100mL	
Specifications				
Purity(GC)	0.95 ~ 1.05 mol/L		0.95 ~ 1.05 mol/L	
Appearance	colorless clear		colorless clear	
pH (25 °C)	6.8 ~ 7.0		6.5 ~ 6.7	
Absorbance (1cm cell reference : water)				
λ (nm)	max.		max.	
240	0.40		0.40	
254	0.03		0.03	
270 ~ 400	0.01		0.01	
Relative fluorescence intensity	to pass test		to pass test	

Ready to Use Pre-mixed solvents

Pre-mixed HPLC solvents with formic acid or trifluoroacetic acid are ideal choice for LC/MS or LC/MS/MS. There are no worry about contamination prepared by analyst.

	0.1vol% Formic acid-Acetonitrile	0.1vol% Formic acid-Distilled Water	0.1vol% Trifluoroacetic acid-Acetonitrile	0.1vol% Trifluoroacetic acid- distilled water
	01922-12 200mL 01922-63 1L 01922-64 3L	16245-12 200mL 16245-63 1L 16245-64 3L	41132-79 1L 41132-76 3L	41133-79 1L 41133-76 3L
Specifications				
Formic acid	0.09~0.11 vol%	0.09~0.11 vol%	-	-
Trifluoroacetic acid	-	-	0.09~0.11 vol%	0.09~0.11 vol%
Water	max. 0.05 %	-	max. 0.05 %	-
Non-volatile matter	max. 0.001 %	max. 0.001 %	max. 0.001 %	max. 0.001 %
Barium (Ba)	-	0.01 ppm	-	0.01 ppm
Calcium (Ca)	-	0.01 ppm	-	0.01 ppm
Cadmium (Cd)	-	0.01 ppm	-	0.01 ppm
Cobalt (Co)	-	0.01 ppm	-	0.01 ppm
Chromium (Cr)	-	0.01 ppm	-	0.01 ppm
Iron (Fe)	-	0.01 ppm	-	0.01 ppm
Potassium (K)	-	0.01 ppm	-	0.01 ppm
Magnesium (Mg)	-	0.01 ppm	-	0.01 ppm
Manganese (Mn)	-	0.01 ppm	-	0.01 ppm
Sodium (Na)	-	0.01 ppm	-	0.01 ppm
Nickel (Ni)	-	0.01 ppm	-	0.01 ppm
Lead (Pb)	-	0.01 ppm	-	0.01 ppm
Zinc (Zn)	-	0.01 ppm	-	0.01 ppm
Absorbance (1cm cell reference : water)				
λ (nm)	max.	max.	max.	max.
200	2.000	-	1.500	-
210	2.500	2.500	1.500	-
220	2.500	1.500	1.500	-
230	1.500	1.000	0.500	-
240~	0.800	0.800	0.300	-
Relative fluorescence intensity	-	to pass test	-	-
Suitability for LC/MS	to pass test	to pass test	-	-

Prepsol

Solvents for Preparative Chromatography

Preparative work with HPLC is an effective method of separating and purifying medicinal ingredients or biopharmaceuticals. It also has a potential for common industrial application. Solvents used for this procedure must be of high quality as well as inexpensive. To meet such requirements, we offer solvents for mass-preparative liquid chromatography. Prepsol has the advantageous features of low UV absorption and limited nonvolatile substances. We provide Prepsol in 18-liter peckaging for large-scale application.

□ Guaranteed properties

Non-volatile matter

Special treated solvent to minimize impurity.

UV Absorbance

Prepsol yields low blank in UV absorption.

Peroxides • Acidity

For separation of unstable substance against acids or peroxides solvent with Low content of acidity or peroxide is important.

Refractive Index (n_D^{20})

In use with RI detector, the larger the refractive index difference between sample ingredients and the solvent, the more the detection sensitivity is enhanced.

Water content

Water content is the important factor to prevent column degradation and obtain a stable chromatogram, in case of Normal Phase Chromatography.

	Acetonitrile	Distilled Water	Chloroform	Ethanol (99.5)
	01031-84 3L×2 01031-96 18L	11334-96 18L 11334-92 20L	07278-84 25kg	14033-84 18L
Specifications				
Purity (GC)	min. 99.8 %	-	min. 99.5 %	min. 99.5 %
Refractive index n_D^{20}	1.343~1.346	1.332~1.334	1.445~1.448	1.360~1.363
Water	max. 0.05 %	-	max. 0.03 %	max. 0.3 %
pH	-	5.5~7.5	-	-
Non-volatile matter	max. 3 ppm	max. 3 ppm	max. 5 ppm	max. 5 ppm
Acid (as CH ₃ COOH)	max. 0.001 %	-	-	max. 0.001 %
Acid (as HCl)	-	-	max. 0.001 %	-
Peroxide (as H ₂ O ₂)	max. 5 ppm	max. 5 ppm	-	-
Absorbance (1cm cell reference : water)				
λ (nm)	max.	max.	max.	max.
210	-	0.01	-	-
220	-	-	-	0.40
230	0.30	-	-	-
254	-	-	0.30	-
260~	-	-	-	0.02
280~	0.01	-	0.02	-
			stabilized with Amylene	

	Ethyl Acetate	Methanol	Hexane
	14029-96 18L	25183-84 3L×2 25183-96 18L	18635-96 18L
Specifications			
Purity (GC)	min. 99.7 %	min. 99.8 %	min. 96.0 %
Refractive index n_D^{20}	1.370~1.374	1.327~1.330	1.374~1.377
Water	max. 0.05 %	max. 0.02 %	max. 0.01 %
Non-volatile matter	max. 3ppm	max. 5ppm	max. 3ppm
Acid (as CH ₃ COOH)	max. 0.001 %	-	max. 0.001 %
Acid (as HCOOH)	-	max. 0.001 %	-
Peroxide (as H ₂ O ₂)	max. 5 ppm	max. 5 ppm	max. 5 ppm
Absorbance (1cm cell reference : water)			
λ (nm)	max.	max.	max.
220	-	0.30	0.50
240	-	-	0.20
260	0.40	0.02	-
280~	-	0.01	-
290~	0.01	-	-
300~	-	-	0.01

Solvents for GPC

We also offer solvents and reagents for Gel Permeation Chromatography. We provide dedicated guarantee solvents, enabling highly reproducible analysis. You can use in GPC analysis with confidence.

	α -Dichlorobenzene		<i>N</i> -Methyl-2-pyrrolidinone		Tetrahydrofuran			
Specification								
Purity (GC)	min. 99.5 %		min. 99.0 %		min. 99.8 %			
Density (20°C)	1.303~1.309		1.030~1.034		0.884~0.889			
Refractive index n_D^{20}	1.550~1.554		1.467~1.472		1.406~1.409			
Water	max. 0.02 %		max. 0.1 %		max. 0.02 %			
Non-volatile matter	max. 0.001 %		-		max. 0.001 %			
Chloride (Cl)	max. 0.001 %		-		-			
Free chlorine (Cl)	max. 1 ppm		-		-			
Acid	-		max. 5 ppm (as HCl)		max. 0.001 % (as CH ₃ COOH)			
Peroxide(as H ₂ O ₂)	-		-		max. 0.005 %			
Absorbance	λ (nm)	max.	λ (nm)	max.	λ (nm)	max.	λ (nm)	max.
	300	0.30	285	0.70	215	0.70	280	0.03
	330	0.10	330	0.35	230	0.40	290	0.02
	350~400	0.05	320~600	0.10	240	0.30	300	0.01
Relative fluorescence intensity	-		-		to pass test			
Suitability for LC/MS	-		-		to pass test			

Solvents for GPC

Product No.	Product Name	Grade	Package
07278-1B	Chloroform, stabilized with Amylene	HPLC	1 L
07278-2B			3 L
07278-84	Chloroform, stabilized with Amylene	Preparative LC	25 kg
10149-1B	1,2-Dichloroethane	HPLC	1 L
10127-79	α -Dichlorobenzene	HPLC	1 L
10127-76			3 L
10344-1B	<i>N,N</i> -Dimethylformamide	HPLC	1 L
10344-2B			3 L
18529-1B	1,1,1,3,3,3-Hexafluoro-2-propanol	HPLC	100 mL
18529-3B			500 mL
25336-79	<i>N</i> -Methyl-2-pyrrolidinone	HPLC	1 L
40060-3B	Tetrahydrofuran, stabilizer free	HPLC	200 mL
40060-5B			500 mL
40060-1B			1 L
40060-2B			3 L
40060-67	Tetrahydrofuran, stabilizer free	LC/MS	1 L
40060-78			3 L
41120-79	Tetrahydrofuran, stabilized with BHT	HPLC	1 L
41120-76			3 L
41120-84	Tetrahydrofuran, stabilized with BHT	Preparative LC	3 L × 2

Reagents for GPC

High purity reagents reduced the metal impurity to it's limit. you can use as an reliable additive in the analysis with polar solvents.

Product No.	Product Name	Grade	Package
24234-33	Lithium bromide, anhydrous, 3N5	High purity	25 g
24234-13			250 g
24122-33	Lithium chloride, 3N5	High purity	25 g
24122-08			250 g

Order Information

Product Name	Grade	Package	Product No.
High Purity Solvents for HPLC			
Acetonitrile -Plus-	HPLC	1L	01031-1B
		3L	01031-2B
Acetonitrile -Plus- (for Pharmaceutical Analysis)	HPLC	1L	01858-79
		3L	01858-76
Acetone	HPLC	1L	01026-1B
		3L	01026-2B
Ethanol (99.5)	HPLC	1L	14033-1B
		3L	14033-2B
Chloroform	HPLC	1L	07278-1B
		3L	07278-2B
Ethyl Acetate	HPLC	1L	14029-1B
		3L	14029-2B
1,4-Dioxane	HPLC	1L	10425-1B
Cyclohexane	HPLC	1L	07547-1B
		3L	07547-2B
1,2-Dichloroethane	HPLC	1L	10149-1B
o-Dichlorobenzene	HPLC	1L	10127-79
		3L	10127-76
Dichloromethane	HPLC	1L	10158-1B
		3L	10158-2B
<i>N,N</i> -Dimethylformamide	HPLC	1L	10344-1B
		3L	10344-2B
Distilled Water -Plus-	HPLC	1L	11307-1B
		3L	11307-2B
Tetrahydrofuran, stabilizer free	HPLC	200mL	40060-3B
		500mL	40060-5B
		1L	40060-1B
		3L	40060-2B
Tetrahydrofuran, stabilizer free (for Pharmaceutical Analysis)	HPLC	3L	40060-76
Tetrahydrofuran, stabilizer with BHT	HPLC	1L	41120-79
		3L	41120-76
2,2,4-Trimethylpentane	HPLC	1L	31005-1B
Toluene	HPLC	1L	40180-1B
		3L	40180-2B
1-Butanol	HPLC	1L	04354-1B
<i>tert</i> -Butyl methyl ether	HPLC	1L	04418-1B
		3L	04418-2B
2-Propanol -Plus-	HPLC	1L	32435-1B
		3L	32435-2B
1,1,1,3,3,3-Hexafluoro-2-propanol	HPLC	100mL	18529-1B
		500mL	18529-3B
Hexane	HPLC	1L	18041-1B
		3L	18041-2B
Heptane (<i>n</i> -Heptane)	HPLC	1L	18005-1B
Benzene	HPLC	1L	04084-1B
Methanol -Plus-	HPLC	1L	25183-1B
		3L	25183-2B
Methanol -Plus- (for Pharmaceutical Analysis)	HPLC	1L	25190-79
		3L	25190-76
<i>N</i> -Methyl-2-pyrrolidinone	HPLC	1L	25336-79

* the product with "plus" is added with a particle guarantee.

* (A): Ample, (S): Screw cap

Product Name	Grade	Package	Product No.
High Purity Solvents for LC/MS			
Acetonitrile	LC/MS	200mL	01033-23
Acetonitrile -Plus-	LC/MS	1L	01033-79
		3L	01033-76
Distilled Water	LC/MS	200mL	11307-23
Distilled Water -Plus-	LC/MS	1L	11307-79
		3L	11307-76
Methanol	LC/MS	200mL	25185-23
Methanol -Plus-	LC/MS	1L	25185-79
		3L	25185-76
2-Propanol	LC/MS	200mL	32435-12
2-Propanol -Plus-	LC/MS	1L	32435-79
		3L	32435-76
Tetrahydrofuran, stabilizer free	LC/MS	1L	40060-67
		3L	40060-78
Pre-mix Solvents for HPLC			
1mol/L Ammonium acetate solution	HPLC	100mL	01969-23
1mol/L Ammonium formate solution	HPLC	100mL	01298-23
Formic acid, 98%	HPLC	1mL(A)×5	16233-96
		25mL(S)	16233-97
Acetic acid	HPLC	1mL(A)×5	01021-96
		25mL(S)	01021-97
Trifluoroacetic acid	HPLC	1mL(A)×5	40578-1B
		25mL(A)	40578-2B
Phosphoric acid	HPLC	25mL(S)	32187-96
Reagents for HPLC			
0.1vol% Formic acid-acetonitrile	LC/MS	200 mL	01922-12
		1 L	01922-63
		3 L	01922-64
0.1vol% Formic acid-distilled water	LC/MS	200 mL	16245-12
		1 L	16245-63
		3 L	16245-64
0.1vol% Trifluoroacetic acid-acetonitrile	HPLC	1 L	41132-79
		3 L	41132-76
0.1vol% Trifluoroacetic acid-distilled water	HPLC	1 L	41133-79
		3 L	41133-76
Prepsol Solvents for Preparative LC			
Acetonitrile	Preparative LC	3L×2	01031-84
		18L	01031-96
Ethanol (99.5)	Preparative LC	18L	14033-84
Chloroform	Preparative LC	25kg	07278-84
Ethyl Acetate	Preparative LC	18L	14029-96
Distilled Water	Preparative LC	18L	11334-96
Distilled water (BAG-IN-BOX TYPE)	Preparative LC	20L	11334-92
Hexane	Preparative LC	18L	18635-96
Tetrahydrofuran, stabilizer with BHT	Preparative LC	3L×2	41120-84
Methanol	Preparative LC	3L×2	25183-84
		18L	25183-96



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