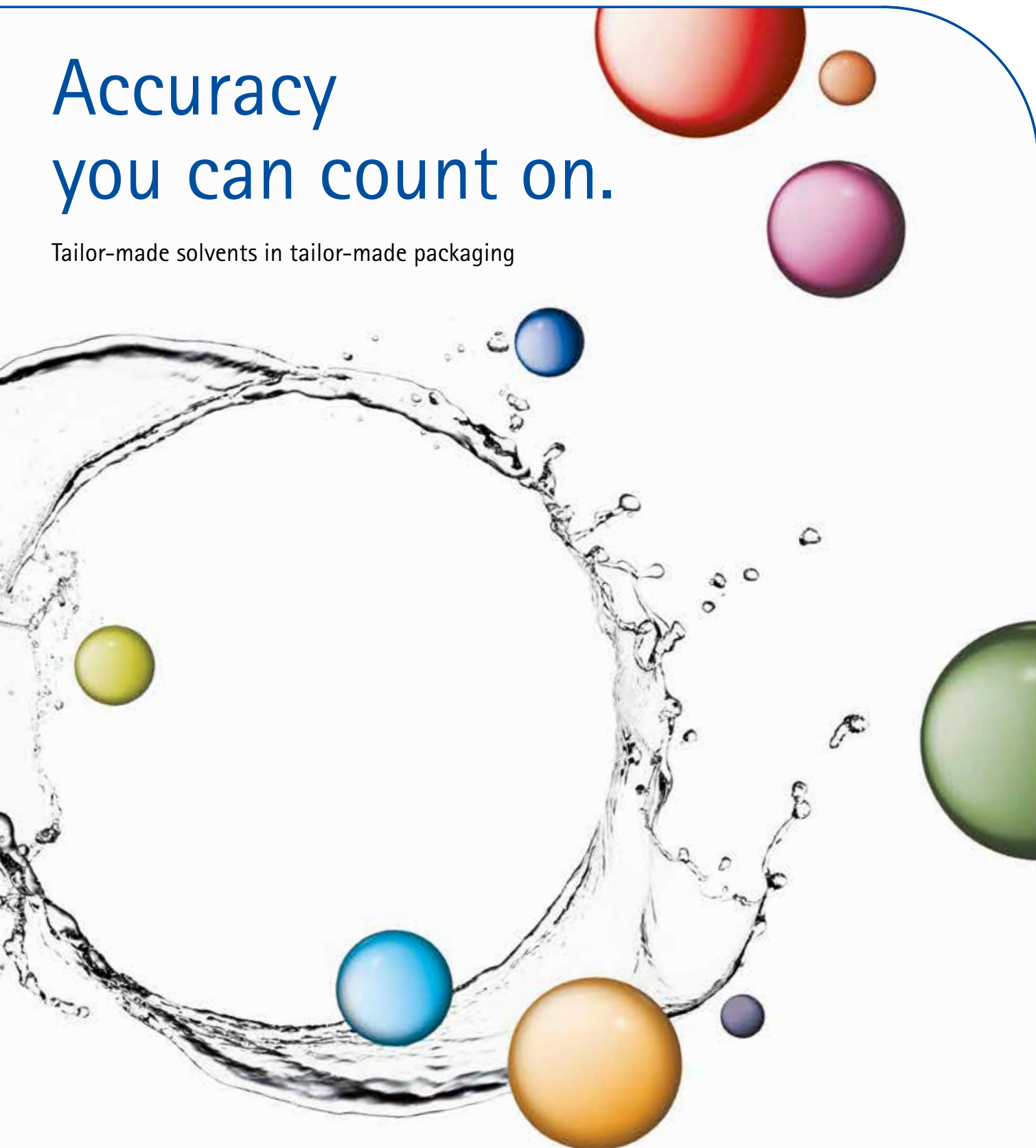


Accuracy you can count on.

Tailor-made solvents in tailor-made packaging

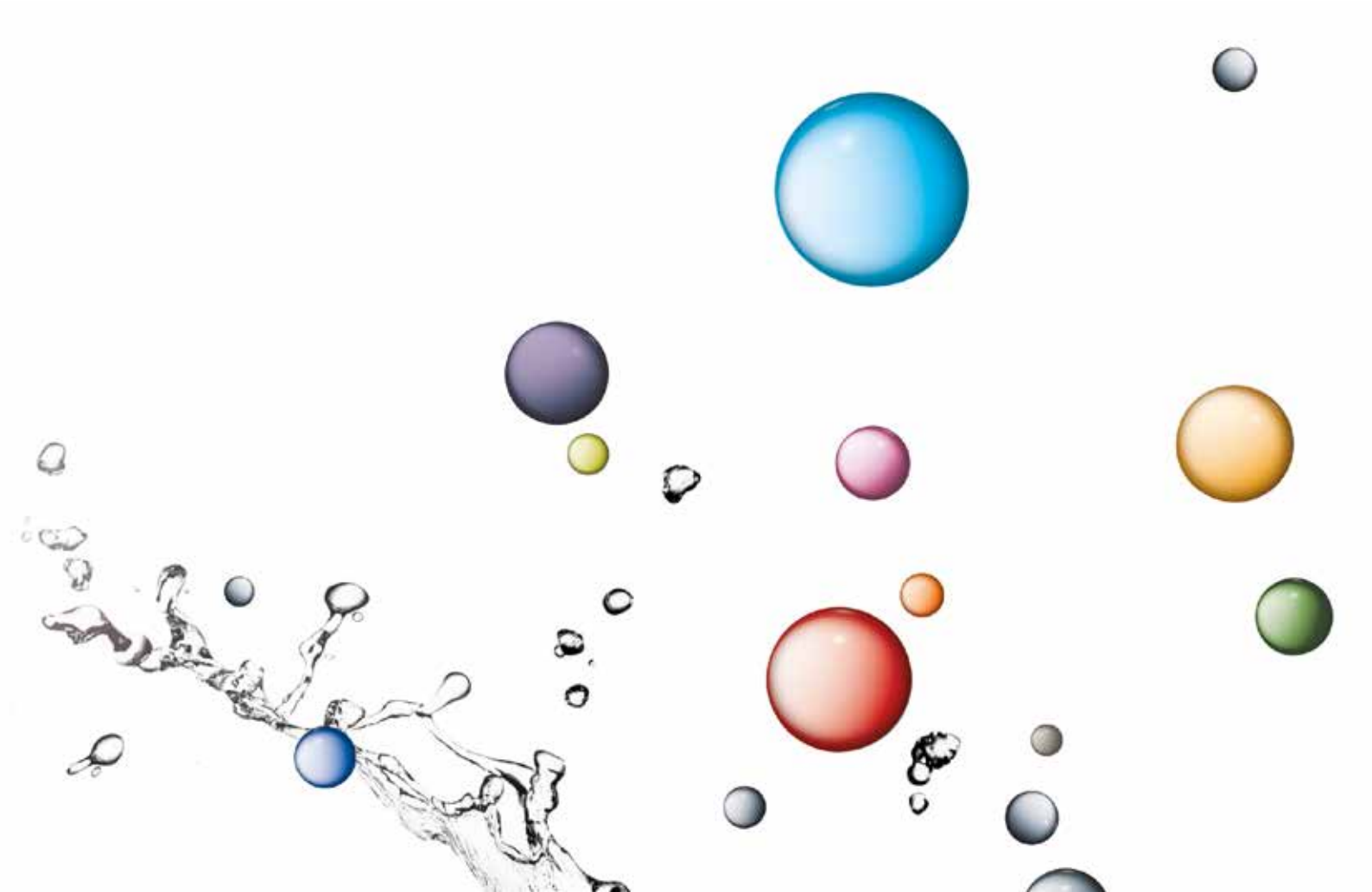


Tailor-made solvents

For over 150 years, our chemicals have been synonymous with dependable quality. To keep pace with the latest quality requirements, we develop all our products continually and progressively. As a result, they help you solve problems efficiently and economically in the laboratory, pilot plant and production.

As your reliable partner and one-stop supplier, EMD Millipore offers a comprehensive range of quality products and services. To make them better still, we listen carefully to our customers worldwide – then integrate the ideas, suggestions and feedback you provide. Building on this unique partnership of trust, we are already developing the products and services you will need tomorrow.

EMD Millipore protects you and the environment with solutions that stand for high quality and high safety; with products, packaging and extensive documentation, too. You benefit from the synergies when products and packaging match perfectly. That way, you are always well provided for.

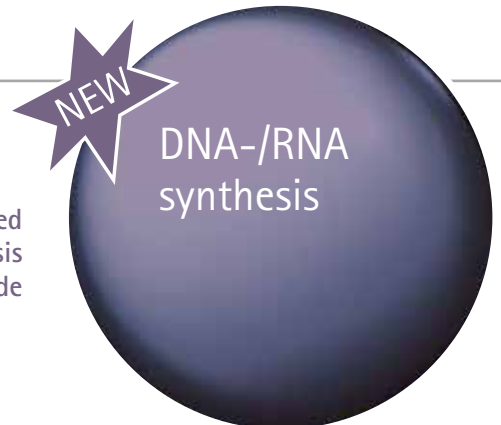
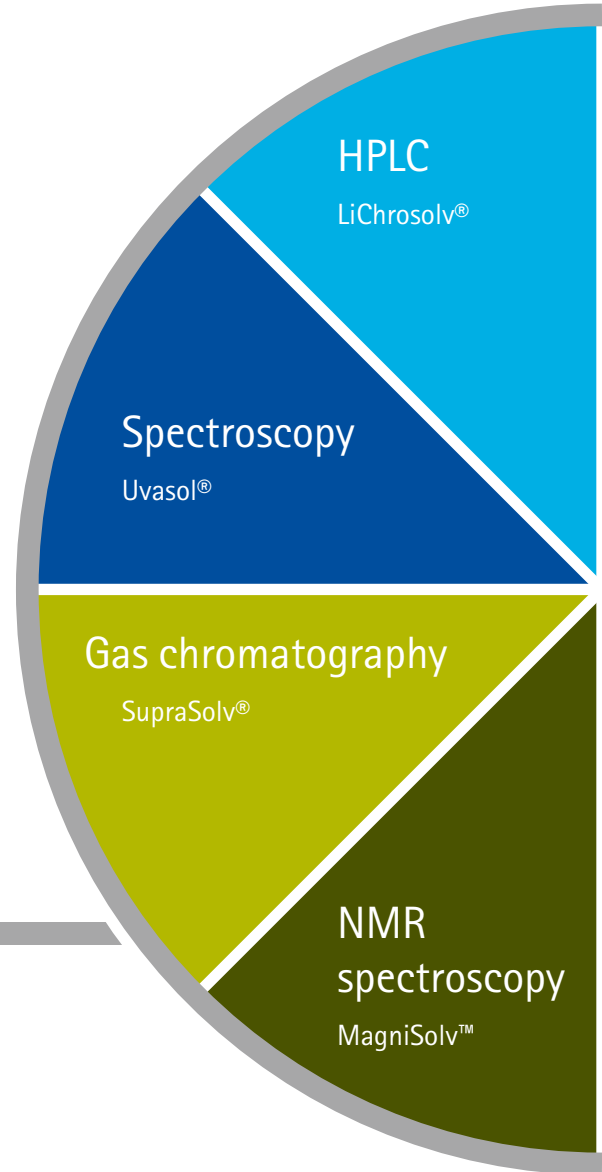


Instrumental analysis

- HPLC**
High performance liquid chromatography
- Spectroscopy**
IR, UV & fluorescence spectroscopy
- Gas chromatography**
Organic trace analysis
- NMR**
Nuclear magnetic resonance spectroscopy

Packaging and withdrawal systems

- Glass bottles
- Aluminum bottles
- Septum seal bottles



EMD Millipore has now started to provide DNA-/RNA synthesis reagents worldwide

Classical analysis and synthesis

SeccoSolv®

Dried solvents

EMSURE®

Solvents for analysis
ACS, ISO, Reag. Ph Eur

EMPARTA®

Solvents for analysis
ACS

EMPLURA®

Solvents for
lab-applications

SeccoSolv®

DNA-/RNA-synthesis, peptide and
organic synthesis

EMSURE®

Regulated and highly demanding
lab applications

EMPARTA®

Classical analytical lab applications

EMPLURA®

Production, preparative laboratory
work and cleaning purposes

Packaging and withdrawal systems

- Glass bottles
- HDPE bottles
- Septum seal bottles
- Stainless steel drums
- Barrels and containers

Withdrawal systems and safety accessories



Instrumental analysis

Page

HPLC LiChrosolv® 06

Spectroscopy Uvasol® 20

Gas chromatography SupraSolv® 26

NMR spectroscopy MagniSolv™ 34

Packaging and withdrawal systems 38



DNA-/RNA synthesis reagents 42

Classical analysis and synthesis

SeccoSolv® Dried solvents 44

EMSURE® Solvents for analysis | ACS, ISO, Reag. Ph Eur 48

EMPARTA® Solvents for analysis | ACS 58

EMPLURA® Solvents for lab-applications 62

Packaging and withdrawal systems 68

Accessories 84

HPLC High performance liquid chromatography

LiChrosolv®

HPLC is now a key technique in research and development, pharmaceutical quality control and environmental analysis. Due to the various tasks involved, high-performance solvents are a must.

EMD Millipore offers:

- **LiChrosolv®** | For analytical HPLC
| For fast chromatography
| New for LC-MS application



Isocratic and gradient elution

With their high degree of UV transmittance, low UV absorbance, low particle count, low acidity and alkalinity and low evaporation residue level, **LiChrosolv®** solvents are ideal for reproducible separations. They are produced from specially selected raw materials, and undergo a number of purification steps prior to final packaging. Since separations are normally carried out under gradient conditions in analytical HPLC, we offer solvents in 'gradient grade' as well as 'isocratic grade'. This enables you to minimize the gradient effect of the solvent involved – for example in enantiomeric separations on chiral phases.

Fast chromatography / LC-MS detection

With their ultra low detection limits, these techniques are becoming increasingly popular in pharmaceutical and biotechnical industries. EMD Millipore presents a new generation of LC-MS **LiChrosolv® hypergrade** which meets all the requirements of LC-MS ionization methods (ESI/APCI positive and negative mode) for best quantitative results in triple quadrupole performance. Thanks to its low level of ionic background and ion suppression, this quality ensures high ionization efficiency. The packaging material has been improved to meet LC-MS quality requirements perfectly. A new standard for the unlimited application of high performance chromatography has been set.

Your benefits

LiChrosolv®

- High quality gains time, gives trust
- Documented as being suitable for UV, fluorescence and mass detection
- Optimized peak baseline separation
- High resolution and sensitivity in LC-MS
- Interference free baseline for better reproducibility

Ordering information

LiChrosolv® A-B

Product	Purity (GC) min. [%]	Evap. residue max. [mg/l]	Water max. [%]	Acidity max. [meq/g]	Alkalinity max. [meq/g]	UV-transmission at [nm]	Content / Packaging	Ord. No.
A Acetone	99.8	2	0.05	0.0002	0.0002	335 (50 %), 340 (80 %), 350 (98 %)	1 GL	1.00020.1000
							2.5 GL	1.00020.2500
							4 GL	1.00020.4000
							5 AL	1.00020.5000
<i>Details see page 18</i>								
Acetonitrile hypergrade, LC-MS suitability	99.9	1	0.01	0.0001	0.0002	191 (25 %), 195 (85 %), 200 (96 %), 215 (98 %), 230 (99 %)	1 GL	1.00029.1000 *
							2.5 GL	1.00029.2500 *
<i>Details see page 15</i>								
Acetonitrile gradient grade, UPLC UHPLC suitability. Reg. Ph Eur, ACS conform	99.9	2	0.02	0.0002	0.0002	193 (60 %), 195 (80 %), 230 (98 %)	1 GL	1.00030.1000
							2.5 GL	1.00030.2500
							4 GL	1.00030.4000
							5 AL	1.00030.5000
<i>Details see page 11, 15 and 18</i>								
Acetonitrile isocratic grade	99.8	4	0.05	0.0005	0.0002	195 (70 %), 200 (90 %), 240 (98 %)	1 GL	1.14291.1000
							2.5 GL	1.14291.2500
							4 GL	1.14291.4000
							5 AL	1.14291.5000
B 1-Butanol	99.8	2	0.05	0.0002	0.0002	230 (75 %), 240 (85 %), 310 (99 %)	1 GL	1.01988.1000
							<i>Details see page 18</i>	
							2.5 GL	1.01988.2500

New extended specification
NEW

All solvents are filtered through 0.2 µm. | GL = glass bottle | AL = aluminum bottle | * = special treated amber glass bottle

Ordering information

LiChrosolv® B-H

Product	Purity (GC) min. [%]	Evap. residue max. [mg/l]	Water max. [%]	Acidity max. [meq/g]	Alkalinity max. [meq/g]	UV-transmission at [nm]	Content / Packaging	Ord. No.
B tert-Butyl methyl ether	99.8	2	0.02 Details see page 18	0.0002	0.0002	240 (60 %), 255 (85 %), 280 (98 %)	1 GL	1.01845.1000
							2.5 GL	1.01845.2500
C 1-Chlorobutane	99.8	2	0.01 Details see page 18	0.0002	0.0002	227 (60 %), 232 (80 %), 250 (98 %)	1 GL	1.01692.1000
							Chloroform	
							1 GL	1.02444.1000
stabilized with 2-methyl- 2-butene and methanol	99.8	5	0.01 Details see page 18	0.0002	0.0002	255 (70 %), 260 (85 %), 300 (98 %)	2.5 GL	1.02444.2500
							4 GL	1.02444.4000
Cyclohexane	99.9	2	0.01 Details see page 18	0.0002	0.0002	230 (75 %), 240 (90 %), 260 (99 %)	1 GL	1.02827.1000
							2.5 GL	1.02827.2500
D 1,2-Dichloro- ethane	99.8	2	0.02 Details see page 18	0.0002	0.0002	240 (85 %), 245 (90 %), 270 (99 %)	1 GL	1.13713.1000
							Dichloro- methane stabilized	
	99.9	5	0.01 Details see page 18	0.0002	0.0002	240 (70 %), 245 (90 %), 260 (99 %)	1 GL	1.06044.1000
							2.5 GL	1.06044.2500
							4 GL	1.06044.4000
E Ethanol gradient grade, UPLC UHPLC suitability	99.8	2	0.02 Details see page 18	0.0002	0.0002	245 (50 %), 270 (80 %), 300 (98 %)	1 GL	1.03132.1000
							2.5 GL	1.03132.2500
							Ethanol	
	99.9	2	0.1 Details see page 11 and 18	0.0002	0.0002	225 (60 %), 240 (85 %), 260 (98 %)	1 GL	1.11727.1000
							2.5 GL	1.11727.2500
							4 GL	1.11727.4000
E Ethyl acetate	99.8	2	0.05 Details see page 18	0.0002	0.0002	260 (50 %), 265 (80 %), 270 (98 %)	1 GL	1.00868.1000
							2.5 GL	1.00868.2500
							4 GL	1.00868.4000
H n-Heptane	99.3	2	0.005 Details see page 18	0.0002	0.0002	210 (50 %), 220 (80 %), 245 (98 %)	1 GL	1.04390.1000
							2.5 GL	1.04390.2500
n-Hexane	98.0	1	0.01 Details see page 18	0.0002	0.0002	210 (50 %), 220 (85 %), 245 (98 %)	1 GL	1.04391.1000
							2.5 GL	1.04391.2500
							4 GL	1.04391.4000
							5 AL	1.04391.5000

All solvents are filtered through 0.2 µm. | GL = glass bottle | AL = aluminum bottle

Ordering information

LiChrosolv® I-Z

Product	Purity (GC) min. [%]	Evap. residue max. [mg/l]	Water max. [%]	Acidity max. [meq/g]	Alkalinity max. [meq/g]	UV-transmission at [nm]	Content / Packaging	Ord. No.
I Isohexane (C ₆ H ₁₄ Isomere)	99.0	2	0.005 <small>Details see page 18</small>	0.0002	0.0002	210 (60 %), 220 (80 %), 245 (98 %)	2.5 l GL	1.04335.2500
Isooctane	99.0	2	0.01 <small>Details see page 18</small>	0.0002	0.0002	210 (50 %), 220 (80 %), 245 (98 %)	1 l GL 2.5 l GL	1.04717.1000 1.04717.2500
M Methanol hypergrade, LC-MS suitability	99.9	1	0.01	0.0002	0.0002	210 (35 %), 220 (60 %), 230 (75 %), 260 (98 %)	1 l GL 2.5 l GL	1.06035.1000 * 1.06035.2500 *
Methanol gradient grade, UPLC UHPLC suitability. Reag. Ph Eur, ACS conform	99.9	2	0.02 <small>Details see page 11 and 18</small>	0.0002	0.0002	210 (20 %), 220 (60 %), 230 (75 %), 235 (83 %), 250 (95 %), 260 (98 %)	1 l GL 2.5 l GL 4 l GL 5 l AL	1.06007.1000 1.06007.2500 1.06007.4000 1.06007.5000
Methanol isocratic grade	99.8	3	0.03	0.0002	0.0002	225 (50 %), 240 (80 %), 265 (98 %)	1 l GL 2.5 l GL 4 l GL 5 l AL	1.06018.1000 1.06018.2500 1.06018.4000 1.06018.5000
P 1-Propanol	99.8	2	0.02	0.0002	0.0002	230 (70 %), 240 (80 %), 270 (98 %)	1 l GL 2.5 l GL 4 l GL	1.01024.1000 1.01024.2500 1.01024.4000
2-Propanol gradient grade, UPLC UHPLC suitability	99.9	2	0.05 <small>Details see page 11 and 18</small>	0.0002	0.0002	220 (80 %), 230 (90 %), 250 (99 %)	1 l GL 2.5 l GL 4 l GL 5 l AL	1.01040.1000 1.01040.2500 1.01040.4000 1.01040.5000
T Tetrahydro- furan not stabilized	99.9	1	0.02 <small>Details see page 18</small>	0.0002	0.0002	218 (30 %), 230 (35 %), 250 (65 %), 280 (95 %)	1 l GL 2.5 l GL 4 l GL	1.08101.1000 1.08101.2500 1.08101.4000
Toluene	99.9	2	0.05 <small>Details see page 18</small>	0.0002	0.0006	300 (70 %), 310 (80 %), 350 (98 %)	1 l GL 2.5 l GL 4 l GL	1.08327.1000 1.08327.2500 1.08327.4000
W Water gradient grade, LC-MS and UPLC UHPLC suitability	-	5	- <small>Details see page 11, 16 and 18</small>	-	-	-	1 l GL 2.5 l GL 4 l GL	1.15333.1000 * 1.15333.2500 * 1.15333.4000 *

All solvents are filtered through 0.2 µm. | GL = glass bottle | AL = aluminum bottle | * = special treated amber glass bottle

New extended
specification



New for LC-MS
application



Detailed information











LiChrosolv® gradient grade | For UPLC and UHPLC

Product	Evap. residue max. [mg/l]	Gradient max. [mAU] at			Fluorescence ¹ max. [ppb] at		Content / Packaging	Ord. No.
		210 nm	235 nm	254 nm	254 nm	365 nm		
A Acetonitrile gradient grade UPLC UHPLC suitability. Reag. Ph Eur, ACS conform	2	1.0	–	0.5	1.0	0.5	1 GL	1.00030.1000
							2.5 GL	1.00030.2500
							4 GL	1.00030.4000
							5 AL	1.00030.5000
E Ethanol gradient grade UPLC UHPLC suitability	2	–	5.0	2.0	–	–	1 GL	1.11727.1000
							2.5 GL	1.11727.2500
							4 GL	1.11727.4000
M Methanol gradient grade UPLC UHPLC suitability. Reag. Ph Eur, ACS conform	2	–	2.0	1.0	1.0	0.5	1 GL	1.06007.1000
							2.5 GL	1.06007.2500
							4 GL	1.06007.4000
							5 AL	1.06007.5000
P 2-Propanol gradient grade UPLC UHPLC suitability	2	–	1.0	1.0	–	–	1 GL	1.01040.1000
							2.5 GL	1.01040.2500
							4 GL	1.01040.4000
							5 AL	1.01040.5000
W Water for chromatography LC-MS and UPLC UHPLC suitability	5	5.0	–	0.5	1.0	0.5	1 GL	1.15333.1000 *
							2.5 GL	1.15333.2500 *
							4 GL	1.15333.4000 *

New for LC-MS application
NEWAll solvents are filtered through 0.2 µm. | 1 = calculated as Quinine in 0.05 mol/l H₂SO₄ | GL = glass bottle | AL = aluminum bottle | * = special treated amber glass bottle

Ordering information

Ready to use | Blends

Product	Assay TFA [%]	Assay ACN [%]	Assay H ₂ O [%]	Content / Packaging	Ord. No.
 A Acetonitrile + 0.05 % Acetic acid (v/v) hypergrade, LC-MS suitability				2.5 GL	1.59006.2500
				4 GL	1.59006.4000
 A Acetonitrile + 0.05 % Formic acid (v/v) hypergrade, LC-MS suitability				2.5 GL	1.59003.2500
				4 GL	1.59003.4000
A Acetonitrile + 0.05 % Trifluoroacetic acid (v/v) hypergrade, LC-MS suitability	0.045 - 0.055			2.5 GL	4.80672.2500
 A Acetonitrile + 0.1 % Acetic acid (v/v) hypergrade, LC-MS suitability				2.5 GL	1.59004.2500
				4 GL	1.59004.4000
 A Acetonitrile + 0.1 % Formic acid (v/v) hypergrade, LC-MS suitability				1 GL	1.59002.1000
				2.5 GL	1.59002.2500
				4 GL	1.59002.4000
A Acetonitrile + 0.1 % Trifluoroacetic acid (v/v) hypergrade, LC-MS suitability	0.095 - 0.105			2.5 GL	4.80448.2500
				 4 GL	4.80448.4000
				30 ST	4.80448.9030
 W Water + 0.05 % Acetic acid (v/v) hypergrade, LC-MS suitability				2.5 GL	1.59008.2500
				4 GL	1.59008.4000
W Water + 0.05 % Trifluoroacetic acid (v/v) hypergrade, LC-MS suitability	0.045 - 0.055			2.5 GL	4.80170.2500
				 4 GL	4.80170.4000
 W Water + 0.1 % Acetic acid (v/v) hypergrade, LC-MS suitability				2.5 GL	1.59007.2500
				4 GL	1.59007.4000
 W Water + 0.1 % Formic acid (v/v) hypergrade, LC-MS suitability				4 GL	1.59013.4000
				W Water + 0.1 % Trifluoroacetic acid (v/v) hypergrade, LC-MS suitability	0.095 - 0.105
				 4 GL	4.80112.4000
				30 ST	4.80112.9030

GL = glass bottle

Detailed information

LiChrosolv®

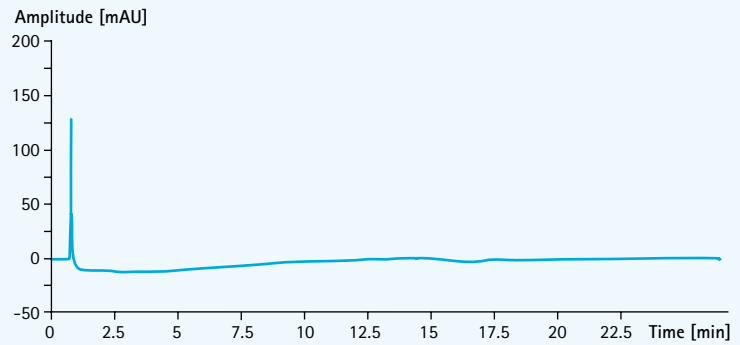


Fig. 1 Batch chromatogram (gradient profile) of LiChrosolv® Acetonitrile gradient grade (100030).

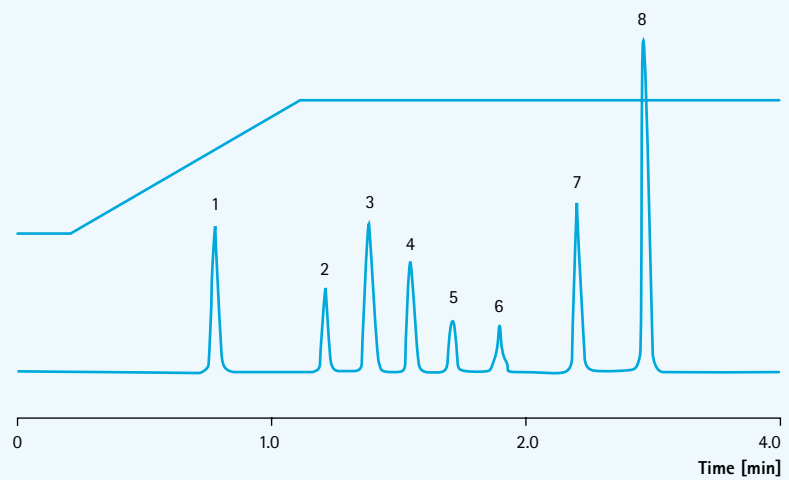


Fig. 2a Optimized peak baseline separation. Interfering free baseline.

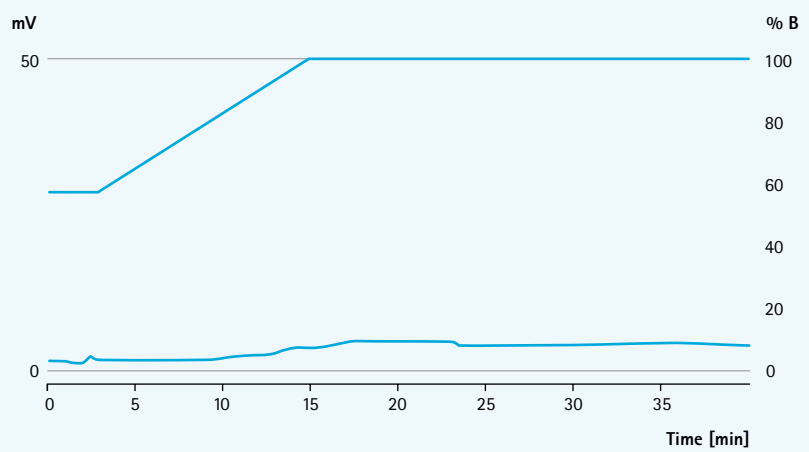


Fig. 2b Blank value of Acetonitrile LiChrosolv® hypergrade in PAH determination according to EPA 610.

Detailed information

LiChrosolv®

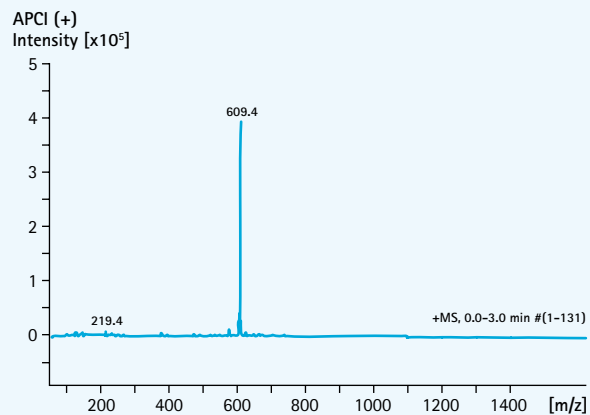
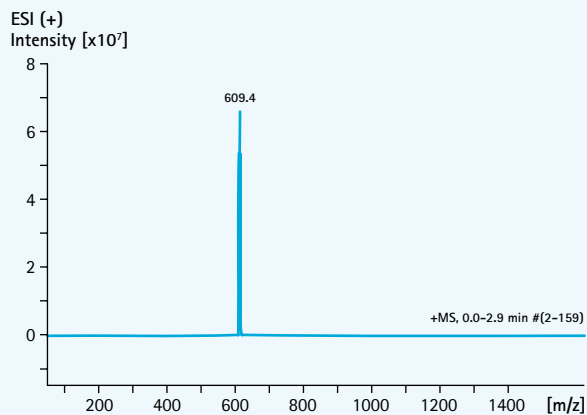


Fig. 3 Mass spectrum of LiChrosolv® Acetonitrile hypergrade (100029). Mobile phase Acetonitrile special LC-MS grade. Intensity of single background mass peak based on reserpine standard (m/z 609.4) in e.g. ESI (+) and APCI (+) mode.

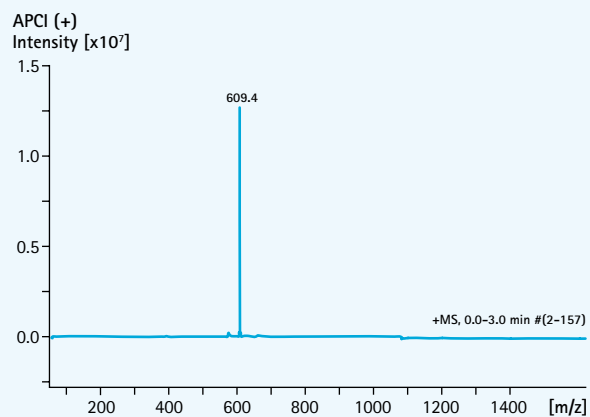
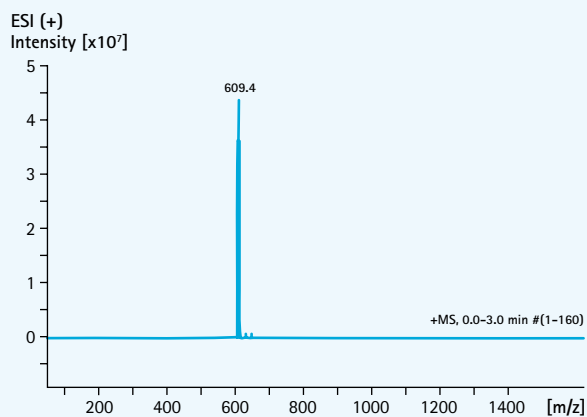


Fig. 4 Mass spectrum of LiChrosolv® Methanol hypergrade (106035). Mobile phase Methanol special LC-MS grade. Intensity of single background mass peak based on reserpine standard (m/z 609.4) in e.g. ESI (+) and APCI (+) mode.

Detailed information

LiChrosolv® hypergrade | NEW for LC-MS method ESI (+)(-) and APCI (+)(-)

Acetonitrile hypergrade
LC-MS suitabilityCat. No. 100029
Spec. values

Purity (GC)	≥ 99.9 %
Identity (IR)	conforms
Residue on evaporation	≤ 1.0 mg/l
Water	≤ 0.01 %
Color	≤ 10 Hazen
Acidity	≤ 0.0001 meq/g
Alkalinity	≤ 0.0002 meq/g
Al (Aluminum) *	≤ 10 ppb
Ca (Calcium) *	≤ 10 ppb
Fe (Iron) *	≤ 10 ppb
Mg (Magnesium) *	≤ 10 ppb
Na (Sodium) *	≤ 50 ppb
K (Potassium) *	≤ 5 ppb
Every other single metal (ICP-MS) *	≤ 5 ppb
Gradient grade	
at 210 nm	≤ 0.8 mAU
at 254 nm	≤ 0.3 mAU
Fluorescence	
as quinine at 254 nm	≤ 1 ppb
as quinine at 365 nm	≤ 0.5 ppb
Transmission	
at 191 nm	≥ 25 %
at 195 nm	≥ 85 %
at 200 nm	≥ 96 %
at 215 nm	≥ 98 %
from 230 nm	≥ 99 %

NEW
New enhanced specificationSuitability for PAH analysis
(HPLC fluorescence-detection)

conforms

At an excitation between 240 and 600 nm (with $t_{\Delta\lambda} = 10$ nm) the emission intensity in the range of 250 - 700 nm is smaller than the following standards: Chinin-Standard (1 ng/ml; 0.05 mol/l H₂SO₄), PAH Standard (1:100,000, Acetonitrile; NIST SRM 1647B)Suitability for pesticide analysis
(HPLC UV-detection)

conforms

Suitability for LC-MS
(tested with ion trap MS); Intensity of background mass peak based on reserpine:Mode: ESI 200 μ l pos | APCI 200 μ l pos ≤ 2 ppbMode: ESI 200 μ l neg | APCI 200 μ l neg ≤ 20 ppbFiltered by 0.2 μ m stainless steel filter | Suitable for UPLC | UHPLC | Ultra Fast HPLC-instruments | Suitable for Q-TOF LC-MS | * = enhanced specificationsMethanol hypergrade
LC-MS suitabilityCat. No. 106035
Spec. values

Purity (GC)	≥ 99.9 %
Identity (IR)	conforms
Residue on evaporation	≤ 1.0 mg/l
Water	≤ 0.01 %
Color	≤ 10 Hazen
Acidity	≤ 0.0002 meq/g
Alkalinity	≤ 0.0002 meq/g
Al (Aluminum) *	≤ 10 ppb
Ca (Calcium) *	≤ 10 ppb
Fe (Iron) *	≤ 10 ppb
Mg (Magnesium) *	≤ 10 ppb
Na (Sodium) *	≤ 100 ppb
K (Potassium) *	≤ 5 ppb
Every other single metal (ICP-MS) *	≤ 5 ppb
Gradient Grade	
at 220 nm	≤ 2.0 mAU
at 235 nm	≤ 1.0 mAU
Fluorescence	
as quinine at 254 nm	≤ 1 ppb
as quinine at 365 nm	≤ 0.5 ppb
Transmission	
at 210 nm	≥ 35 %
at 220 nm	≥ 60 %
at 230 nm	≥ 75 %
from 260 nm	≥ 98 %

NEW
New enhanced specificationSuitability for LC-MS
(tested with ion trap MS); Intensity of single background mass peak based on reserpine:Mode: ESI 200 μ l pos | APCI 200 μ l pos ≤ 2 ppbMode: ESI 200 μ l neg | APCI 200 μ l neg ≤ 20 ppbFiltered by 0.2 μ m stainless steel filter | Suitable for PAH-analysis | Suitable for UPLC | UHPLC | Ultra Fast HPLC-instruments | * = enhanced specifications

*LiChrosolv® Acetonitrile hypergrade
for LC-MS suitability
in 1 and 2.5 l special treated amber glass bottles.*



Detailed information

Water for chromatography | NEW: Now also suitable for LC-MS | UPLC | UHPLC

Water for chromatography [Cat. No. 115333] LC-MS and UPLC UHPLC suitability		Spec. values	Spec. values
Residue on evaporation		≤ 5 mg/l	Spec. conductance at 25°C (at the time of manufacturing) ≤ 1 μS/cm
TOC (at the time of manufacturing)	NEW	≤ 30 ppb	Colony count ≤ 25 CFU/g
Al (Aluminum)	NEW	≤ 10 ppb	Fluorescence
Ca (Calcium)	NEW	≤ 100 ppb	as quinine at 254 nm ≤ 1.0 ppb
Fe (Iron)	NEW	≤ 5 ppb	as quinine at 365 nm ≤ 0.5 ppb
Mg (Magnesium)	NEW	≤ 20 ppb	Gradient grade
Na (Sodium)	NEW	≤ 200 ppb	at 210 nm * ≤ 3.0 mAU
K (Potassium)	NEW	≤ 10 ppb	at 254 nm * ≤ 0.5 mAU
Every other single metal (ICP-MS)	NEW	≤ 5 ppb	Gradient grade (basic absorption at 210 nm) ≤ 20 mAU
Anions (Ion chromatography):			Suitability for LC-MS
Chloride	NEW	≤ 10 ppb	(tested with ion trap MS); Intensity of single background mass peak based on reserpine:
Sulfate	NEW	≤ 10 ppb	Mode: ESI 200 μl pos APCI 200 μl pos ≤ 1 ppb
Nitrate	NEW	≤ 10 ppb	Mode: ESI 200 μl neg APCI 200 μl neg ≤ 20 ppb
Phosphate	NEW	≤ 10 ppb	

Filtered by 0.2 μm stainless steel filter | Suitable for Ultra Fast HPLC-instruments | Suitable for Q-TOF LC-MS | * = enhanced specifications

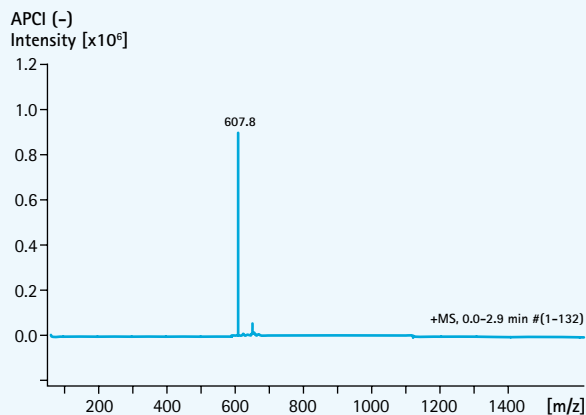
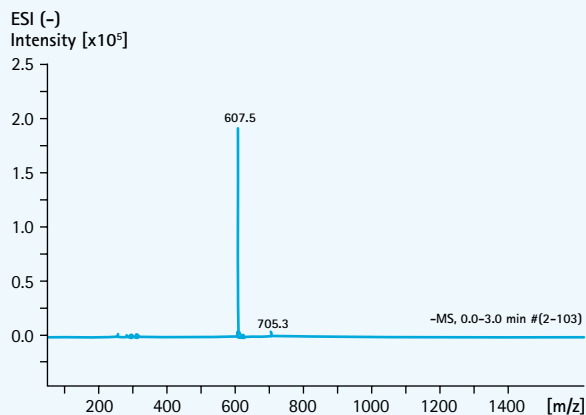
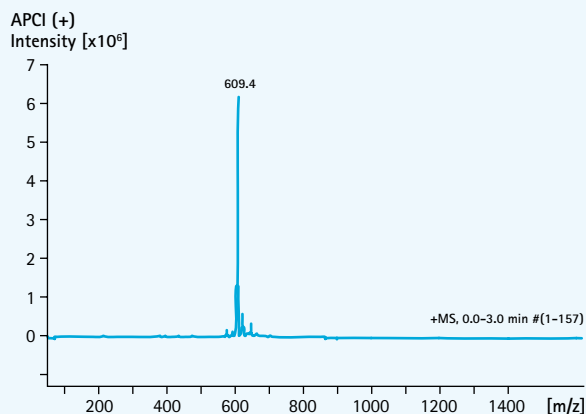
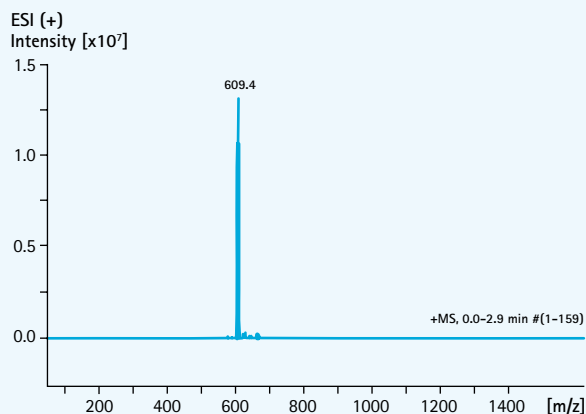


Fig. 5 Mass spectrum of LiChrosolv® Water (115333). Intensity of single background mass peak based on reserpine standard in ESI (+) and APCI (+) mode; ESI (-) and APCI (-) mode.



Detailed information

LiChrosolv® | Solvents for chromatography

Elutropic series	Total polarity index acc. to Snyder ⁽¹⁾	Molar mass [g/mol]	Refractive index [n 20°/D]	Boiling point [°C]	Vapor pressure [hPa] 20°C	Dynamic viscosity		Dielectric constant [DK] 20 or 25°C	Dipole moment acc. to Snyder
						[mPa · s] 22°C	40°C		
n-Heptane	–	100.21	1,388	98.4	48	0.40	0.33	1.9	0
n-Hexane	0.0	86.18	1,375	68.9	160	0.31	0.26	1.9	0
Cyclohexane	0.0	84.16	1,427	80.7	104	0.94	0.71	2.0	0
Isohexane	0.0	86.18	1,376	55 – 62	160 – 190	0.32 (20°C)	0.27	2.0	0
Isooctane	0.4	114.23	1,392	99.2	51	0.51	0.50	1.9	0
Toluene	2.3	92.14	1,496	110.6	29	0.58	0.47	2.4	0.36
tert-Butyl methyl ether	2.9	88.15	1,369	55	268	0.36 (20°C)	–	–	–
Benzene	3.0	78.12	1,501	80.0	101	0.65 (20°C)	–	2.28	0
1-Chlorobutane	–	92.57	1,402	78	110	0.47 (20°C)	–	7.15	1.74
Chloroform	3.4	119.38	1,446	61.7	210	0.56	0.47	4.8	1.01
Dichloromethane	3.4	84.93	1,424	40.0	453	0.43	0.36	9.1	1.60
1,2-Dichloroethane	3.7	98.97	1,445	83.4	87	0.80	0.65	10.6	1.75
1-Butanol	3.9	74.12	1,399	117.2	67	2.95	1.78	17.8	1.66
Tetrahydrofuran	4.2	72.11	1,405	66.0	200	0.47	0.38	7.4	1.63
2-Propanol	4.3	60.10	1,378	82.4	43	2.27	1.35	18.3	1.66
Ethylacetate	4.3	88.10	1,372	77.1	97	0.44	0.36	6.0	1.78
1,4-Dioxane	4.8	88.11	1,422	101.0	41	1.21	0.92	2.2	0.40
Ethanol	5.2	46.07	1,361	78.5	59	1.20	0.83	24.3	1.70
Acetone	5.4	58.08	1,359	56.2	233	0.32	0.27	20.7	2.88
Acetonitrile	6.2	41.05	1,344	81.6	97	0.39	–	37.5	3.92
Methanol	6.6	32.04	1,329	65.0	128	0.52	0.45	32.6	1.70
Water	9.0	18.01	1,333	100.0	23	0.95	0.65	80.2	1.85

LD = median lethal dose | LC = median lethal concentration | No responsibility is taken for the correctness of the details provided.

(1) L.R. Snyder, J.J. Kirkland; Introduction to Modern Liquid Chromatography, John Wiley & Sons, Inc., New York, (1979)

(2) Detailed solvents tables acc. to H. Halpaap can be found in: Einführung in HDPE, ed. R.E. Kaiser, (1979); HPTLC, ed. A. Zlatkis, R.E. Kaiser Elsevier and IFC (1977)

(3) Detailed information: Material Safety Data Sheets (MSDS) provided by EMD Millipore

ϵ° against Al_2O_3 acc. to Snyder ⁽¹⁾	Flow coefficient ⁽²⁾ x [mm ² /s] DC-(silica gel 60 pre-coated plate) 22°C			UV cut-off [nm]	Acute orale toxicity ⁽³⁾ LD ₅₀ rat [mg/kg]	Acute inhalation toxicity ⁽³⁾ LC ₅₀ rat (4 h) [mg/l]	Acute dermal toxicity ⁽³⁾ LD ₅₀ rabbit [mg/kg]	Cat. No.
	50 mm	70 mm	100 mm					
0.01	9.2	10.6	11.4	200	> 2,000	103 g/m ³	3,400	104390
0.01	12.5	13.9	14.6	195	25,000	171.6	> 2,000	104391
0.04	5.4	6.3	6.7	200	> 5,000	14	> 2,000	102827
0.09	12.5	13.9	14.6	195	> 2,000	> 5	> 2,000	104335
0.01	7.9	8.3	8.7	215	> 2,500	37.5	-	104717
0.29	8.3	9.3	11.0	284	636	28.1	12,124	108327
0.2	-	-	-	210	> 2,000	85	> 2,000	101845
0.32	-	-	-	280	930	44	> 8,260	101768
0.26	-	-	-	220	2,200	> 8,000	-	101692
0.40	9.0	10.5	11.6	245	695	47.7	-	102444
0.42	10.1	11.8	13.2	232	1,600	88,000 mg/m ³ (30 min)	> 2,000 (LD ₅₀ rat)	106044
0.44	7.6	8.4	8.9	230	670	7.2	2,800	113713
0.7	-	-	-	265	790	> 18	3,400	101988
0.57	10.9	11.9	12.6	212	1,650	53.9	-	108101
0.82	2.1	2.3	2.5	205	5,045	46.5	12,800	101040
0.59	9.2	10.9	12.1	256	5,620	5.86 (8 h)	> 18,000	100868
0.56	5.2	6.0	6.5	215	5,200	48.5 - 54.3	7,600	103132
0.88	3.4	3.9	4.2	210	6,200	95.6	-	111727
0.56	12.7	14.7	16.2	330	5,800	76	20,000	100020
0.65	12.6	14.0	15.4	190	2,730 - 3,800	27.3	988	100030
0.95	5.6	6.5	7.1	205	5,628	85.26	-	106007
-	5.1	5.7	5.8	-	-	-	-	115333

LiChrosolv® Acetonitrile gradient grade
for liquid chromatography in 1, 2.5 and 4 l glass bottles.



Spectroscopy

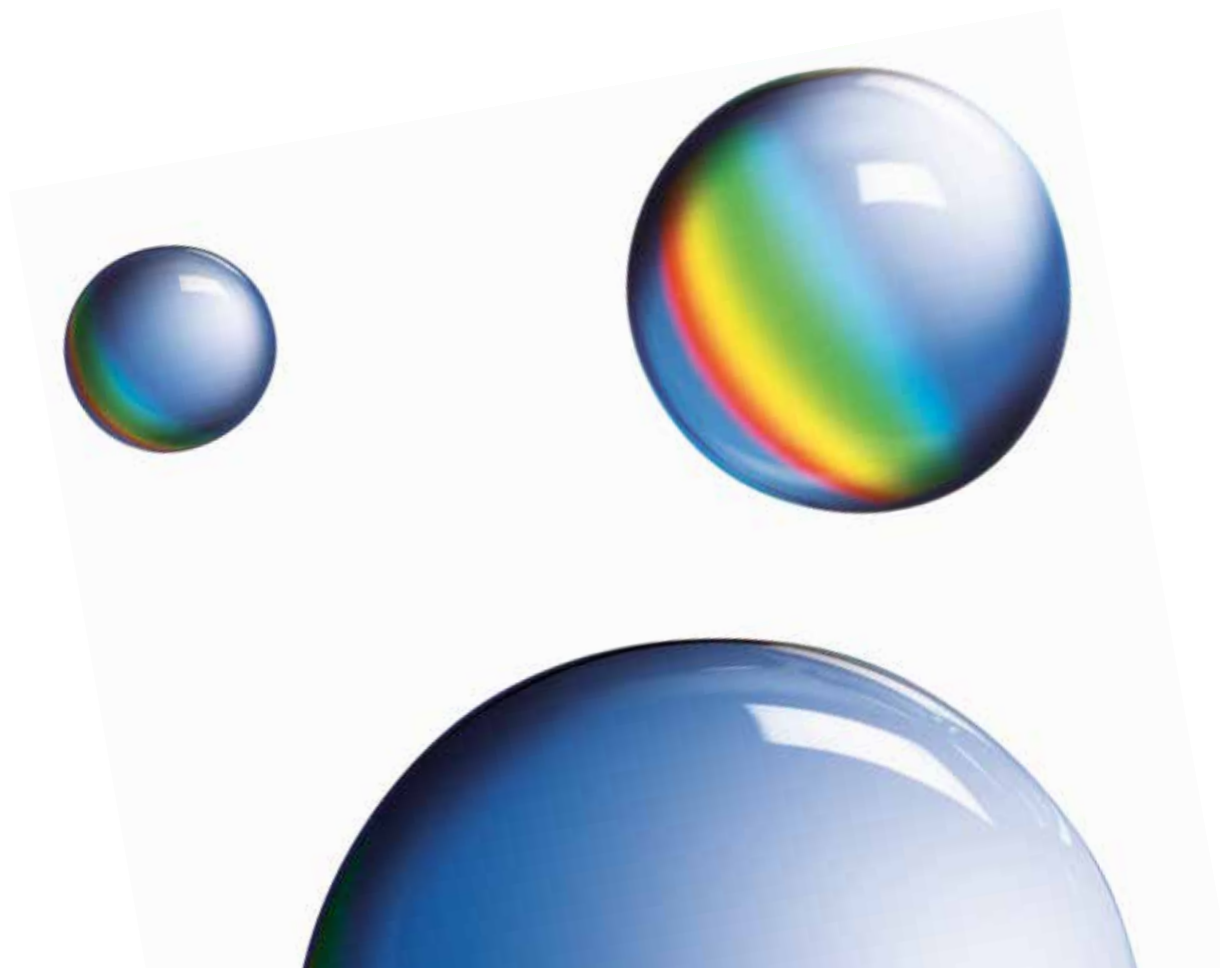
Uvasol®

UV/VIS and infrared spectroscopy are reliable and accurate methods used in modern analytical laboratories. Their versatility makes them indispensable for numerous analytical problems, and the wide variety of sample types reflects their value as an analytical tool.

Two important applications for spectroscopy are the identification of unknown substances, and the determination of concentrations of known substances. In both cases, accurate analytic results depend on the use of very pure solvents for sample preparation.

EMD Millipore **Uvasol®** solvents are specially designed for spectroscopy and other applications that demand solvents of the highest spectral purity. To ensure consistent product quality, **Uvasol®** solvents are made from premium quality raw materials, and are subjected to stringent purification procedures. The refinement process permits higher levels of security in applications, and prevents misinterpretation of analytical results caused by traces of UV, IR and fluorescence contamination.





Your benefits

- **Accurate, reliable analytical results and minimal risk of misinterpretation** due to highest UV transmittance / lowest UV absorbance as well as highest chemical purity
- **Suitable for Ph Eur and USP methods** due to specified UV transmittance / absorbance in accordance with Reag. Ph Eur and ACS
- **Time and cost savings (no need for repeat analysis)** due to highest batch-to-batch consistency
- **Application security** due to application-tested quality

Spectroscopy

Uvasol®

Best chemical purity

The quality of Uvasol® solvents is documented by e.g. minimal inherent fluorescence. This can be demonstrated by the comparison of the fluorescence spectrum of Isooctane Uvasol® (Fig. 2) and the fluorescence spectrum of Isooctane Uvasol® including a Quinine standard of 1 ppb (Fig. 1). This application points out that the fluorescence of Uvasol® is free of any impurities.

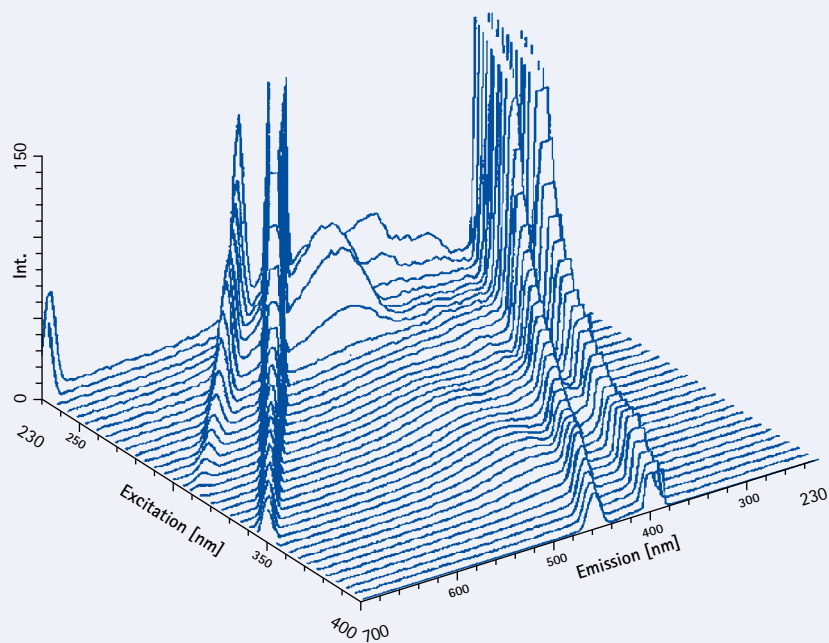


Fig. 1 Isooctane Uvasol®, fluorescence spectrum, Quinine standard, 1 ppb.

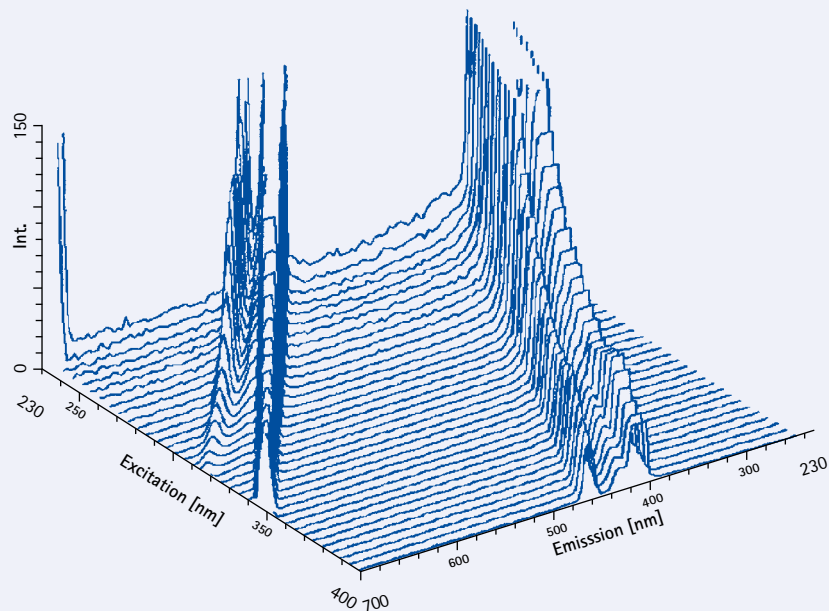


Fig. 2 Isooctane Uvasol®, fluorescence spectrum, batch I208518.

Uvasol® for UV- and infrared spectroscopy – best optical purity

Uvasol® solvents have the highest and widest specification of the UV range in the market. In all specifications the minimum transmittance for 5 typical wavelengths are specified. Figure 4 shows the high UV-transmittance of Isooctane Uvasol. It has a very high transmittance even in low wavelengths areas, resulting in accurate and reliable analytical results. Figure 3 shows the low infrared absorbance of Isooctane Uvasol® in the relevant wavenumbers > 4,500 for this application. The lower the absorbance is, the more precise are your analytical results. Costly repeat analysis or even the loss of valuable samples can thus be prevented.

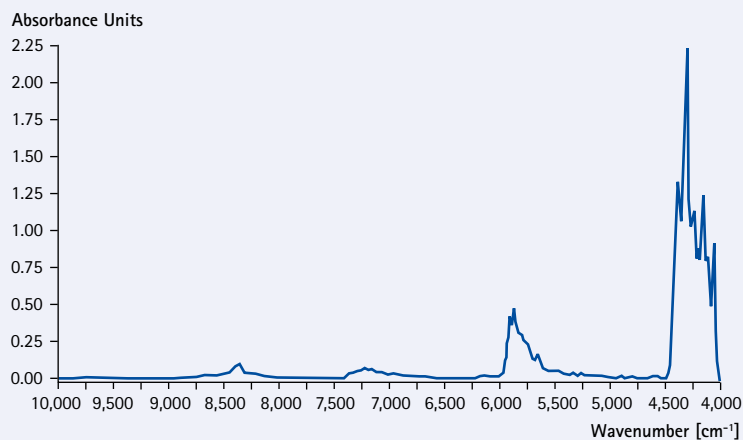


Fig. 3 Isooctane Uvasol®, IR spectrum, batch I208518.

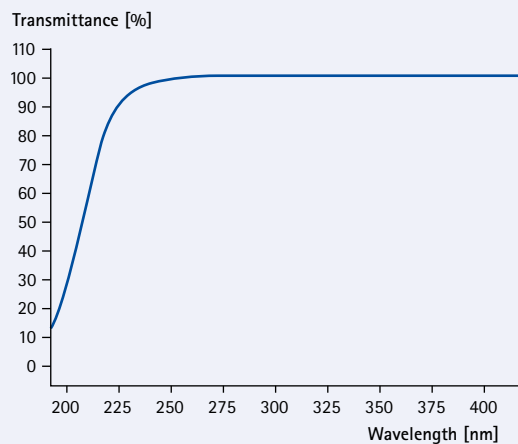


Fig. 4 Isooctane Uvasol®, UV spectrum, batch I208518.

Potassium bromide Uvasol® for infrared spectroscopy

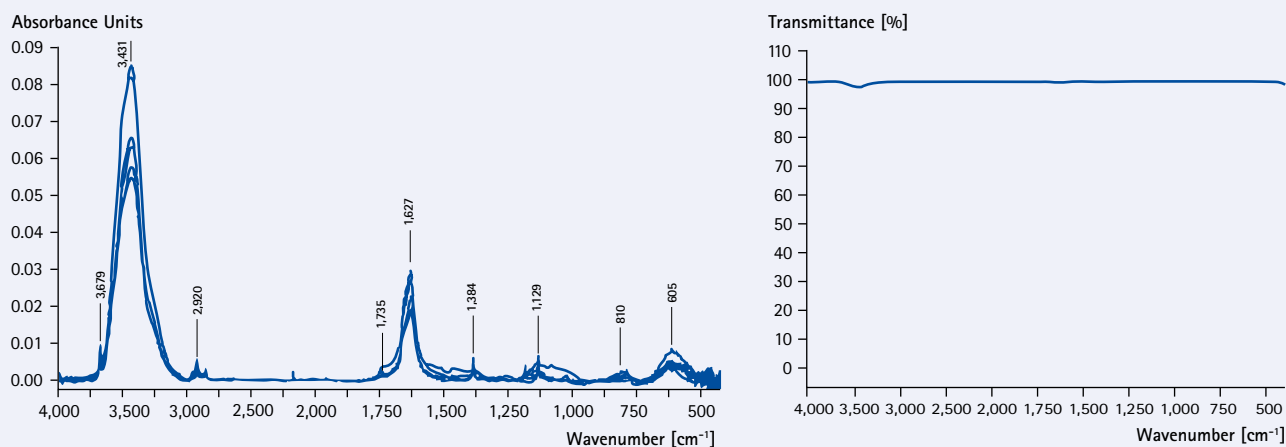


Fig. 5 FT-IR absorbance spectra of representative batches of Uvasol® potassium bromide at 5 mm path length and transmittance spectra (blank) at 0.7 mm path length (32 scans, 2 cm⁻¹ resolution, DTGS detektor, Bruker IFS-48).

The technique of potassium bromide pelletising for infrared spectroscopy has a high quality demand of the used potassium bromide. Potassium bromide Uvasol®, prepared by a special method of purification and subsequent treatment, is adjusted to a mean particle size of 150 µm. This is sufficient for the preparation of perfectly good pellets without the need for further pre-treatment and the associated risk of contamination. It also retains its powdery form over a period of years if stored in an air-tight condition. Its physical suitability for pelletising is checked by a special application test and its chemical purity established by full spectrum FT-IR analysis. The intensities for the OH- and CH-bands in particular are indicated as these occur frequently in critical applications (see Fig. 5).

Ordering information

Uvasol® A-S

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Fluorescence max. [ppb] (254 nm) (365 nm)	UV-absorbance at [nm]	Content / Packaging	Ord. No.							
A Acetone	99.9	0.0002	0.05	–	1.0	330 (0.82), 335 (0.22), 340 (0.07), 345 (0.02), 350 (0.004)	500 ml GL 1.00022.0500							
						2.5 l GL 1.00022.2500								
Acetonitrile	99.9	0.0002	0.01	0.5	0.5	190 (0.70), 195 (0.22), 200 (0.05), 215 (0.02), 230 (0.01)	1 l GL 1.00016.1000							
						2.5 l GL 1.00016.2500								
B tert-Butyl methyl ether	99.9	0.0002	0.01	1.0	1.0	215 (0.40), 235 (0.26), 240 (0.22), 255 (0.07), 260 (0.05), 280 (0.01)	1 l GL 1.01984.1000							
C Carbon disulfide	99.9	0.001	0.01	–	–	–	1 l GL 1.02210.1000							
							Chloroform, stabilized	99.0	0.0002	0.01	1.0	1.0	245 (0.82), 250 (0.30), 255 (0.22), 260 (0.07), 270 (0.01)	500 ml GL 1.02447.0500
								2.5 l GL 1.02447.2500						
Cyclohexane	99.9	0.0002	0.005	1.0	1.0	208 (0.70), 220 (0.26), 230 (0.10), 240 (0.05), 250 (0.01)	500 ml GL 1.02822.0500							
D Dichloro-methane, stabilized	99.9	0.0002	0.01	1.0	1.0	235 (0.52), 240 (0.16), 245 (0.07), 250 (0.02), 255 (0.01)	500 ml GL 1.06048.0500							
							2.5 l GL 1.06048.2500							
Diethyl ether, stabilized	98.0	0.0003	0.03	1.0	1.0	220 (0.52), 235 (0.26), 250 (0.10), 270 (0.05), 300 (0.01)	1 l GL 1.00930.1000							
							N,N-Dimethyl-formamide	99.9	0.0002	0.02	–	1.0	270 (0.60), 275 (0.22), 290 (0.10), 300 (0.05), 330 (0.01)	500 ml GL 1.02937.0500
													2.5 l GL 1.02937.2500	
Dimethyl sulfoxide	99.8	0.0004	0.05	–	7.0	270 (0.46), 280 (0.30), 310 (0.10), 330 (0.05), 350 (0.013)	500 ml GL 1.02950.0500							
E Ethanol	99.9	0.0002	0.05	1.0	1.0	207 (0.70), 220 (0.26), 235 (0.10), 240 (0.07), 245 (0.05), 260 (0.01)	500 ml GL 1.00980.0500							
							2.5 l GL 1.00980.2500							
Ethyl acetate	99.9	0.0002	0.01	2.0	1.0	255 (0.70), 260 (0.13) 263 (0.10), 265 (0.05), 270 (0.01)	500 ml GL 1.00863.0500							
							2.5 l GL 1.00863.2500							
H n-Heptane	99.3	0.0002	0.005	1.0	1.0	200 (0.70), 210 (0.26), 220 (0.10), 228 (0.05), 245 (0.01)	500 ml GL 1.04366.0500							
							2.5 l GL 1.04366.2500							
n-Hexane	99.0	0.0002	0.005	1.0	1.0	195 (1.0), 210 (0.22), 217 (0.10), 225 (0.05), 245 (0.01)	500 ml GL 1.04372.0500							
							2.5 l GL 1.04372.2500							
I Isooctane	99.8	0.0002	0.005	1.0	1.0	205 (0.52), 215 (0.19), 220 (0.10), 225 (0.07), 235 (0.05), 245 (0.01), 255 (0.004)	500 ml GL 1.04718.0500							
							2.5 l GL 1.04718.2500							
M Methanol	99.9	0.0002	0.01	1.0	1.0	205 (1.00), 210 (0.52), 220 (0.22), 230 (0.10), 240 (0.05), 250 (0.02), 260 (0.01)	500 ml GL 1.06002.0500							
							2-Methyl-butane	99.8	0.0005	0.005	1.0	1.0	190 (0.30), 200 (0.19), 210 (0.07), 215 (0.05), 240 (0.01)	1 l GL 1.06056.1000
													2.5 l GL 1.06002.2500	
P n-Pentane	99.5	0.0002	0.005	1.0	1.0	200 (0.30), 210 (0.16), 215 (0.07), 225 (0.02), 240 (0.01)	1 l GL 1.07179.1000							
							Potassium bromide	–	–	–	–	–	100 g GL 1.04907.0100	
													500 g GL 1.04907.0500	
							2-Propanol	99.9	0.0002	0.05	1.0	1.0	210 (0.52), 220 (0.19), 230 (0.10), 240 (0.05), 250 (0.02), 260 (0.01)	1 l GL 1.00993.1000
							2.5 l GL 1.00993.2500							

All solvents are filtered through 0.2 µm. | Color: max. 10 Hazen | Acidity: max. 0.0002 meq/g | Alkalinity: max. 0.0002 meq/g | GL = glass bottle

Ordering information

Uvasol® T-Z

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Fluorescence max. [ppb] (254 nm) (365 nm)	UV-transmittance at [nm]	Content / Packaging	Ord. No.
T Tetrachloro- ethylene	99.9	0.0005	0.01	–	1.0	290 (0.70), 295 (0.19), 300 (0.10), 305 (0.07)	500 ml GL 1.00965.0500
						2.5 l GL 1.00965.2500	
Tetrahydro- furan	99.9	0.0002	0.01	1.0	1.0	215 (0.52), 245 (0.30), 265 (0.10), 275 (0.05), 310 (0.01)	500 ml GL 1.08110.0500
						2.5 l GL 1.08110.2500	
Toluene	99.9	0.0002	0.01	–	1.0	285 (0.82), 290 (0.22), 300 (0.10), 310 (0.05), 335 (0.02), 350 (0.01)	1 l GL 1.08331.1000
Trifluoro acetic acid	99.8	0.005	0.1	–	–	–	25 ml GL 1.08262.0025
							100 ml GL 1.08262.0100
							1 l GL 1.08262.1000
							2.5 l GL 1.08262.2500

All solvents are filtered through 0.2 µm. | Color: max. 10 Hazen | Acidity: max. 0.0002 meq/g | Alkalinity: max. 0.0002 meq/g | GL = glass bottle

Gas chromatography

SupraSolv®

SupraSolv® solvents are ideal for all gas chromatography laboratory applications, such as highly sensitive pesticide and dioxin analysis. To ensure cutting-edge performance, we manufacture these solvents within special distillation cuts using the latest production processes. Only highly enriched solvents are used for the suitability test with various detection methods.

EMD Millipore is committed to developing solvents with the highest possible degree of purity. This is why we tailor our solvent specifications to your individual areas of application.





Security and reliability for gas chromatography

SupraSolv® provides the analyst with the necessary security and reliability for today's applications, especially when monitoring and determining environmentally relevant substances in soil and water samples, e.g. polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), polychlorinated dibenzodioxins (PCDD), pesticides, but also highly volatile chlorinated hydrocarbons present in ppb trace amounts only.

SupraSolv® solvents for headspace gas chromatography

SupraSolv® solvents for headspace gas chromatography are developed particularly for the analysis of residual solvents in drug substances, excipients, and drug products according to Ph Eur and USP. Their high purity is provided by special designed production processes – for correct, reliable and reproducible results of analysis.

Specifications at a glance	GC-ECD pesticide analysis 1,2,4-Trichlorobenzene to Decachlorobiphenyle (Lindane standard)	GC-FID n-Undecane to n-Tetracontane (n-Tetradecane standard)	GC-MS n-Undecane to n-Tetracontane; scan range 30 – 600 amu (n-Tetradecane standard)
SupraSolv® solvents for gas chromatography ECD and FID	max. 3 pg/ml	max. 3 ng/ml	–
SupraSolv® solvents for gas chromatography MS	–	–	max. 3 ng/ml

Your benefits

- Accurate, reliable and reproducible results due to minimal signal-to-noise ratio
- Time and cost savings due to the best possible batch consistency, thus avoiding analysis repetition
- The most comprehensive application area due to the largest retention time range

Gas chromatography SupraSolv®

SupraSolv® solvents from EMD Millipore are designed specially for sample preparation in gas chromatography. No matter if you use ECD, FID or MS – our comprehensive portfolio of GC solvents offers a dedicated product quality for your specific application and detection method. Our SupraSolv® ECD and FID quality is specially developed and tested for ECD (Electron Capture Detector) and FID (Flame Ionization Detector). SupraSolv® MS is dedicated for use in gas chromatography coupled with mass spectrometric detection. Both SupraSolv® qualities are carefully tested for these specific detectors, and show a minimal signal-to-noise ratio in a specified retention time range. Fig. 1 shows a GC-ECD reference chromatogram from Trichlorobenzene to Decachlorobiphenyle (internal standard Lindane = 3 pg/ml) compared to a typical GC-ECD batch chromatogram of n-Hexane SupraSolv® EDC and FID (104371). SupraSolv® shows minimal interference signals in the relevant retention time; thus results of analysis are reliable, reproducible and accurate.

— Reference chromatogram
— Batch chromatogram

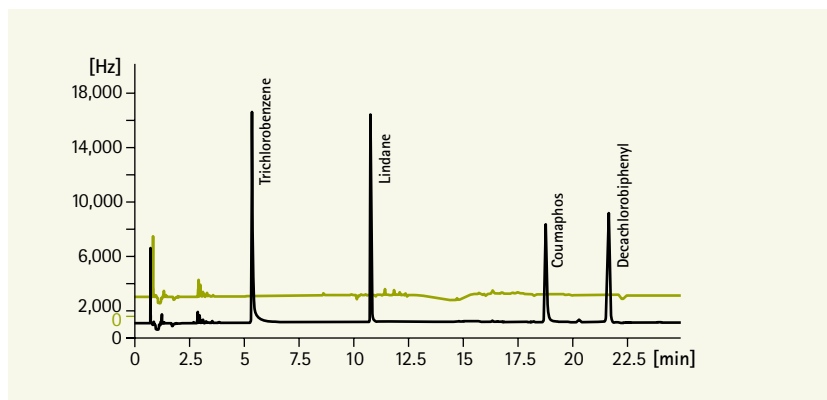


Fig. 1 GC-ECD, batch and reference chromatogram (Lindane = 3 pg/ml), n-Hexane SupraSolv® EDC and FID (104371).

EPA Method 508: Determination of chlorinated pesticides in water, standard chromatogram

Classical pesticide analysis according EPA method 508 is employed for the qualitative and quantitative determination of pesticides in food and environmental samples. The method uses GC-ECD. The specified ECD retention time range of SupraSolv® ECD and FID covers all analytes of interest for this application, resulting in best application security.

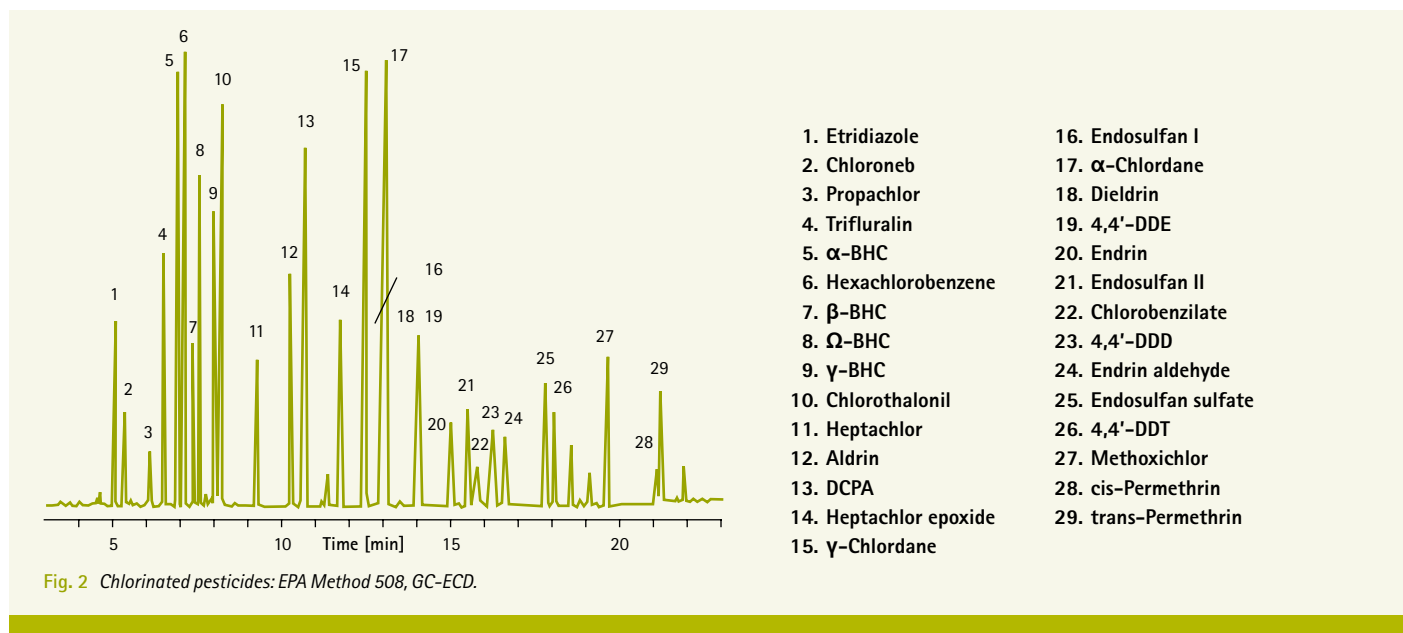


Fig. 2 Chlorinated pesticides: EPA Method 508, GC-ECD.

Gas chromatography

SupraSolv® headspace

SupraSolv® solvents for the analysis of residual solvents according to Ph Eur and USP

Headspace gas chromatography is a precise, well-accepted method for the analysis of residual solvents in drug substances and products. It is recommended as the preferred method of analysis for this application by the European Pharmacopoeia (Chapter 2.4.24) and the United States Pharmacopoeia (Chapter 467).

The ICH (International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use) Guideline Q3C "Impurities: Guideline for Residual Solvents" divides all residual solvents into three classes according to their harmfulness for human health, and defines permissible maximum concentrations in actives, excipients and drug products. Both the European and the United States Pharmacopoeia refer to this guideline. Accurate analysis with headspace gas chromatography demands the use of very pure solvents with extremely low concentrations of the defined residual solvents.

By specifying for SupraSolv® headspace the concentrations of all residual solvents of the three defined classes in the ICH guideline, EMD Millipore offers a precise purity window for this application – for unique, application-orientated quality. Since we also perform a headspace application test on each batch, every delivery gives you the reliability, accuracy and analytical safety you need.

Extract of specification

ICH = International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use.

Every residual solvent of **class 1** acc. ICH $\leq 1 \mu\text{g/g}$
 Every residual solvent of **class 2** acc. ICH $\leq 10 \mu\text{g/g}$
 Every residual solvent of **class 3** acc. ICH $\leq 50 \mu\text{g/g}$

Fig. 3 Chromatogram of DMSO Headspace SupraSolv® 101900 without addition compared to a chromatogram of DMSO Headspace SupraSolv® 101900 with 0.8 ppm benzene.

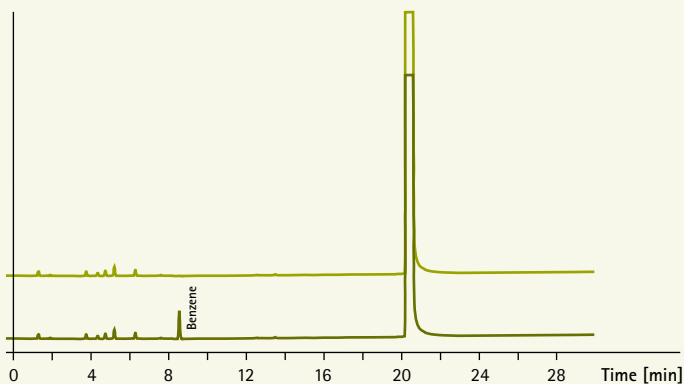
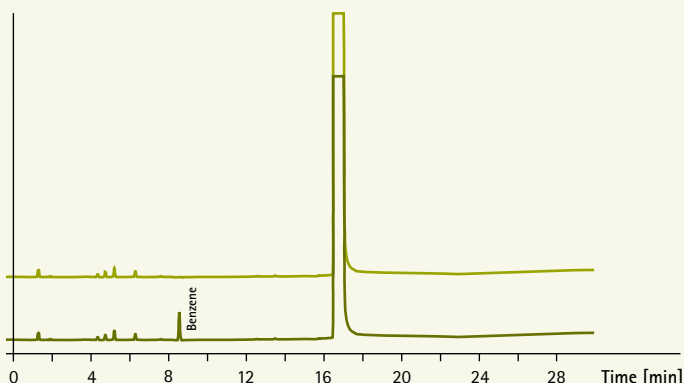


Fig. 4 Chromatogram of DMF Headspace SupraSolv® 100202 without addition compared to a chromatogram of DMF Headspace SupraSolv® 100202 with 0.8 ppm benzene.



Ordering information

SupraSolv® solvents for gas chromatography ECD and FID

Product	Purity (GC) min. [%]	Evap. residue max. [mg/l]	Water max. [%]	Color max. [Hazen]	Content / Packaging	Ord. No.
A Acetone	99.8	3.0	0.05	10	1 l GL	1.00012.1000
					2.5 l GL	1.00012.2500
					4 l GL	1.00012.4000
Acetonitrile	99.8	3.0	0.05	10	1 l GL	1.00017.1000
					2.5 l GL	1.00017.2500
					4 l GL	1.00017.4000
B tert-Butyl methyl ether	99.8	3.0	0.02	10	1 l GL	1.01995.1000
					2.5 l GL	1.01995.2500
C Chloroform, stabilized	99.8	5.0	0.01	10	1 l GL	1.02432.1000
					2.5 l GL	1.02432.2500
Cyclohexane	99.8	3.0	0.01	10	1 l GL	1.02817.1000
					2.5 l GL	1.02817.2500
					4 l GL	1.02817.4000
D Dichloromethane, stabilized	99.8	5.0	0.01	10	1 l GL	1.06054.1000
					2.5 l GL	1.06054.2500
					4 l GL	1.06054.4000
Diethyl ether, stabilized	98.0	3.0	0.05	10	1 l GL	1.00931.1000
					2.5 l GL	1.00931.2500
N,N-Dimethylformamide	99.8	3.0	0.05	10	1 l GL	1.10983.1000
					2.5 l GL	1.10983.2500
E Ethanol	99.8	3.0	0.05	10	1 l GL	1.02371.1000
					2.5 l GL	1.02371.2500
					4 l GL	1.02371.4000
Ethyl acetate	99.8	3.0	0.02	10	1 l GL	1.10972.1000
					2.5 l GL	1.10972.2500
					4 l GL	1.10972.4000
H n-Heptane	99.8	3.0	0.02	10	1 l GL	1.04360.1000
					2.5 l GL	1.04360.2500
n-Hexane	98.0*	3.0	0.01	10	1 l GL	1.04371.1000
					2.5 l GL	1.04371.2500
					4 l GL	1.04371.4000
I Isohexane	99.8	3.0	0.01	10	2.5 l GL	1.04340.2500
Isooctane	99.8	3.0	0.01	10	1 l GL	1.15440.1000
					2.5 l GL	1.15440.2500
M Methanol	99.8	3.0	0.1	10	1 l GL	1.06011.1000
					2.5 l GL	1.06011.2500
					4 l GL	1.06011.4000
P n-Pentane	99.8	3.0	0.02	10	1 l GL	1.00882.1000
					2.5 l GL	1.00882.2500
					4 l GL	1.00882.4000
Petroleum benzine (40 – 60°C)	–	3.0	0.01	10	1 l GL	1.01772.1000
					2.5 l GL	1.01772.2500
					4 l GL	1.01772.4000
2-Propanol	99.8	3.0	0.1	10	1 l GL	1.00998.1000
					2.5 l GL	1.00998.2500
T Toluene	99.8	3.0	0.03	10	1 l GL	1.08389.1000
					2.5 l GL	1.08389.2500
					4 l GL	1.08389.4000

GL = glass bottle | * = sum of hexane isomers + methyl cyclopentane (GC ≥ 99.8 % | GC-ECD (retention range 1,2,4-Trichlorobenzene to Decachlorobiphenyle individual signals (Lindane standard)) ≤ 3 pg/ml | GC-FID (retention range n-Undecane to n-Tetracontane individual signals (n-Tetradecane standard)) ≤ 3 ng/ml




Ordering information

SupraSolv[®] solvents for gas chromatography MS

Product	Purity (GC) min. [%]	Evap. residue max. [mg/l]	Water max. [%]	Color max. [Hazen]	Content / Packaging	Ord. No.
A Acetone	99.8	3.0	0.05	10	1 GL	1.00658.1000
					2.5 GL	1.00658.2500
Acetonitrile	99.8	3.0	0.05	10	1 GL	1.00665.1000
					2.5 GL	1.00665.2500
C Cyclohexane	99.8	3.0	0.01	10	1 GL	1.00667.1000
					2.5 GL	1.00667.2500
D Dichloromethane, stabilized	99.8	5.0	0.01	10	1 GL	1.00668.1000
					2.5 GL	1.00668.2500
E Ethyl acetate	99.8	3.0	0.02	10	1 GL	1.00789.1000
					2.5 GL	1.00789.2500
H n-Hexane	98.0 *	3.0	0.01	10	1 GL	1.00795.1000
					2.5 GL	1.00795.2500
M Methanol	99.8	3.0	0.1	10	1 GL	1.00837.1000
					2.5 GL	1.00837.2500
T Toluene	99.8	3.0	0.03	10	1 GL	1.00849.1000
					2.5 GL	1.00849.2500

GL = glass bottle | * = sum of hexane isomers + methyl cyclopentane (GC) ≥ 99.8 % | GC-MS (retention range n-Undecane to n-Tetracontane; scanning area 30 – 600 amu individual signals (n-Tetradecane standard)) ≤ 3 ng/ml

SupraSolv[®] headspace For the analysis of residual solvents according to ICH, Ph Eur and USP

Product	Purity (GC) min. [%]	Evap. residue max. [mg/l]	Water max. [%]	Color max. [Hazen]	Content / Packaging	Ord. No.
 D N,N-Dimethylacetamide	99.8	3.0	0.05	10	500 ml GL	1.00399.0500
					1 GL	1.00399.1000
N,N-Dimethylformamide	99.8	3.0	0.05	10	500 ml GL	1.00202.0500
					500 ml SB	1.00202.0501
					1 GL	1.00202.1000
					2.5 GL	1.00202.2500
Dimethyl sulfoxide	99.8	3.0	0.05	10	500 ml GL	1.01900.0500
					500 ml SB	1.01900.0501
					1 GL	1.01900.1000
					2.5 GL	1.01900.2500
 M 1-Methyl-2-pyrrolidone	99.8	3.0	0.05	10	500 ml GL	1.02497.0500
					1 GL	1.02497.1000
					2.5 GL	1.02497.2500
 W Water	–	5.0	–	–	1 GL	1.00577.1000
					2.5 GL	1.00577.2500

GL = glass bottle | SB = septum seal bottle ► SeccoSept[®] septum seal bottle see page 58 | Every residual solvent of class 1 acc. ICH ≤ 1 µg/g | Every residual solvent of class 2 acc. ICH ≤ 10 µg/g | Every residual solvent of class 3 acc. ICH ≤ 50 µg/g

NMR Nuclear magnetic resonance spectroscopy

MagniSolv™ | Deuterated solvents

Deuterated solvents are required wherever chemical research is carried out. And when it comes to NMR spectroscopy – the most important method in the structural analysis of organic molecules – they are indispensable.

NMR is a non-destructive, information-rich analytical technique which helps researchers to understand molecular structure and dynamics. NMR experiments provide information on connectivity – i.e., which atoms are attached to each other in a molecule, their spatial orientation, and how molecules move in their natural environment. This kind of structural information is particularly important in proteomics / genomics and drug discovery applications, where scientists desire a deeper understanding of protein target molecules and their spatial relationships with synthetic drug candidates.





Wide range of highest quality

A wide range of **MagniSolv™** deuterated solvents with extremely low residual water, excellent chemical purity, and the highest isotopic enrichment available can satisfy the most demanding requirements of researchers. In this solvent range the "classical" standard products and "exotic" specialities are represented.

Reliability

Depending on application and sensitivity of the NMR spectrometer EMD Millipore offers solvents with deuteration degrees between 98 % and 99.96 %. In case of all the water soluble deuterated standard products, water content is specified according to both Karl Fischer and NMR. This is a unique benefit for our customers and underpins the position of EMD Millipore as a supplier of chemicals of the highest quality and reliability.

Optimized packaging

EMD Millipore provides a wide range of different packaging types (bottles, practical ampoules and septum bottles) and packaging sizes. Concerning the septum bottles we have the broadest range of deuterated solvents in this customer friendly packaging material. Here EMD Millipore's vast experience in the optimization of packaging is a unique benefit that we can fully utilize. We are also prepared to offer large volumes of **MagniSolv™** deuterated compounds. This also applies to special package sizes and other grades.

Your benefits

NMR spectroscopy

- Reliable results save time and give trust by
 - Excellent chemical purity and highest isotopic enrichment
 - Reliable deuteration degrees
 - Clear and clean baselines
 - Determination of water content in two ways (Karl Fischer and NMR)
- Innovative packaging for long-term storage without quality loss
- Resulting in high reproducibility of the analysis
- Easy, safe and accident-free handling with septum bottles and glass ampoules
- Flexibility through broad packaging variety resulting in less chemical and packaging waste

NMR Nuclear magnetic resonance spectroscopy

MagniSolv™ | Deuterated solvents

Whatever you require! EMD Millipore's deuterated solvents!

We provide a wide range of products in different packaging types and -sizes.



- ▶ Other brochure: Attractive, MagniSolv™ deuterated solvents from EMD Millipore (W 284110)
- ▶ LabTool: NMR chemical shifts (W 284109)

Ordering information

MagniSolv™ | Deuterated solvents A-D

Product	Deuteration degree [%]	H ₂ O+D ₂ O (KF) [%]	H ₂ O (NMR) [%]	Density at 20°C [g/ml]	Quantity / Packaging	Content [g]	Ord. No.
A Acetic acid-D1 99.5 % D	> 99.5	-	-	1.06	25 ml GL	26.50	8.15035.0025
Acetic acid-D4 99.5 %	> 99.5	< 0.05	-	1.12	10 x 0.75 ml GA	8.40	8.15036.0009
					10 ml GA	11.20	8.15036.0010
Acetone-D6 99.9 % D	> 99.9	< 0.03	< 0.02	0.87	10 x 0.5 ml GA	4.35	1.00021.0005
					10 x 0.75 ml GA	6.53	1.00021.0009
					10 ml SB	8.70	1.00021.0010
					25 ml GL	21.75	1.00021.0025
					100 ml GL	87.00	1.00021.0100
Acetone-D6 99.96 % D	> 99.96	< 0.03	< 0.02	0.87	10 x 0.75 ml GA	6.53	1.11969.0009
Acetonitrile-D3 99 % D	> 99	< 0.10	< 0.05	0.84	10 ml SB	8.40	1.02904.0010
Acetonitrile-D3 99.8 % D	> 99.8	< 0.10	< 0.05	0.84	10 ml SB	8.40	1.00220.0010
Acetonitrile-D3 99.96 % D	> 99.96	< 0.02	< 0.01	0.84	1 ml GA	0.84	1.13753.0001
					10 x 0.75 ml GA	6.30	1.13753.0009
Ammonia-D3 26 wt % in D ₂ O	> 99.5	-	-	1.06	10 ml GA	10.60	8.15008.0010
					25 ml GL	26.50	8.15008.0025
B Benzene-D6 99.6 % D	> 99.6	-	< 0.02	0.95	10 x 0.75 ml GA	7.13	1.01789.0009
					10 ml SB	9.50	1.01789.0010
					100 ml GL	95.00	1.01789.0100
Benzene-D6 99.96 % D	> 99.96	-	-	0.95	10 x 0.75 ml GA	7.13	1.01766.0009
					10 ml GA	9.50	1.01766.0010
tert-Butanol (ol-D) 99 % D	> 99	-	-	0.80	25 ml GL	20.00	8.15014.0025
C Chloroform 99.5 % D; 1 vol. % TMS stabilized with silver	> 99.5	-	< 0.02	1.50	25 ml GL	37.50	1.13359.0025
					100 ml GL	150.00	1.13359.0100
Chloroform-D1 99.8 % D not stabilized	> 99.8	-	< 0.01	1.50	25 ml GL	37.50	1.02450.0025
					100 ml GL	150.00	1.02450.0100
					500 ml GL	750.00	1.02450.0500
Chloroform-D1 99.8 % D stabilized with silver	> 99.8	-	< 0.01	1.50	25 ml GL	37.50	1.03420.0025
					100 ml GL	150.00	1.03420.0100
					500 ml GL	750.00	1.03420.0500
Chloroform 99.8 % D; 0.03 % TMS stabilized with silver	> 99.8	-	< 0.01	1.50	25 ml GL	37.50	1.03296.0025
					100 ml GL	150.00	1.03296.0100
					500 ml GL	750.00	1.03296.0500
Chloroform-D1 99.96 % D	> 99.96	-	< 0.005	1.50	10 x 0.75 ml GA	11.25	1.02446.0009
					10 ml GA	15.00	1.02446.0010
25 ml stabilized with silver					25 ml GL	37.50	1.02446.0025
100 ml stabilized with silver					100 ml GL	150.00	1.02446.0100
Cumene (Isopropylbenzene)-D12 99 % D	> 99	-	-	0.95	1 ml GA	0.87	8.15023.0001
Cyclohexane-D12 99.5 % D	> 99.5	< 0.05	< 0.03	0.89	10 x 0.5 ml GA	4.45	8.15024.0005
					10 x 0.75 ml GA	6.68	8.15024.0009
					5 ml GA	4.45	8.15024.0006
D n-Decane-D22 99 % D	> 99	-	-	0.85	1 ml GA	0.85	8.15027.0001
Deuterium chloride 20 wt % in D ₂ O 99.5 % D	> 99.5	-	-	1.19	25 ml GL	29.75	8.15016.0025
Deuterium chloride 20 wt % in D ₂ O 99.95 % D	> 99.95	-	-	1.19	10 ml GA	11.90	8.15017.0010
Deuterium chloride 38 wt % in D ₂ O 99.5 % D	> 99.5	-	-	1.26	10 ml GA	12.60	8.15018.0010
					50 ml GL	63.00	8.15018.0050

GA = glass ampoule | SB = septum bottle | GL = glass bottle

Ordering information

MagniSolv™ | Deuterated solvents D-L

Product	Deuteration degree [%]	H ₂ O+D ₂ O (KF) [%]	H ₂ O (NMR) [%]	Density at 20°C [g/ml]	Quantity / Packaging	Content [g]	Ord. No.
D Deuterium oxide 99.9 % D	> 99.9	-	-	1.11	10 x 0.75 ml GA	8.33	1.13366.0009
					10 ml SB	11.10	1.13366.0010
					25 ml GL	27.75	1.13366.0025
					100 ml GL	111.00	1.13366.0100
					500 ml GL	555.00	1.13366.0500
Deuterium oxide 99.96 % D	> 99.96	-	-	1.11	10 x 0.5 ml GA	5.55	1.03428.0005
					10 x 0.75 ml GA	8.33	1.03428.0009
					10 ml SB	11.10	1.03428.0010
					100 ml GL	111.00	1.03428.0100
1,2-Dichlorobenzene-D4 99 % D	> 99	-	< 0.03	1.34	5 ml GA	6.70	8.15029.0005
Dichloromethane-D2 99.8 % D	> 99.8	-	< 0.01	1.36	10 x 0.75 ml GA	10.20	1.13720.0009
					10 ml GA	13.60	1.13720.0010
Dichloromethane-D2 99.96 % D	> 99.96	-	< 0.005	1.36	10 x 0.5 ml GA	6.80	1.04200.0005
					10 x 0.75 ml GA	10.20	1.04200.0009
					10 ml GA	13.60	1.04200.0010
Diethylether-D10 99 % D	> 99	-	-	0.78	1 ml GA	1.00	8.15031.0001
Dimethylacetamide-D9 99 % D	> 99	-	-	1.03	1 ml GA	1.03	8.15032.0001
Dimethylformamide-D7 99.5 % D	> 99.5	< 0.05	< 0.03	1.05	1 ml GA	1.05	1.11656.0001
					10 x 0.75 ml GA	7.88	1.11656.0009
Dimethylsulfate-D6 99.5 % D	> 99.5	-	-	1.40	5 ml GA	7.00	8.15034.0005
Dimethylsulfoxide-D6 99.8 % D	> 99.8	< 0.03	< 0.02	1.19	10 x 0.5 ml GA	5.95	1.03424.0005
					10 x 0.75 ml GA	8.93	1.03424.0009
					10 ml SB	11.90	1.03424.0010
					10 ml GA	11.90	1.03424.0011
					25 ml GL	29.75	1.03424.0025
					50 ml SB	59.5	1.03424.0050
Dimethylsulfoxide-D6 99.9 % D; 0.1 vol. % TMS	> 99.9	< 0.03	< 0.02	1.19	10 x 0.6 ml GA	7.14	1.03587.0006
					25 ml GL	29.75	1.03587.0025
					25 ml SB	29.75	1.03587.0026
					100 ml GL	119.00	1.03587.0100
Dimethylsulfoxide-D6 99.8 % D; 0.03 vol. % TMS	> 99.8	-	-	1.19	50 ml SB	59.5	1.03591.0050
					100 ml GL	119.00	1.03591.0100
Dimethylsulfoxide-D6 99.9 % D	> 99.9	< 0.03	< 0.02	1.19	10 x 0.75 ml GA	8.93	1.03643.0009
Dimethylsulfoxide-D6 99.96 % D	> 99.96	< 0.02	< 0.01	1.19	10 x 0.5 ml GA	5.95	1.03562.0005
					10 x 0.75 ml GA	8.93	1.03562.0009
					10 ml GA	11.90	1.03562.0010
					25 ml GL	29.75	1.03562.0025
Dimethylsulfoxide-D6 99.96 % D; 0.03 vol. % TMS	> 99.96	< 0.02	< 0.01	1.19	5 ml GA	5.95	1.03592.0005
					25 ml GL	29.75	1.03592.0025
E Ethanol-D6 99 % D	> 99	< 0.10	< 0.05	0.90	1 ml GA	0.90	1.03450.0001
Ethanol (ol-D) abs. 99.5 % D	> 99.5	-	-	0.80	50 ml GL	40.00	8.15037.0050
F Formic acid-D2 97 wt % in D₂O	> 99.5	-	-	1.27	10 ml GA	12.70	1.13365.0010
H Hexafluoro-2-propanol-D2 99.5 % D	> 99.5	-	-	1.65	5 ml GA	8.25	8.15041.0005
n-Hexane-D14 99 % D	> 99	-	-	0.77	1 ml GA	0.77	8.15043.0001
L Lithiumaluminiumdeuterid 98 %	> 98	-	-	-	5 g GL	5.00	8.15048.0005

GA = glass ampoule | SB = septum bottle | GL = glass bottle

Ordering information

MagniSolv™ | Deuterated solvents M-Z

Product	Deuteration degree [%]	H ₂ O+D ₂ O (KF) [%]	H ₂ O (NMR) [%]	Density at 20°C [g/ml]	Quantity / Packaging	Content [g]	Ord. No.
M Methylcyclohexane-D14 99.5 % D	> 99.5	-	-	0.88	5 ml GA	4.40	8.15053.0005
Methanol (ol-D) 99.5 % D	> 99.5	-	-	0.81	50 ml GL	40.50	8.15051.0050
					100 ml GL	81.00	8.15051.0100
Methanol-D4 99.8 % D	> 99.8	< 0.03	-	0.89	1 ml GA	0.89	1.06028.0001
					10 x 0.5 ml GA	4.45	1.06028.0005
					10 x 0.75 ml GA	6.68	1.06028.0009
					10 ml SB	8.90	1.06028.0010
					25 ml GL	22.25	1.06028.0025
					25 ml SB	22.25	1.06028.0026
					100 ml GL	89.00	1.06028.0100
Methanol-D4 99.95 % D	> 99.95	< 0.02	-	0.89	10 x 0.5 ml GA	4.45	1.06025.0005
					10 x 0.75 ml GA	6.68	1.06025.0009
Methanol-D3 99.5 % D	> 99.5	-	-	0.87	1 ml GA	0.87	8.15052.0001
					5 ml GA	4.35	8.15052.0005
N Naphthalene-D8 98 % D	> 98	-	-		1 g GL	1.00	8.15000.0001
Nitrobenzene-D5 99.5 % D	> 99.5	-	-	1.25	10 ml GA	12.53	8.15001.0010
Nitromethane-D3 99 % D	> 99	< 0.10	< 0.05	1.18	2 x 0.75 ml GA	1.77	1.02914.0002
O n-Octane-D18 99 % D	> 99	-	-	0.82	1 g GA	0.82	8.15002.0001
P Phenol-D6 98 % D	> 98	-	-	-	5 g GL	5.00	8.15003.0005
Phosphoric acid-D3 85 wt % in D ₂ O 99 % D	> 99	-	-	1.74	10 ml GA	17.40	8.15058.0010
2-Propanol (ol-D) 98 % D	> 98	-	-	0.79	25 ml GL	19.75	8.15044.0025
2-Propanol-D8 99.5 % D	> 99.5	-	-	0.89	5 ml GA	4.45	8.15045.0005
Pyridine-D5 99.8 % D	> 99.8	< 0.03	< 0.02	1.05	10 x 0.75 ml GA	7.88	1.07475.0009
					10 ml SB	10.50	1.07475.0010
S Sodium deuterium oxide 30 wt % in D ₂ O 99.5 % D	> 99.5	-	-	1.46	25 ml GL	36.50	8.15055.0025
Sulfuric acid-D2 96 - 98 wt % in D ₂ O	> 99.5	-	-	1.88	25 ml GL	47.00	8.15060.0025
					50 ml GL	94.00	8.15060.0050
Styrene-D8 98 % D	> 99	-	-	0.98	1 ml GA	0.98	8.15061.0001
					10 ml GA	9.80	8.15061.0010
T Tetrachloroethane-D2 99.5 % D	> 99.5	-	< 0.02	1.62	10 x 0.75 ml GA	12.15	1.03495.0009
					25 ml GL	40.50	1.03495.0025
Tetramethylsilane	> 99.7	-	-	0.64	100 ml GL	64.00	1.08183.0100
TMS-Propionic acid-D4-Na 98 % D	> 98	-	-	-	1 g GL	1.00	1.08652.0001
Tetrahydrofuran-D8 99.5 % D	> 99.5	< 0.05	< 0.03	0.99	1 ml GA	0.99	1.13364.0001
					10 x 0.75 ml GA	7.43	1.13364.0009
					10 ml SB	9.90	1.13364.0010
Toluene-D8 99.5 % D	> 99.5	-	< 0.02	0.94	10 ml SB	9.40	1.13368.0010
Trifluoroacetic acid-D1 99.5 % D	> 99.5	< 0.05	< 0.03	1.50	10 ml GA	15.00	1.13363.0010
X p-Xylene-D10 99.5 % D	> 99.5	-	-	0.95	10 ml GA	9.50	8.15005.0010

GA = glass ampoule | SB = septum bottle | GL = glass bottle

Easy and safe handling:
Safety by one point cut (OPC).



Packaging and withdrawal systems

Instrumental analysis

EMD Millipore has a strong track record in developing practical packaging concepts and chemical packaging that preserve the high quality of our solvents. We have been authorized as an official inspection authority by the Federal Institute for Material Research and Testing of Germany (BAM).

EMD Millipore offers a unique variety of packaging sizes and types for **LiChrosolv®** (high performance liquid chromatography), **Uvasol®** (spectroscopy), **SupraSolv®**, and **SeccoSolv®** (dried solvents):

- Glass bottles
- Aluminum bottles
- Septum seal bottles (see page 56)



Your benefits

Packaging and withdrawal systems

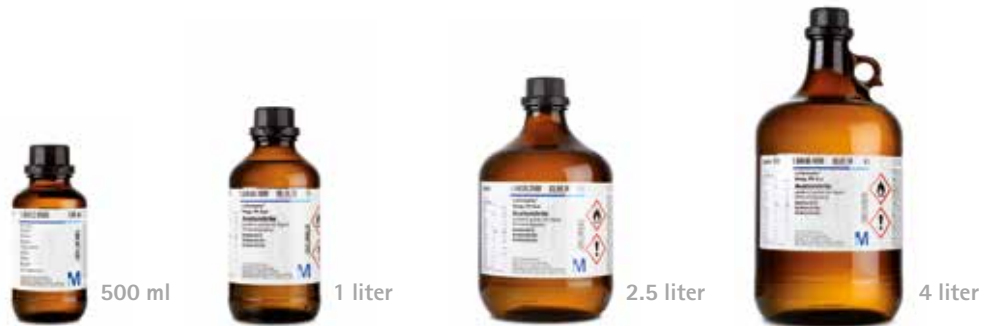
- Application and demand orientated packaging sizes
- Easy, safe and contamination-free solvent handling
- Maximum safety due to an extensive portfolio of safety accessories
- Direct connection to laboratory equipment possible (e.g. HPLC-instruments)

Packaging overview

Instrumental analysis



Glass bottles



- Optimum characteristics for handling, storage and transport
- Safe footprint
- Low center of gravity
- Optimum emptying
- Safety screw cap S40 (Polypropylene) with a circlip as an originality device and a PTFE-insert for highest closeness
- High pressure resistance
- Special pouring lip for non-drip pouring
- Level sensors available

To comply with transport regulations the glass bottles must be protected by pads of polystyrene. Such polystyrene packages are dispatched as packages of 6 x 1 l or 4 x 2.5 l in a special folding corrugated cardboard box that has been approved for transport purposes. For daily lab handling of glass bottles we recommend to use the safety carriers 9.20078.0001 for 0.5 l to 2.5 l or 1.20080.0001 for 4 l glass bottles.



Aluminum bottle



- Optimum characteristics for handling, storage and transport
- Safety screw cap S40 (Polypropylene) with a circlip as an originality device and a PTFE-insert for highest closeness
- UN certification to be sent without polystyrene outer packaging
- Optimum material characteristics (avoidance of interactions between solvents and packaging material)
- Low weight (easy handling and low transport costs)
- No risk of fracture
- Level sensors available

Packaging details and safety accessories

Instrumental analysis



Glass bottles [available from 0.5 l up to 4 l]



Specially developed S40 thread
withstands higher contact pressure
and ensures tighter seals

Specially formed, sharp thread lip
for safe drip free pouring

Specially treated high quality glass
with extreme durability due to constant
wall thickness for highest safety and
product quality

New S40 screw cap
Tamper proof closure will remain as ring
on the bottle neck

Pour ring for safe and ergonomic withdraw
New tension-free manufacturing
technology: "bottle out of one drop"
to avoid any predetermined
breaking point

Unique, clear and complete labeling
with product specifications
and all relevant hazard declarations

Broad and stable base
for safe stand with low point of gravity



Technical data

Material:
Moulded amber glass, hydrolytic class 3

Available packaging size:
0.5 l, 1 l, 2.5 l and 4 l

Height, diameter and net weight (bottle size):
180 mm, ø 83 mm, approx. 450 g (0.5 l)
222 mm, ø 101 mm, approx. 600 g (1 l)
258 mm, ø 151 mm, approx. 1140 g (2.5 l)
350 mm, ø 162 mm, approx. 1525 g (4 l)

Safety accessories

Bottle opening key S40 / S28	1.08801.0001
Safety carrier for bottles up to 2.5 l	9.20078.0001
Safety carrier for 4 l bottles	1.40140.0001
HPLC-adapter with integrated level sensor for EMD Millipore bottles with S40 thread (supply)	9.67100.2001
Display for level sensor	9.67100.2004
Label set for self-labeling lab-mixtures according to GHS, DIN EN ISO & GLP	1.00801.0001
HPLC-S40-adapter (supply) with valve and filter for direct bottle connection to HPLC-tubes	1.03830.0001
HPLC-S40-adapter (disposal) for direct bottle connection to HPLC-tubes	1.03831.0001
Exhaust air filter for 1.03831.0001	1.03833.0001



Aluminum bottle [available for 5 l]



Technical data

Material:
Aluminum

Available packaging size:
5 l

Height, diameter and net weight:
298 mm, ø 175 mm, approx. 285 g

Safety accessories

Bottle opening key S40 / S28	1.08801.0001
HPLC-adapter with integrated level sensor for EMD Millipore bottles with S40 thread (supply)	9.67100.2001
Display for level sensor	9.67100.2004
Label set for self-labeling lab-mixtures according to GHS, DIN EN ISO & GLP	1.00801.0001
HPLC-S40-adapter (supply) with valve and filter for direct bottle connection to HPLC-tubes	1.03830.0001
HPLC-S40-adapter (disposal) for direct bottle connection to HPLC-tubes	1.03831.0001
Exhaust air filter for 1.03831.0001	1.03833.0001

DNA-/RNA synthesis reagents



Additional to our high quality acetonitrile dried with low water content up to 10 ppm, EMD Millipore has now started to provide DNA-/RNA synthesis reagents worldwide – both on a custom basis as well as for the broader market, including core facilities and other commercial companies. As the field expands, we will continue to create new formulations, align with new synthesis instrumentation manufacturers, and broaden our DNA & RNA synthesis portfolio. So if you don't see what you need, talk to us. We would be glad to work with you to develop new custom blended synthesis reagents and delivery mechanisms to meet your specific requirements.

Your benefits

Our DNA-/RNA synthesis reagent portfolio offers:

- A comprehensive range of high quality reagents
- The highest grade of solvents
- Broad range of packaging for specific synthesis instrumentation
- Quantities from bottle to bulk

Our products have the lowest published specifications for:

- Water content
- Acid content
- Particulate levels
- Our product features
 - Give you trust in product quality resulting in a high quality synthesis
 - Support you in running reliable synthesis with reproducible results
 - Help you to deliver a fast and cost-efficient work

All DNA/RNA reagents are available in a wide variety of packaging types, including bottles of up to 4 liters. We also offer customized packaging, delivery, and engineering support that will allow you to make direct connections to your laboratory instruments.

Ordering information

DNA-/RNA synthesis reagents



Product	Details	Content / Packaging	Ord. No.	
A Acetonitrile for DNA synthesis (≤ 10 ppm water content)	Septum bottle	50 ml SB	1.12636.0050	
	Stand alone from instrument (S40 neck finish)	2.5 l GL	1.12636.2500	
	Stand alone from instrument (S40 neck finish)	4 l GL	1.12636.4000	
Acetonitrile for DNA synthesis (≤ 30 ppm water content)	Stand alone from instrument (S40 neck finish)	2.5 l GL	1.13212.2500	
	Stand alone from instrument (S40 neck finish)	4 l GL	1.13212.4000	
Activator Solution 0.25M Ethylthio-1H-tetrazole in Acetonitrile	Attaches directly to Instrument (28/405 neck finish)	450 ml GL	8.57000.0450	
	Stand alone from Instrument (GL-45 neck finish)	1 l GL	8.57000.1000	
	Stand alone from Instrument (GL-45 neck finish)	4 l GL	8.57000.4000	
Activator Solution 0.30M 5-Benzylmercatotetrazole in Acetonitrile	Stand alone from Instrument (GL-45 neck finish)	1 l GL	8.57001.1000	
	Stand alone from Instrument (GL-45 neck finish)	2.5 l GL	8.57001.2500	
C Capping Reagent A Tetrahydrofuran/2,6-Lutidine/Acetic anhydride 8/1/1 v/v/v	Attaches directly to Instrument (28/405 neck finish)	450 ml GL	1.18603.0450	
	Capping Reagent A Tetrahydrofuran/Pyridine/Acetic anhydride 8/1/1 v/v/v	Attaches directly to Instrument (28/405 neck finish)	450 ml GL 8.57011.0450	
Capping Reagent A Tetrahydrofuran/Acetic anhydride 9/1 v/v	Attaches directly to Instrument (28/405 neck finish)	450 ml GL	1.18605.0450	
	Capping Reagent A 20 % n-Methylimidazole in Acetonitrile v/v	Attaches directly to Instrument (GL-45 neck finish)	500 ml GL 8.57002.0500	
Capping Reagent A 20 % n-Methylimidazole in Acetonitrile v/v	Stand alone from Instrument (GL-45 neck finish)	1 l GL	8.57002.1000	
	Stand alone from Instrument (38 mm neck finish)	4 l GL	8.57002.4000	
	Capping Reagent B n-Methylimidazole/Tetrahydrofuran/Pyridine 1/8/1 v/v/v	Attaches directly to Instrument (28/405 neck finish)	450 ml GL	1.18609.0450
Capping Reagent B 16 % n-Methylimidazole in Tetrahydrofuran v/v	Attaches directly to Instrument (28/405 neck finish)	450 ml GL	8.57012.0450	
	Stand alone from Instrument (38 mm neck finish)	4 l GL	8.57012.4000	
Capping Reagent B1 40 % Acetic anhydride in Acetonitrile v/v	Attaches directly to Instrument (28/405 neck finish)	200 ml GL	8.57005.0200	
	Attaches directly to Instrument (GL45 neck finish)	500 ml GL	8.57005.0500	
Capping Reagent B2 60 % 2,6-Lutidine in Acetonitrile v/v	Attaches directly to Instrument (28/405 neck finish)	200 ml GL	8.57006.0200	
	Attaches directly to Instrument (GL45 neck finish)	500 ml GL	8.57006.0500	
O Oxidizer Reagent 0.02M Iodine in Tetrahydrofuran/Pyridine/H ₂ O 70/20/10 v/v/v	Attaches directly to Instrument (28/405 neck finish)	450 ml GL	8.57013.0450	
	Stand alone from Instrument (38 mm neck finish)	4 l GL	8.57013.4000	
Oxidizer Reagent 0.05M Iodine in Pyridine/H ₂ O 90/10 v/v	Stand alone from Instrument (GL-45 neck finish)	1 l GL	8.57008.1000	
	Stand alone from Instrument (GL-45 neck finish)	2.5 l GL	8.57008.2500	
D Deblock Reagent 3.0 % Trichloroacetic acid in Dichloromethane w/v	Stand alone from Instrument (38 mm neck finish)	4 l GL	8.57014.4000	
	Stand alone from Instrument (GL-45 neck finish)	1 l GL	8.57007.1000	
	Deblock Reagent 3.0 % Dichloroacetic acid in Toluene v/v	Stand alone from Instrument (GL-45 neck finish)	2.5 l GL	8.57007.2500
		Stand alone from Instrument (38 mm neck finish)	4 l GL	8.57007.4000
	NOW Pak container	20 l PEC	8.57007.9020	
	Deblock Reagent 3.0 % Dichloroacetic acid in Dichloromethane v/v	Stand alone from Instrument (38 mm neck finish)	4 l GL	1.18619.4000
	DEA Solution 20 % Diethylamine in Acetonitrile	Stand alone from Instrument (GL-45 neck finish)	500 ml GL	8.57010.0500

SB = septum bottle | GL = glass bottle | ST = stainless steel returnable barrel | PEC = NOWPak HDPE drum

Dried solvents of highest purity and with lowest water content are essential for many laboratory applications – and here **SeccoSolv[®]** ready-to-use solvents fulfill even the most stringent requirements. They are produced using specially selected distillation methods that ensure consistently high dryness and batch-to-batch consistency. **SeccoSolv[®]** dried solvents are available in 500 ml bottles and also in 1 l and 2.5 l bottles with a standard EMD Millipore S40 cap.

To protect the quality of these products even better from potential contaminants, our new **SeccoSept[®]** septum seal cap provides multiple layers of protection to keep solvents in flawless condition before, during, and after removal. These innovative caps are available on 150 and 1,000 ml packaging sizes, and complement our existing product line perfectly.





Safety – double tamper evidence closure and SeccoSept®, the innovative septum seal cap

A security ring on the screw closure and the seal on the cap opening remove any doubt as to whether the product has been opened previously. The septum is a PTFE-coated silicon sealing disk that fits precisely into the cap, while a safety lip in the cap keeps it securely in place. As a result, the septum can be punctured multiple times without losing stability or becoming porous.

The special silicon has outstanding self-sealing properties that enable rapid sealing of the puncture site. Properties of the septum exclude the possibility of it interacting with the solvent.

Simple handling – five extra-large septum surfaces and rotating cap

Only the septum circle currently in use is exposed to the environment. After removing the solvent, the user turns the cap to the sealing position – now the fresh puncture site is immediately protected from potential contaminants. When needed, the bottle's rotating cap enables one-handed operation for practical and safe handling during your applications.

Flexibility – with and without septum cap

If you need to withdraw larger quantities of solvent, simply take off the septum cap entirely. Or remove the yellow cap for access to all five septum circles.

Your benefits

SeccoSolv® | SeccoSept®

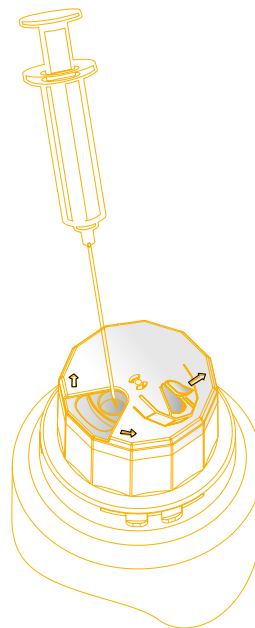
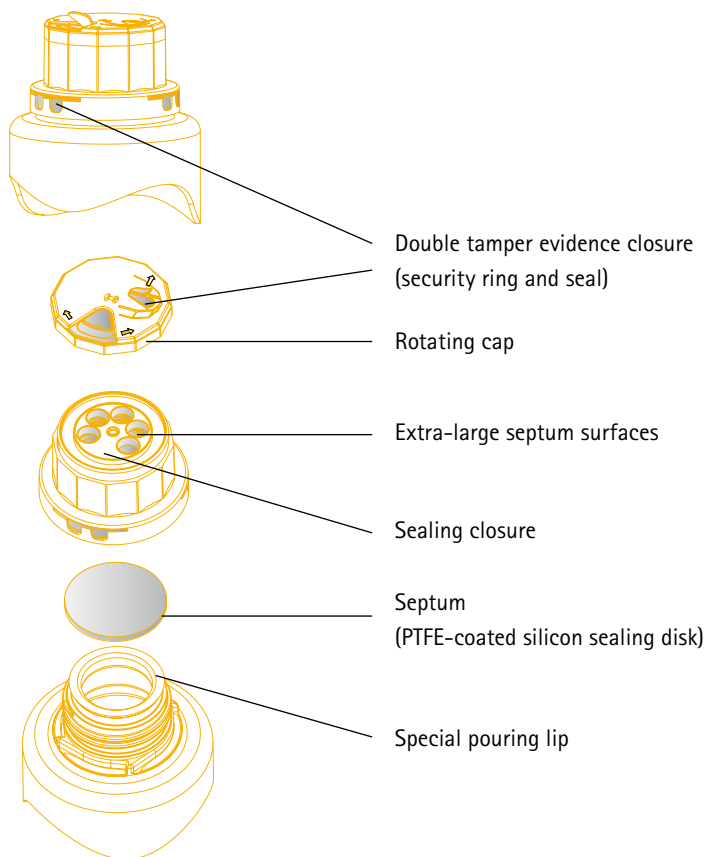
- Reliable results save time and give trust by
 - Highest quality
 - Constant and high level of dryness
 - SeccoSept®, best protection for keeping solvent quality
- Resulting in high reproducibility of the synthesis
- Flexibility through broad packaging variety for less chemical and packaging waste reducing costs
- Time- & cost saving and minimized health & environmental risk compared to self-dried solvents

SeccoSolv[®]

Dried solvents | SeccoSept[®] closure system



SeccoSept[®] the septum-innovation!



More service for your daily lab work

Take advantage of our "Care-Free Service Package" for your solvent needs. In addition to reliable quality, we will provide you with comprehensive technical support, helpful documentation, rapid delivery times, wide variety of packaging and practical withdrawal systems!

Do you need large quantities, different packaging sizes, new products, or modified product specifications? Please contact your local EMD Millipore representative directly for individual inquiries.

► Packaging and withdrawal systems see page 40 and 80

Ordering information

SeccoSolv® | SeccoSept®

Product	Purity (GC) min. [%]	Evap. residue max. [mg/l]	Water max. [%]	Content / Packaging	Ord. No.	Content / Packaging	Ord. No. SeccoSept®
A Acetone	99.9	10	0.0075	500 ml GL	1.00299.0500	150 ml SB	1.00299.0161
						1 SB	
	99.9	10	0.005	500 ml GL	1.00004.0500	150 ml SB	1.00004.0161
						1 SB	
Acetonitrile for DNA synthesis (≤ 10 ppm water content)	99.9	1	0.001	50 ml GL	1.12636.0050		
				2.5 GL	1.12636.2500		
				4 GL	1.12636.4000		
Acetonitrile for DNA synthesis (≤ 30 ppm water content)	99.9	1	0.003	2.5 GL	1.13212.2500		
				4 GL	1.13212.4000		
C Chloroform	99.9	10	0.003			1 SB	1.02395.1001
				NEW Cyclopentylmethylether	99.9	20	0.0075
		1 SB	1.08296.1001				
D Dichloromethane	99.9	10	0.004	500 ml GL	1.06051.0500	150 ml SB	1.06051.0161
						1 SB	1.06051.1001
Diethyl ether	99.9	10	0.005	500 ml GL	1.00929.0500	150 ml SB	1.00929.0161
				1 GL	1.00929.1000	1 SB	1.00929.1001
Dimethylformamide	99.9	10	0.003	2.5 GL	1.02375.2500	150 ml SB	1.02375.0161
						1 SB	1.02375.1001
NEW Dimethylformamide for peptide synthesis (Free Amines ≤ 10 ppm)	99.9	10	0.03	2.5 GL	1.00397.2500		
				4 x 4 GL	1.00397.4004		
				25 STD	1.00397.6025		
Dimethyl sulfoxide	99.9	10	0.025	500 ml GL	1.02931.0500	150 ml SB	1.02931.0161
				1 GL	1.02931.1000	1 SB	1.02931.1001
				2.5 GL	1.02931.2500		
1,4-Dioxane	99.9	10	0.005	500 ml GL	1.03110.0500	150 ml SB	1.03110.0161
						1 SB	1.03110.1001
E Ethanol	99.9	10	0.01	500 ml GL	1.00990.0500	150 ml SB	1.00990.0161
						1 SB	1.00990.1001
Ethyl acetate	99.9	10	0.003			1 SB	1.02396.1001
H n-Hexane	99.0	10	0.004	500 ml GL	1.04373.0500		
I Isooctane	99.8	10	0.003	500 ml GL	1.04715.0500		
M Methanol	99.9	10	0.003	500 ml GL	1.06012.0500	150 ml SB	1.06012.0161
				1 GL	1.06012.1000	1 SB	1.06012.1001
				2.5 GL	1.06012.2500		
				10 STD	1.06012.6010		
NEW n-Methyl-2-pyrrolidone for peptide synthesis (Free Amines ≤ 5 ppm)	99.7	-	0.05	2.5 GL	1.00574.2500		
				4 GL	1.00574.4000		
NEW 2-Methyltetrahydrofuran	99.9	10	0.01			150 ml SB	1.08291.0161
						1 SB	1.08291.1001
P 2-Propanol	99.9	10	0.005	500 ml GL	1.00994.0500	150 ml SB	1.00994.0161
						1 SB	1.00994.1001
Pyridine	99.9	10	0.0075	500 ml GL	1.07463.0500	150 ml SB	1.07463.0161
						1 SB	1.07463.1001
T Tetrahydrofuran	99.9	10	0.005	500 ml GL	1.08107.0500	150 ml SB	1.08107.0161
				1 GL	1.08107.1000	1 SB	1.08107.1001
Toluene	99.9	10	0.005	500 ml GL	1.08326.0500	150 ml SB	1.08326.0161
						1 SB	1.08326.1001
Trifluoroacetic acid for protein sequencing	99.7	-	0.01	50 ml GL	1.08178.0050		
Trifluoroacetic acid (25 % solution in water) for protein sequencing	24.5 - 25.5	-	74.5 - 75.5	50 ml GL	1.08218.0050		

All solvents filtered through 0.2 µm. | GL = glass bottle | SB = septum seal bottle | STD = stainless steel drum

EMSURE® for analysis

Our premium grade for all regulated and highly demanding lab applications

The highest purity, consistent product quality and proven safety. These are the hallmarks of all EMSURE® products. Whether for complex applications, or routine analysis, our premium grade EMSURE® provide an extra level of quality and consistency thanks to their unmatched specifications. Not only are these premium reagents optimized for highly demanding analysis, but also fully compliant with international standards.

Laboratory use

EMSURE® – EMPARTA® – EMPLURA® | The three quality grades of EMD Millipore classical solvents

Whenever you want to use a solvent, you have to consider your requirements, your application and of course your budget. Each application is different and the range of solvents you choose should be perfectly adapted to your application. No matter what your application is (cleaning, product synthesis, sample preparation or highly critical analysis) – no matter if you have to follow international norms, ensure safety regulations or require both bulk and small quantities – the classical solvents product range has the product that perfectly fits to your needs.

Laboratory use	Cleaning	Synthesis R&D	Analysis QC	Other critical or demanding lab applications with specific requirements
Pharma industry and regulated applications				
Less-regulated applications				
Science, research, contract labs				
Schools, education				

EMPLURA®
▶ page 74

EMPARTA®
▶ page 70

EMSURE®
▶ page 60





Compliant

EMSURE® specifications not only fulfill ACS, Reag. Ph Eur and ISO guidelines – but surpass them. That's because we are regularly adding new parameters required by our customers.

This is essential as it enables the use of the latest technologies, such as the concentration of metals, e.g. for use in combination with AAS.

Universal

Our solvents have no boundaries. Due to their multi-standard compliance, they can be used across the globe for almost all applications.

This is a great advantage for our global customers as it allows them to work with the same standard operating procedures (SOPs), and export to countries with different regulations.

Requirements

Nowadays, the requirements made of a solvent are much higher than its actual product characteristics. In addition to analytical purity, factors such handling, safety and documentation all play an increasingly role. An unparalleled range of packaging, withdrawal systems and services adds the finishing touch to what we have to offer: an all-inclusive package in which components are finely tuned down to the vary last detail.



Your benefits

EMSURE®

- Premium grade for regulated and highly demanding lab applications
- Worldwide best and most extensive product specification with up to 70 parameters
- Full compliance with ACS, ISO and Reag. Ph Eur
- Widest range of pack sizes and packaging materials

EMSURE®

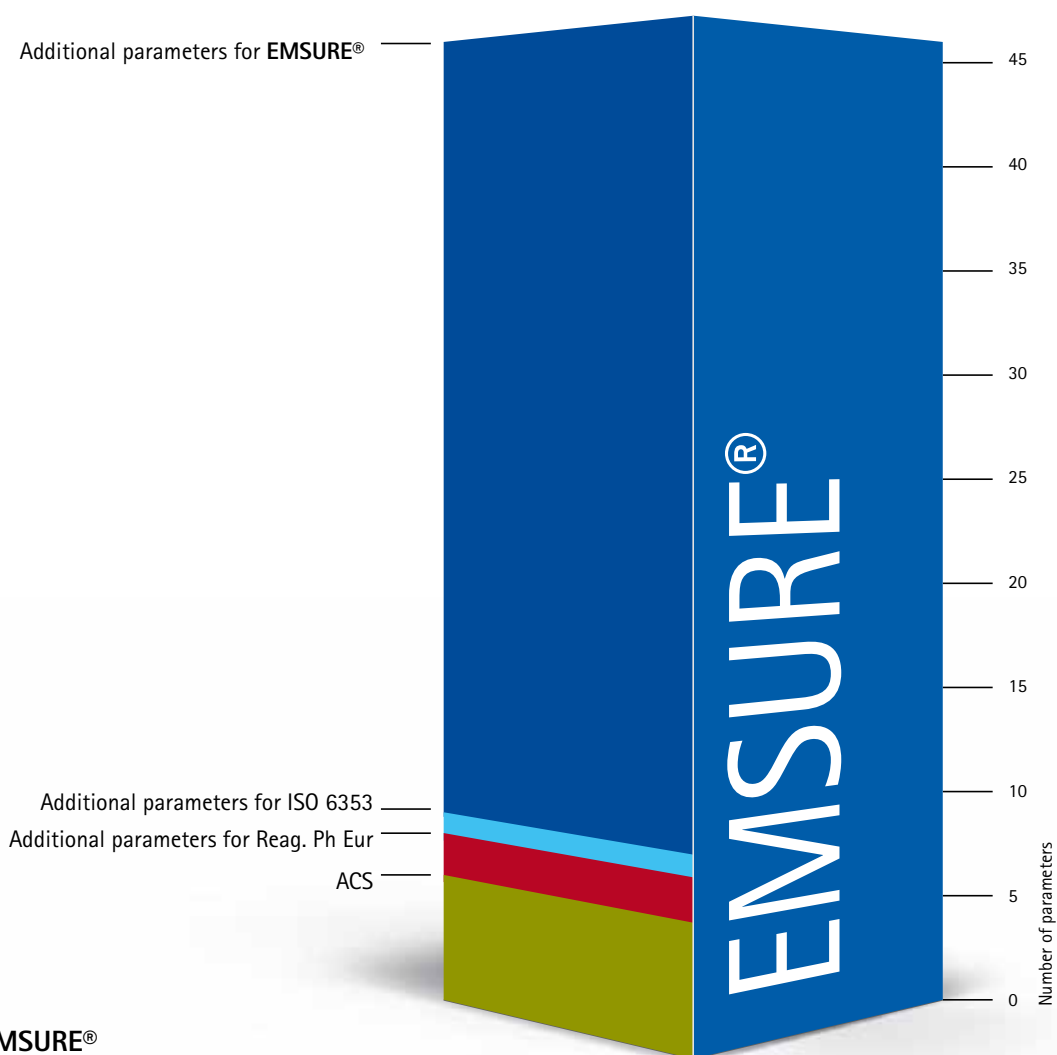
Solvents for analysis | ACS, ISO, Reag. Ph Eur

What makes EMSURE® reagents special?

Their unrivaled specifications.

Tested for up to 70 parameters, EMSURE® products offer the best and most extensive specifications – worldwide!

This, combined with lower impurity levels, gives you greater control of your analysis, and helps you avoid wrong analytical results, especially when developing new applications.



Solvents

Toluene for analysis EMSURE®

ACS, ISO, Reag. Ph Eur (Cat. No. 108325)

The graph demonstrates the typical number of parameters specified by EMSURE® products versus those required by regulatory organizations (ACS, ISO and Reag. Ph Eur). Clearly, EMSURE® not only fulfills international guidelines, but surpasses them by far.

Ordering information

EMSURE® | Solvents for analysis A-B

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Content / Packaging	Ord. No.
A Acetone for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.8	0.0005	0.05	1 GL	1.00014.1000
				1 PE	1.00014.1011
				2.5 GL	1.00014.2500
				2.5 PE	1.00014.2511
				4 GL	1.00014.4000
				5 PE	1.00014.5000
				10 ST	1.00014.6010
				25 ST	1.00014.6025
				25 ME	1.00014.9025
				180 ME	1.00014.9180
190 ME	1.00014.6190				
Acetonitrile for analysis EMSURE® ACS, Reag. Ph Eur	99.5	0.001	0.1	1 GL	1.00003.1000
				2.5 GL	1.00003.2500
				4 GL	1.00003.4000
				10 ST	1.00003.6010
				25 ST	1.00003.6025
				25 ME	1.00003.9025
Acetylacetone for analysis EMSURE®	99.0	-	0.3	100 ml GL	1.09600.0100
				500 ml GL	1.09600.0500
n-Amyl alcohol (Pentan-1-ol) for analysis EMSURE®	98.5	0.005	0.1	1 GL	1.00975.1000
				2.5 GL	1.00975.2500
Aniline for analysis EMSURE®	99.5	-	0.1	1 GL	1.01261.1000
B Benzene for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.7	0.001	0.03	1 GL	1.01783.1000
				2.5 GL	1.01783.2500
				4 GL	1.01783.4000
Benzyl alcohol for analysis EMSURE®	99.5	-	0.1	1 GL	1.09626.1000
				2.5 GL	1.09626.2500
				4 GL	1.09626.4000
				25 ST	1.09626.6025
1-Butanol for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.5	0.001	0.1	1 GL	1.01990.1000
				2.5 GL	1.01990.2500
				4 GL	1.01990.4000
				10 ST	1.01990.6010
				25 ST	1.01990.6025
2-Butanol for analysis EMSURE®	99.0	0.001	0.2	1 GL	1.09630.1000
				2.5 GL	1.09630.2500
				25 ME	1.09630.9025
tert-Butanol for analysis EMSURE® ACS, Reag. Ph Eur	99.5	0.001	0.1	500 ml GL	1.09629.0500
				5 AL	1.09629.5000
				25 ME	1.09629.9025
n-Butyl acetate for analysis EMSURE®	99.5	0.001	0.1	1 GL	1.09652.1000
				2.5 GL	1.09652.2500
				4 GL	1.09652.4000
				10 ST	1.09652.6010
tert-Butyl methyl ether for analysis EMSURE® ACS	99.5	0.001	0.03	1 GL	1.01849.1000
				2.5 GL	1.01849.2500
				4 GL	1.01849.4000
				190 ME	1.01849.9180

GL = glass bottle | PE = polyethylene bottle | AL = aluminum bottle | ST = stainless steel drum | ME = one-way vessel

Ordering information

EMSURE® | Solvents for analysis C-D

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Content / Packaging	Ord. No.
C Carbon disulfide for analysis EMSURE® ACS, Reag. Ph Eur	99.9	0.001	0.01	1 GL	1.02214.1000
				1 GL	1.02445.1000
				2.5 GL	1.02445.2500
				4 GL	1.02445.4000
				10 ST	1.02445.6010
				25 ST	1.02445.6025
Chloroform for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.0 - 99.4	0.001	0.01	190 ME	1.02445.9190
				1 GL	1.09666.1000
				2.5 GL	1.09666.2500
				2.5 PE	1.09666.2511
				10 ST	1.09666.6010
				25 ST	1.09666.6025
Cyclohexane for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.5	0.001	0.01	190 ME	1.09666.9190
				1 GL	1.02930.1000
				2.5 GL	1.02930.2500
				4 GL	1.06050.4000
				10 ST	1.06050.6010
				25 ST	1.06050.6025
D 1,2-Dichlorobenzene for extraction analysis EMSURE®	99.0	-	0.01	25 ME	1.06050.9025
				190 ST	1.06050.6190
				190 ME	1.06050.9190
				1 PE	1.16205.1000
				1 GL	1.00921.1000
				2.5 GL	1.00921.2500
Dichloromethane for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.8	0.001	0.01	4 GL	1.00921.4000
				5 AL	1.00921.5000
				10 ST	1.00921.6010
				25 ST	1.00921.6025
				25 ME	1.00921.9025
				190 ST	1.00921.6190
Diethanolamine for analysis EMSURE®	99.5	-	0.25	190 ME	1.00921.9190
				1 GL	1.00867.1000
				2.5 GL	1.00867.2500
				4 GL	1.00867.4000
				10 ST	1.00867.6010
				25 ST	1.00867.6025
Diethyl ether for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.7	0.0005	0.03	25 ME	1.00867.9025
				190 ST	1.00867.6190
				190 ME	1.00867.9190
				1 GL	1.00867.1000
				2.5 GL	1.00867.2500
				4 GL	1.00867.4000
Diisopropyl ether for analysis EMSURE® ACS, Reag. Ph Eur	99.0	0.005	0.05	10 ST	1.00867.6010
				190 ST	1.00867.6190
				1 GL	1.03053.1000
				1 PE	1.03053.1011
				2.5 GL	1.03053.2500
				2.5 PE	1.03053.2511
N,N-Dimethylformamide for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.8	0.001	0.1	4 GL	1.03053.4000
				10 ST	1.03053.6010
				25 ST	1.03053.6025

GL = glass bottle | PE = polyethylene bottle | AL = aluminum bottle | ST = stainless steel drum | ME = one-way vessel

Ordering information

EMSURE® | Solvents for analysis D-E

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Content / Packaging	Ord. No.						
D Dimethyl sulfoxide for analysis EMSURE® ACS	99.9	0.001	0.1	1 GL	1.02952.1000						
				1 PE	1.02952.1011						
				2.5 GL	1.02952.2500						
				2.5 PE	1.02952.2511						
				4 GL	1.02952.4000						
				25 ME	1.02952.9025						
1,4-Dioxane for analysis EMSURE® ACS, ISO	99.5	0.001	0.05	250 ml GL	1.09671.0250						
				1 GL	1.09671.1000						
				2.5 GL	1.09671.2500						
25 ST	1.09671.6025										
						E Ethanol 96 % EMSURE® Reag. PhEur	95.1-96.9	0.0025	-	500 ml GL	1.59010.0500
										2.5 GL	1.59010.2500
Ethanol absolute for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.9	0.0005	0.1	1 GL	1.00983.1000						
				1 PE	1.00983.1011						
				2.5 GL	1.00983.2500						
				2.5 PE	1.00983.2511						
				4 GL	1.00983.4000						
				5 PE	1.00983.5000						
10 ST	1.00983.6010										
25 ST	1.00983.6025										
25 ME	1.00983.9025										
180 ME	1.00983.9180										
190 ST	1.00983.6190										
Ethanol denatured with about 1 % Methyl ethyl ketone for analysis EMSURE®	99.5	0.001	0.1	1 PE	1.00974.1011						
				2.5 PE	1.00974.2511						
				4 GL	1.00974.4000						
				25 ST	1.00974.6025						
				25 ME	1.00974.9025						
				180 ME	1.00974.9180						
Ethanolamine for analysis EMSURE®	99.5	-	0.2	1 PE	1.00845.1000						
				2.5 PE	1.00845.2500						
Ethyl acetate for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.5	0.001	0.05	1 PE	1.09623.1000						
				2.5 GL	1.09623.2500						
				2.5 PE	1.09623.2511						
				4 GL	1.09623.4000						
				10 ST	1.09623.6010						
				25 ST	1.09623.6025						
				25 ME	1.09623.9026						
				180 ME	1.09623.9181						
Ethylene glycol for analysis EMSURE® Reag. Ph Eur, Reag. USP	99.5	-	0.1	1 PE	1.09621.1000						
				2.5 PE	1.09621.2500						
				4 GL	1.09621.4000						
				10 ST	1.09621.6010						
				25 ST	1.09621.6025						
180 ME	1.09621.9180										
Ethylene glycol monomethyl ether for analysis EMSURE® ACS, Reag. Ph Eur	99.5	0.003	0.1	1 GL	1.00859.1000						
				2.5 GL	1.00859.2500						
				25 ST	1.00859.9025						

GL = glass bottle | PE = polyethylene bottle | ST = stainless steel drum | ME = one-way vessel

Ordering information

EMSURE® | Solvents for analysis E-I

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Content / Packaging	Ord. No.				
E Ethyl methyl ketone for analysis EMSURE® ACS, Reag. Ph Eur	99.5	0.001	0.05	1 GL	1.09708.1000				
				2.5 GL	1.09708.2500				
				4 GL	1.09708.4000				
				25 ST	1.09708.6025				
				190 ME	1.09708.9190				
F Formamide for analysis EMSURE® ACS, Reag. Ph Eur	99.5	-	0.1	1 GL	1.09684.1000				
				2.5 GL	1.09684.2500				
G Glycerol 85 % for analysis EMSURE® Reag. Ph Eur	84.5 - 85.5	-	14.5 - 15.5	500 ml PE	1.04094.0500				
				1 PE	1.04094.1000				
				2.5 PE	1.04094.2500				
Glycerol for analysis EMSURE® ACS, Reag. Ph Eur	99.5	-	0.5	25 PE	1.04094.9026				
				1 PE	1.04092.1000				
				2.5 PE	1.04092.2511				
10 PE	99.5	-	0.5	10 PE	1.04092.9010				
				H n-Heptane for analysis EMSURE® Reag. Ph Eur	99.0	0.001	0.01	1 GL	1.04379.1000
								2.5 GL	1.04379.2500
2.5 PE	1.04379.2511								
4 GL	1.04379.4000								
10 ST	1.04379.6010								
25 ST	99.0	0.001	0.005	25 ST	1.04379.6025				
				190 ME	1.04379.9190				
				1 GL	1.04367.1000				
2.5 GL	99.0	0.001	0.005	2.5 GL	1.04367.2500				
				2.5 PE	1.04367.2511				
10 ST	99.0	0.001	0.005	10 ST	1.04367.6010				
				25 ST	1.04367.6025				
190 ST	99.0	0.001	0.005	190 ST	1.04367.6190				
				190 ME	1.04367.9190				
n-Hexane for analysis EMSURE® ACS, Reag. Ph Eur	96.0	0.001	0.01	1 GL	1.04374.1000				
				2.5 GL	1.04374.2500				
				2.5 PE	1.04374.2511				
				4 GL	1.04374.4000				
				10 ST	1.04374.6010				
25 ST	1.04374.6025								
I Isoamyl alcohol for analysis EMSURE® ACS, Reag. Ph Eur	99.0	0.002	0.2	1 GL	1.00979.1000				
				2.5 GL	1.00979.2500				
				4 GL	1.00979.4000				
				25 ME	1.00979.9025				
Isobutanol for analysis EMSURE® ACS, Reag. Ph Eur	99.0	0.001	0.05	1 GL	1.00984.1000				
				2.5 GL	1.00984.2500				
Isobutyl methyl ketone for extraction analysis EMSURE® ACS, Reag. Ph Eur	99.0	0.001	0.1	1 GL	1.06146.1000				
				2.5 GL	1.06146.2500				
				4 GL	1.06146.4000				
25 ST	99.0	0.001	0.01	25 ST	1.06146.6025				
				1 GL	95.0	0.001	0.01	1 GL	1.04333.1000
								2.5 GL	1.04333.2500
190 ME	1.04333.9190								

GL = glass bottle | PE = polyethylene bottle | ST = stainless steel drum | ME = one-way vessel

Ordering information

EMSURE® | Solvents for analysis I-P

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Content / Packaging	Ord. No.
I Isooctane for analysis EMSURE® ACS, Reag. Ph Eur	99.5	0.001	0.01	1 GL	1.04727.1000
				2.5 GL	1.04727.2500
				4 GL	1.04727.4000
				10 ST	1.04727.6010
				25 ST	1.04727.6025
				190 ST	1.04727.6190
M Methanol for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.9	0.0005	0.05	1 GL	1.06009.1000
				1 PE	1.06009.1011
				2.5 GL	1.06009.2500
				2.5 PE	1.06009.2511
				4 GL	1.06009.4000
				5 PE	1.06009.5000
				10 ST	1.06009.6010
				25 ST	1.06009.6025
				25 ME	1.06009.9025
				180 ME	1.06009.9180
				190 ST	1.06009.6190
P n-Pentane for analysis EMSURE®	99.0	0.001	0.01	1 GL	1.07177.1000
				2.5 GL	1.07177.2500
				4 GL	1.07177.4000
				10 ST	1.07177.6010
				190 ME	1.07177.9190
Petroleum benzene boiling range 30 – 50°C for analysis EMSURE®	-	0.003	0.01	1 GL	1.01786.1000
				2.5 GL	1.01786.2500
Petroleum benzene boiling range 40 – 60°C for analysis EMSURE® ACS, ISO	-	0.001	0.01	1 GL	1.01775.1000
				2.5 GL	1.01775.2500
				4 GL	1.01775.4000
				5 AL	1.01775.5000
				10 ST	1.01775.6010
				25 ST	1.01775.6025
Petroleum benzene boiling range 60 – 80°C for analysis EMSURE®	-	0.001	0.01	1 GL	1.01774.1000
				2.5 GL	1.01774.2500
Petroleum benzene boiling range 80 – 100°C for analysis EMSURE®	-	0.001	0.01	5 AL	1.01774.5000
				10 ST	1.01774.6010
				25 ST	1.01774.6025
				190 ME	1.01775.9190
Petroleum benzene boiling range 100 – 120°C for analysis EMSURE® Reag. Ph Eur	-	0.001	0.01	1 GL	1.01781.1000
NEW Petroleum ether boiling range 35 – 60°C for analysis EMSURE® ACS	-	0.001	0.01	4 GL	1.07927.4000
				1 GL	1.09718.1000
Petroleum for analysis EMSURE®	-	-	0.01	2.5 GL	1.09718.2500
				25 ST	1.09718.6025
Piperidine for analysis EMSURE®	99.0	0.01	0.3	500 ml GL	1.09724.0500

GL = glass bottle | PE = polyethylene bottle | ST = stainless steel drum | ME = one-way vessel

Ordering information

EMSURE® | Solvents for analysis P-W

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Content / Packaging	Ord. No.
P 1-Propanol for analysis EMSURE® ACS, Reag. Ph Eur	99.5	0.001	0.05	1 GL	1.00997.1000
				2.5 GL	1.00997.2500
				4 GL	1.00997.4000
				25 ST	1.00997.6025
2-Propanol for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.8	0.001	0.05	1 GL	1.09634.1000
				1 PE	1.09634.1011
				2.5 GL	1.09634.2500
				2.5 PE	1.09634.2511
				4 GL	1.09634.4000
				5 PE	1.09634.5000
				10 ST	1.09634.6010
				25 ST	1.09634.6025
				25 ME	1.09634.9025
180 ME	1.09634.9180				
190 ST	1.09634.6190				
Pyridine for analysis EMSURE® ACS, Reag. Ph Eur	99.5	0.002	0.1	500 ml GL	1.09728.0500
				1 GL	1.09728.1000
				2.5 GL	1.09728.2500
				4 GL	1.09728.4000
				25 ST	1.09728.6025
190 ME	1.09728.9190				
T Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur	99.8	0.0005	0.03	1 GL	1.09731.1000
				2.5 GL	1.09731.2500
				4 GL	1.09731.4000
				10 ST	1.09731.6010
				25 ST	1.09731.6025
190 ME	1.09731.9190				
190 ST	1.09731.6190				
Toluene for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.9	0.0005	0.03	1 GL	1.08325.1000
				2.5 GL	1.08325.2500
				2.5 PE	1.08325.2511
				4 GL	1.08325.4000
				10 ST	1.08325.6010
				25 ST	1.08325.6025
190 ME	1.08325.9190				
Trichloroethylene for analysis EMSURE® ACS, Reag. Ph Eur	99.5	0.001	0.01	1 GL	1.11872.1000
				2.5 GL	1.11872.2500
U n-Undecane for analysis EMSURE®	99.0	-	0.01	100 ml GL	1.09795.0100
W Water for analysis EMSURE®	-	0.0001	-	4 GL	1.16754.4000
				5 PE	1.16754.5000
				10 PE	1.16754.9010

GL = glass bottle | PE = polyethylene bottle | AL = aluminum bottle | ST = stainless steel drum | ME = one-way vessel

Ordering information

EMSURE® | Solvents for analysis X-Z

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Content / Packaging	Ord. No.
X Xylene for analysis EMSURE® ACS, ISO, Reag. Ph Eur	99.8	0.001	0.03	1 GL	1.08661.1000
				2.5 GL	1.08661.2500
				2.5 PE	1.08661.2511
				4 GL	1.08661.4000
				10 ST	1.08661.6010
				25 ST	1.08661.6025
				25 ME	1.08661.9025
p-Xylene for analysis EMSURE® ISO	99.0	0.001	0.01	1 GL	1.08684.1000
				2.5 GL	1.08684.2500
				25 ME	1.08684.9025



GL = glass bottle | PE = polyethylene bottle | ST = stainless steel drum | ME = one-way vessel



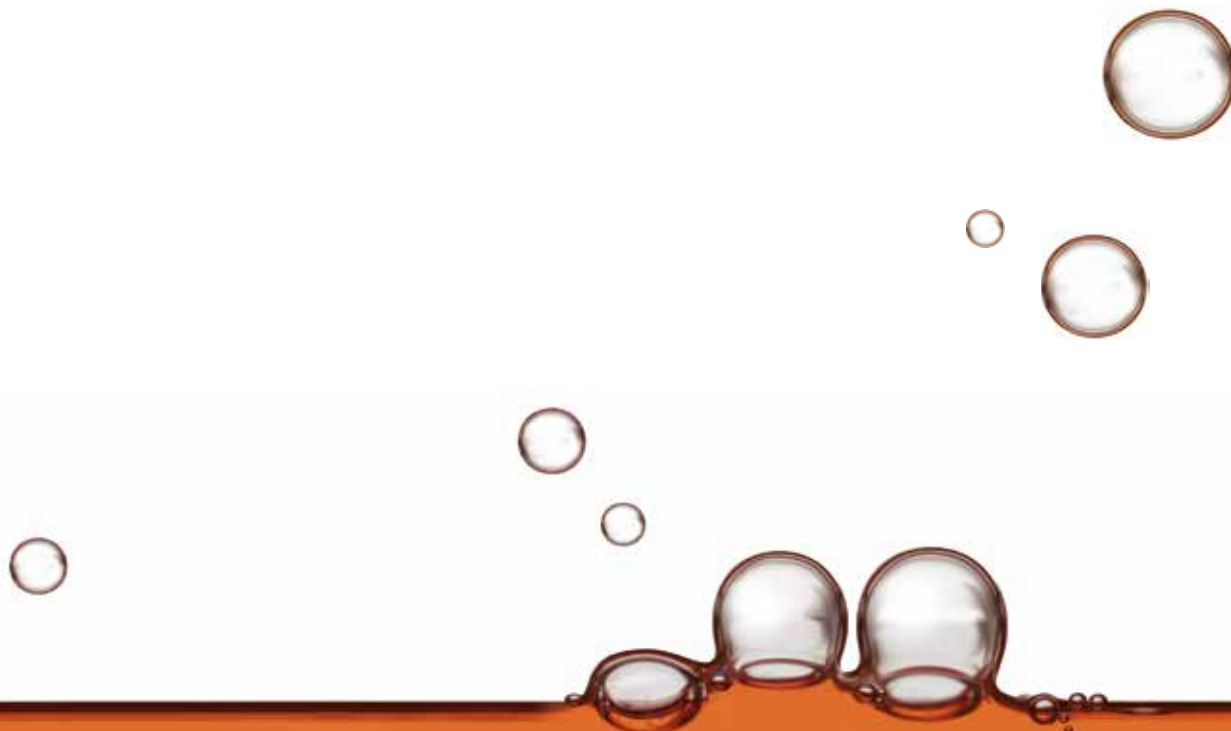
► Packaging and withdrawal systems see page 80

EMPARTA® for analysis ACS

High-quality solvents for routine tasks in analytical laboratories

Routine labs have other requirements than laboratories that perform pharmaceutical quality control. With **EMPARTA®**, EMD Millipore offers high-quality lab grade solvents for routine tasks in analytical laboratories. Compared to **EMSURE®**, **EMPARTA®** grade solvents come with fewer test parameters. Still, their specifications cover all important parameters, ensuring reliable and reproducible results. **EMPARTA®** solvents meet the requirements of the American Chemical Society (ACS) which makes them ideal for a wide range of analytical applications.

From raw materials to packaging and certification, every aspect of **EMPARTA®** solvents is designed to make analytical lab applications efficient and cost effective.





Laboratory use

EMSURE® – EMPARTA® – EMPLURA® | The three quality grades of EMD Millipore classical solvents

Whenever you want to use a solvent, you have to consider your requirements, your application and of course your budget. Each application is different and the range of solvents you choose should be perfectly adapted to your application. No matter what your application is (cleaning, product synthesis, sample preparation or highly critical analysis) – no matter if you have to follow international norms, ensure safety regulations or require both bulk and small quantities – the classical solvents product range has the product that perfectly fits to your needs.

Laboratory use	Cleaning	Synthesis R&D	Analysis QC	Other critical or demanding lab applications with specific requirements
Pharma industry and regulated applications				
Less-regulated applications				
Science, research, contract labs				
Schools, education				

EMPLURA®
▶ page 74

EMPARTA®
▶ page 70

EMSURE®
▶ page 60

Your benefits

EMPARTA®

- High-quality solvents suitable for your analytical lab applications
- Specifications according to ACS
- More than 10 specification parameters
- Packaged in 2.5 and 4 liter bottles and 25 liter drums



Ordering information

EMPARTA® | Solvents for analysis

Product	Purity (GC) min. [%]	Evap. residue max. [%]	Water max. [%]	Content / Packaging	Ord. No.
A Acetone for analysis EMPARTA® ACS	99.5	0.001	0.5	2.5 PE	1.07021.2511
				4 GL	1.07021.4000
				25 ME	1.07021.9026
C Chloroform for analysis EMPARTA® ACS	99.0 - 99.4	0.001	0.01	2.5 GL	1.07024.2500
				4 GL	1.07024.4000
Cyclohexanone for analysis EMPARTA® ACS	99.0	0.05	0.05	4 GL	1.07061.4000
D 1,2 Dichloroethane for analysis EMPARTA® ACS	99.0	0.002	0.03	4 GL	1.07058.4000
				Dichloromethane for analysis EMPARTA® ACS	99.5
Diethyl ether for analysis EMPARTA® ACS	99.5	0.001	0.01	4 GL	1.07020.4000
				10 ST	1.07020.6010
				2.5 GL	1.07026.2500
N,N-Dimethylformamide for analysis EMPARTA® ACS	99.5	0.001	0.1	4 GL	1.07026.4000
				5 AL	1.07026.5000
				1 GL	1.03034.1000
				1 PE	1.03034.1011
				2.5 GL	1.03034.2500
				2.5 PE	1.03034.2511
E Ethanol absolute for analysis EMPARTA® ACS	99.5	0.001	0.2	4 GL	1.03034.4000
				25 ST	1.03034.6025
				2.5 PE	1.07017.2511
				4 GL	1.07017.4000
H n-Hexane for analysis EMPARTA® ACS	98.5	0.001	0.02	25 ME	1.07017.9026
				2.5 PE	1.07023.2511
				4 GL	1.07023.4000
Hexanes for analysis EMPARTA® ACS	98.5	0.001	-	25 ST	1.07023.6025
				1 GL	1.07060.1000
				4 GL	1.07060.4000
M Methanol for analysis EMPARTA® ACS	99.8	0.001	0.1	2.5 ME	1.07018.2511
				4 GL	1.07018.4000
				25 ME	1.07018.9026
1-Methyl-2-pyrrolidone for analysis EMPARTA® ACS	99.0	-	0.05	4 GL	1.07063.4000
P 2-Propanol for analysis EMPARTA® ACS	99.5	0.001	0.2	4 GL	1.07022.4000
				2.5 PE	1.07022.2511
				25 ME	1.07022.9026
T Tetrahydrofuran for analysis EMPARTA® ACS	99.5	0.03	0.05	2.5 GL	1.07025.2500
				4 GL	1.07025.4000
Toluene for analysis EMPARTA® ACS	99.5	0.001	0.03	2.5 GL	1.07019.2500
				2.5 PE	1.07019.2511
				4 GL	1.07019.4000
X Xylenes (isomeric mixture) for analysis EMPARTA® ACS	98.5	0.002	0.05	2.5 GL	1.08633.2500
				4 GL	1.08633.4000

GL = glass bottle | PE = polyethylene bottle | AL = aluminum bottle | ST = stainless steel drum | ME = one-way vessel

► Packaging and withdrawal systems see page 80



Detailed information

EMPARTA® | Solvents for analysis

Acetone for analysis EMPARTA® ACS	Cat. No. 107021 Spec. values
Purity (GC)	≥ 99.5 %
Identity (IR)	conforms
Solubility in water	conforms
Colour	≤ 10 Hazen
Titration acid	≤ 0.0003 meq/g
Titration base	≤ 0.0006 meq/g
Methanol (GC)	≤ 0.05 %
2-Propanol (GC)	≤ 0.05 %
Aldehydes (as formaldehyde)	≤ 0.002 %
Substances reducing potassium permanganate (as O)	≤ 0.0003 %
Evaporation residue	≤ 0.001 %
Water	≤ 0.5 %

Chloroform for analysis EMPARTA® ACS	Cat. No. 107024 Spec. values
Purity (GC)	99.0 - 99.4 %
Assay (according to ACS)	≥ 99.8 %
Identity (IR)	conforms
Appearance	clear
Colour	≤ 10 Hazen
Acid and chloride	conforms
Free chlorine	≤ 0.00003 %
Carbonyl compounds (as CO)	≤ 0.005 %
Readily carbonizable substances	conforms
Aldehydes and ketones (C ₃ H ₆ O)	≤ 0.001 %
Suitability for determination with dithizone	conforms
Pb	≤ 0.000005 %
Evaporation residue	≤ 0.001 %
Water	≤ 0.01 %

Ethanol absolute for analysis EMPARTA® ACS	Cat. No. 107017 Spec. values
Purity (GC)	≥ 99.5 %
Identity (IR)	conforms
Colour	≤ 10 Hazen
Solubility in water	conforms
Titration acid	≤ 0.0005 meq/g
Titration base	≤ 0.0002 meq/g
Acetone (GC)	≤ 0.001 %
Methanol (GC)	≤ 0.1 %
2-Propanol (GC)	≤ 0.003 %
Substances reducing potassium permanganate (as O)	≤ 0.0002 %
Readily carbonizable substances	conforms
Evaporation residue	≤ 0.001 %
Water	≤ 0.2 %

n-Hexane for analysis EMPARTA® ACS	Cat. No. 107023 Spec. values
Purity Σ hexane isomers + methylcyclopentane (GC)	≥ 98.5 %
Identity (IR)	conforms
Colour	≤ 10 Hazen
Water-soluble titration acid	≤ 0.0003 meq/g
Thiophene	conforms
Sulfur compounds (as S)	≤ 0.005 %
Evaporation residue	≤ 0.001 %
Water	≤ 0.02 %

Tetrahydrofuran for analysis EMPARTA® ACS	Cat. No. 107025 Spec. values
Purity (GC)	≥ 99.5 %
Identity (IR)	conforms
Appearance	clear
Colour	≤ 10 Hazen
Peroxide (as H ₂ O ₂)	≤ 0.01 %
Evaporation residue	≤ 0.03 %
Water	≤ 0.05 %



EMPLURA®

The cost-efficient solution for preparative lab applications and chemical production

For many applications, you don't need solvents with highest purity – you need a cost-efficient solution with reliable quality and available in high quantities. **EMPLURA®** is EMD Millipore's low-cost alternative to high-purity qualities. **EMPLURA®** solvents are tested mainly for preparative purposes or for standard production processes.

Laboratory use

EMSURE® – EMPARTA® – EEMPLURA® | The three quality grades of EMD Millipore classical solvents

Whenever you want to use a solvent, you have to consider your requirements, your application and of course your budget. Each application is different and the range of solvents you choose should be perfectly adapted to your application. No matter what your application is (cleaning, product synthesis, sample preparation or highly critical analysis) – no matter if you have to follow international norms, ensure safety regulations or require both bulk and small quantities – the classical solvents product range has the product that perfectly fits to your needs.

Laboratory use	Cleaning	Synthesis R&D	Analysis QC	Other critical or demanding lab applications with specific requirements
Pharma industry and regulated applications				
Less-regulated applications				
Science, research, contract labs				
Schools, education				

EMPLURA®
▶ page 74

EMPARTA®
▶ page 70

EMSURE®
▶ page 60



Parameters

We check only for those parameters which are important in the described application, i.e. the minimum assay, the identity using IR-spectroscopy, the density, many times the water content and for ethers also the content of peroxides.

Packaging

The pack sizes vary from 1 liter up to 190 liter drums. Bulk-quantities and packaging on request.

Your benefits

EMPLURA®

- The right solvent for all non-regulated applications
- Adequate specifications with the most important parameters
- Available in small packs as well as in bulk quantities




Ordering information

EMPLURA® | Solvents for lab-applications A-D

Product	Purity (GC) min. [%]	Content / Packaging	Ord. No.
A Acetone EMPLURA®	99.0	1 PE	8.22251.1000
		2.5 PE	8.22251.2500
		25 ME	8.22251.9025
Acetonitrile EMPLURA®	99.0	1 GL	1.15500.1000
		2.5 GL	1.15500.2500
		25 ST	1.15500.6025
		190 ME	1.15500.9190
n-Amyl acetate EMPLURA®	98.0	1 GL	8.18700.1000
		5 PE	8.18700.5000
tert-Amyl alcohol EMPLURA®	99.0	1 GL	8.06193.1000
B Benzene EMPLURA®	99.5	1 GL	1.01782.1000
		2.5 GL	1.01782.2500
		1-Butanol EMPLURA®	99.0
		5 PE	8.22262.5000
		25 ME	8.22262.9025
2-Butanol EMPLURA®	99.0	2.5 PE	8.22263.2500
tert-Butanol EMPLURA®	99.0	1 PE	8.22264.1000
		5 PE	8.22264.5000
		25 ME	8.22264.9025
n-Butyl acetate EMPLURA®	99.0	2.5 GL	1.01974.2500
		25 ST	1.01974.6025
		190 ME	1.01974.9190
tert-Butyl methyl ether EMPLURA®	99.0	2.5 GL	1.01843.2500
		10 ME	1.01843.9011
		25 ST	1.01843.6025
		190 ST	1.01843.6190
		200 ME	1.01843.9200

GL = glass bottle | PE = polyethylene bottle | AL = aluminum bottle |
ST = stainless steel drum | ME = one-way vessel

Product	Purity (GC) min. [%]	Content / Packaging	Ord. No.		
C Carbon disulfide EMPLURA®	99.5	1 GL	1.02211.1000		
		Chloroform EMPLURA®	99.0	1 GL	8.22265.1000
				2.5 GL	8.22265.2500
		25 ME	8.22265.9025		
Cyclohexane EMPLURA®	99.0	1 GL	1.02832.1000		
		2.5 GL	1.02832.2500		
		25 ST	1.02832.6025		
		190 ST	1.02832.6190		
		190 ME	1.02832.9190		
Cyclohexanone EMPLURA®	99.0	1 GL	1.02888.1000		
		2.5 GL	1.02888.2500		
		10 ST	1.02888.6010		
		25 ST	1.02888.6025		
		190 ME	1.02888.9191		
 Cyclopentyl methyl ether EMPLURA®	99.0	1 GL	1.08293.1000		
		2.5 GL	1.08293.2500		
		4 GL	1.08293.4000		
D 1,2-Dichloroethane EMPLURA®	99.5	1 GL	1.00955.1000		
		2.5 GL	1.00955.2500		
		25 ST	1.00955.6025		
		190 ME	1.00955.9190		
Dichloromethane EMPLURA®	99.0	1 GL	8.22271.1000		
		2.5 GL	8.22271.2500		
		25 ME	8.22271.9025		
		190 ME	8.22271.9190		
Diethyl ether EMPLURA®	99.0	1 GL	1.00923.1000		
		5 AL	1.00923.5000		
		25 ST	1.00923.6025		
N,N-Dimethylfor- mamide EMPLURA®	99.0	1 PE	8.22275.1000		
		2.5 PE	8.22275.2500		
		25 ST	8.22275.6025		
Dimethyl sulfoxide EMPLURA®	99.0	1 GL	1.16743.1000		
		25 ST	1.16743.6025		
		190 ME	1.16743.9210		
1,4-Dioxane EMPLURA®	99.0	1 GL	1.03115.1000		
		2.5 GL	1.03115.2500		
		25 ST	1.03155.6025		
		190 ME	1.03155.9191		

Ordering information

EMPLURA® | Solvents for lab-applications E-O

Product	Purity (GC) min. [%]	Content / Packaging	Ord. No.
E Ethanol absolute EMPLURA®	99.5	1 GL	8.18760.1000
		2.5 GL	8.18760.2500
		25 ME	8.18760.9025
		180 ME	8.18760.9180
Ethyl acetate EMPLURA®	99.5	2.5 PE	8.22277.2500
		5 PE	8.22277.5000
Ethyl lactate EMPLURA®	99.0	1 GL	1.09639.1000
		2.5 GL	1.09639.2500
		4 GL	1.09639.4000
Ethyl methyl ketone (2-Butanone) EMPLURA®	99.0	1 GL	1.06014.1000
		2.5 GL	1.06014.2500
		10 ME	1.06014.9011
		25 ST	1.06014.6025
Ethylene glycol EMPLURA®	99.0	1 GL	1.00949.1000
		2.5 GL	1.00949.2500
		25 ST	1.00949.6025
		190 ST	1.00949.6190
F Formamide EMPLURA®	99.0	1 GL	1.04008.1000
		2.5 GL	1.04008.2500
		25 ME	1.04008.9025
H n-Heptane about 85 % EMPLURA®	85.0	1 GL	1.04307.1000
		2.5 GL	1.04307.2500
		4 GL	1.04307.4000
n-Heptane EMPLURA®	99.0	1 GL	1.04365.1000
		2.5 GL	1.04365.2500
		2.5 PE	1.04365.2511
		10 ME	1.04365.9011
		25 ST	1.04365.6025
n-Hexane about 85 % EMPLURA®	85.0	1 GL	1.04306.1000
		2.5 GL	1.04306.2500
		4 GL	1.04306.4000
n-Hexane EMPLURA®	95.0	1 GL	1.04368.1000
		2.5 GL	1.04368.2500
		2.5 PE	1.04368.2511
		10 ME	1.04368.9011
		25 ST	1.04368.6025
		190 ST	1.04368.6190
		190 ME	1.04368.9190

GL = glass bottle | PE = polyethylene bottle | ST = stainless steel drum | ME = one-way vessel

Product	Purity (GC) min. [%]	Content / Packaging	Ord. No.
I Isoamyl acetate EMPLURA®	99.0	1 GL	1.01231.1000
		25 ST	1.01231.6025
Isoamyl alcohol (mixture of isomers) EMPLURA®	99.0	1 PE	8.22255.1000
		2.5 PE	8.22255.2500
Isobutanol (isobutyl alcohol) EMPLURA®	98.5	2.5 GL	1.00985.2500
		25 ST	1.00985.6025
		190 ME	1.00985.9190
Isobutyl methyl ketone EMPLURA®	99.0	2.5 GL	8.20820.2500
		10 ST	8.20820.6010
		25 ST	8.20820.6025
M Methanol EMPLURA®	99.5	1 PE	8.22283.1000
		2.5 PE	8.22283.2500
		5 PE	8.22283.5000
		10 ME	8.22283.9011
		25 ME	8.22283.9025
		180 ME	8.22283.9180
		1-Methoxy- 2-propanol EMPLURA®	99.5
25 ST	1.16738.6025		
190 ME	1.16738.9190		
2-Methyltetrahydro- furan EMPLURA®	99.0	1 GL	1.08292.1000
		2.5 GL	1.08292.2500
		4 GL	1.08292.4000
Methyl benzoat EMPLURA®	99.0	1 GL	1.06059.1000
		2.5 GL	1.06059.2500
		25 ST	1.06059.6025
1-Methyl-2-pyrrol- idone EMPLURA®	99.5	1 GL	8.06072.1000
		2.5 GL	8.06072.2500
		10 ST	8.06072.6010
		10 ME	8.06072.9011
		25 ME	8.06072.9025
		210 kg ME	8.06072.9210
O 1-Octanol EMPLURA®	99.0	1 GL	1.00991.1000
		25 ST	1.00991.6025

Ordering information

EMPLURA® | Solvents for lab-applications P-Z

Product	Purity (GC) min. [%]	Content / Packaging	Ord. No.
P n-Pentane about 95 % EMPLURA®	95.0	1 GL	1.07176.1000
		5 AL	1.07176.5000
		25 ST	1.07176.6025
		190 ME	1.07176.9190
n-Pentane EMPLURA®	99.0	1 GL	8.20957.1000
		2.5 GL	8.20957.2500
		25 ME	8.20957.9025
Petroleum benzene boiling range to about 40°C EMPLURA®	-	1 GL	1.00915.1000
		5 AL	1.00915.5000
		25 ST	1.00915.6025
Petroleum benzene boiling range 40 - 80°C EMPLURA®	-	1 GL	1.01773.1000
		5 AL	1.01773.5000
Petroleum benzene boiling range 50 - 70°C EMPLURA®	-	1 GL	1.00910.1000
		5 AL	1.00910.5000
		25 ST	1.00910.6025
Petroleum benzene boiling range 100 - 140°C (Naphtha Benzene) EMPLURA®	-	1 GL	1.01770.1000
		5 AL	1.01770.5000
Petroleum benzene boiling range 140 - 180°C EMPLURA®	-	1 GL	8.14563.1000
1,2-Propanediol EMPLURA®	99.0	1 PE	8.22324.1000
		5 PE	8.22324.5000
1-Propanol EMPLURA®	99.0	1 GL	1.00996.1000
		2.5 GL	1.00996.2500
		25 ST	1.00996.6025
		190 ME	1.00996.9190
2-Propanol 70 % EMPLURA®	-	4 GL	1.09636.4000
2-Propanol EMPLURA®	99.5	1 PE	8.18766.1000
		2.5 PE	8.18766.2500
		10 ME	8.18766.9011
		25 ME	8.18766.9025
		180 ME	8.18766.9180
Pyridine EMPLURA®	99.0	1 GL	1.07462.1000
		2.5 GL	1.07462.2500
		25 ST	1.07462.6026
		190 ME	1.07462.9190

GL = glass bottle | PE = polyethylene bottle | AL = aluminum bottle |
ST = stainless steel drum | ME = one-way vessel

Product	Purity (GC) min. [%]	Content / Packaging	Ord. No.
T Tetrachloroethylene EMPLURA®	99.0	1 GL	1.00964.1000
		2.5 GL	1.00964.2500
		25 ST	1.00964.6025
		190 ME	1.00964.9190
Tetrahydrofuran EMPLURA®	99.0	1 GL	1.08114.1000
		2.5 GL	1.08114.2500
		25 ST	1.08114.6025
		190 ST	1.08114.6190
		190 ME	1.08114.9190
Toluene EMPLURA®	99.0	1 GL	1.08323.1000
		2.5 GL	1.08323.2500
		10 ME	1.08323.9011
		25 ST	1.08323.6025
		190 ME	1.08323.9190
Trichloroethylene EMPLURA®	99.5	1 GL	1.00958.1000
		2.5 GL	1.00958.2500
		25 ST	1.00958.6025
Triethanolamine EMPLURA®	99.0	5 PE	8.22341.5000
		25 PE	8.22341.9026
X Xylenes (isomeric mixture) EMPLURA®	-	2.5 GL	1.08634.2500
		4 GL	1.08634.4000

NEW

NEW

NEW

NEW



Packaging and withdrawal systems

Classical analysis

EMD Millipore has a strong track record in developing practical packaging concepts and chemical packaging that preserve the high quality of our solvents. We have been authorized as an official inspection authority by the Federal Institute for Material Research and Testing of Germany (BAM).

EMD Millipore offers a unique variety of packaging sizes and types for solvents **EMSURE®**, **EMPARTA®**, **EMPLURA®** and **SeccoSolv®**:

- Glass bottles
- HDPE bottles
- Aluminum bottles
- Septum seal bottles (see page 56)
- Stainless steel drums
- Other drums and containers

For many years, EMD Millipore has worked closely with customers to develop solvent withdrawal systems that are tailor-made for our packaging types. Today, our broad range of withdrawal systems and containers is unrivalled in the industry. As a result, customers can rest assured that whatever the application, we can always supply the right container and the right withdrawal system. And since we provide a fully integrated system that includes solvent, container and withdrawal equipment, all components are perfectly matched for optimal results.



Your benefits

Packaging and withdrawal systems

- Application and demand orientated packaging sizes
- Easy, safe and contamination-free solvent handling
- Maximum safety due to an extensive portfolio of safety accessories
- Ecological and economical benefit by using returnable containers
- Individual user installation or other customized solutions possible
- High lab safety with process automation by level sensor technology

Quantity guideline

Classical analysis and synthesis

EMD Millipore's demanding quality standards apply not only to the reagents themselves but also to the packaging they are supplied in; each material being carefully developed and matched to its product specification. Our extensive variety of packaging types and sizes is unrivaled in the industry. Each of your individual demands can be covered with pack sizes from 0.5 l to 190 l and materials from glass and HDPE to metal and stainless steel.

Please select the size and material that suits your application best.

Bottles



Metal drums



Stainless steel drums



Pack sizes	0.5 l – 5 l	10 l – 190 l
Annual consumption	0.5 l – 100 l	100 l – 1000 l

Safety & environment

- Each packaging material is strictly safety tested by the Federal Institute for Material Research and Testing of Germany (BAM) and designated as suitable for the transport of hazardous materials.
- Design improvements combined with EMD Millipore withdrawal systems and safety accessories allow optimal removal of any residual quantities – minimization of the environmental pollution risk.
- The usage of EMD Millipore withdrawal systems (e.g. direct connections to instruments, central lab supply) reduce the solvent vapors emitted to the environment during solvent usage.
- Unbreakable properties of e.g. Aluminum bottles or stainless steel drums minimize the environmental pollution risks.

Packaging overview

Classical analysis



Glass bottles



- Optimum characteristics for handling, storage and transport
- Safe footprint
- Low center of gravity
- Optimum emptying
- Safety screw cap S40 (Polypropylene) with a circlip as an originality device and a PTFE-insert for highest closeness
- High pressure resistance
- Special pouring lip for non-drip pouring
- Level sensors available

To comply with transport regulations the glass bottles must be protected by pads of polystyrene. Such polystyrene packages are dispatched as packages of 6 x 1 l or 4 x 2.5 l in a special folding corrugated cardboard box that has been approved for transport purposes. For daily lab handling of glass bottles we recommend to use the safety carriers 9.20078.0001 for 0.5 l to 2.5 l or 1.20080.0001 for 4 l glass bottles.



HDPE bottle



- Made from HDPE (no risk of fracture), outstanding handling characteristics due to integrated handle for 2.5 and 5 liter bottles
- Small footprint (optimum for storage) and low weight (easy to handle and low transport costs)
- Tested for blisters and particles
- UN certification to be sent without polystyrene outer packaging
- Safety screw cap S40 (Polypropylene) with a circlip as an originality device and a PTFE-insert for highest closeness
- High pressure resistance
- Level sensors available



Aluminum bottle



5 liter

► For more details
please have a look on page 47

- Optimum characteristics for handling, storage and transport
- Optimum material characteristics
(avoidance of interactions between solvents and packaging material)
- Safety screw cap S40 with a circlip as an originality device and a PTFE-insert for highest closeness
- UN certification to be sent without polystyrene outer packaging
- Low weight (easy handling and low transport costs)
- No risk of fracture
- Level sensors available



Stainless steel drums



10 liter



25 liter



190 liter

► For more details
please have a look on page 91

- Optimum material characteristics
(avoidance of interactions between solvents and packaging material)
- Can be combined with a variety of withdrawal systems and level sensors
- Optimum emptying
- Stackable



Other drums and containers



10 liter



25 liter



180/190 liter

In addition to conventional packaging we also implement quite specific solutions especially for production use. This range includes steel drums (25 and 180/190 liter – depending on the solvent with a PE-inliner).

Packaging details and safety accessories

Classical analysis and synthesis



Glass bottles [available from 0.5 l up to 4 l]



Specially developed S40 thread
withstands higher contact pressure
and ensures tighter seals

Specially formed, sharp thread lip
for safe drip free pouring

Specially treated high quality glass
with extreme durability due to constant
wall thickness for highest safety and
product quality

New S40 screw cap
Tamper proof closure will remain as ring
on the bottle neck

Pour ring for safe and ergonomic withdraw
New tension-free manufacturing
technology: "bottle out of one drop"
to avoid any predetermined
breaking point

Unique, clear and complete labeling
with product specifications
and all relevant hazard declarations

Broad and stable base
for safe stand with low point of gravity



Technical data

Material:
Moulded amber glass, hydrolytic class 3

Available packaging size:
0.5 l, 1 l, 2.5 l and 4 l

Height, diameter and net weight (bottle size):
180 mm, ø 83 mm, approx. 450 g (0.5 l)
222 mm, ø 101 mm, approx. 600 g (1 l)
258 mm, ø 151 mm, approx. 1140 g (2.5 l)
350 mm, ø 162 mm, approx. 1525 g (4 l)

Safety accessories

Bottle opening key S40 / S28	1.08801.0001
Safety carrier for bottles up to 2.5 l	9.20078.0001
Safety carrier for 4 l bottles	1.40140.0001
Adapter with integrated level sensor for EMD Millipore bottles with S40 thread (supply)	9.67100.2001
Display for level sensor	9.67100.2004
Label set for self-labeling lab-mixtures according to GHS, DIN EN ISO & GLP	1.00801.0001



HDPE bottles [available from 1 l up to 5 l]



Specially developed S40 thread
withstands higher contact pressure
and ensures tighter seals

New S40 screw cap
Tamper proof closure will remain as ring
on the bottle neck

Specially formed, sharp thread lip
for safe drip free pouring

Integrated handle
for best pouring properties

Specially treated high quality HDPE
with extreme durability, inertness
and shock resistance for highest safety
and product quality

Unique, clear and complete labeling
with product specifications
and all relevant hazard declarations

Reduced packaging waste
(no additional protection material
necessary inside card boxes)
to protect the environment and
to benefit from economical advantages

Low bottle weight
for easy, safe and economic solvents
handling

Technical data	
Material:	HD-PE
Available packaging size:	1 l, 2.5 l and 5 l
Height, diameter and net weight (bottle size):	206 mm, ø 101 mm, approx. 66 g (1 l) 322 mm, ø 125 mm, approx. 145 g (2.5 l) 330 mm, ø 178 mm, approx. 335 g (5 l)

Safety accessories	
Bottle opening key S40 / S28	1.08801.0001
Adapter with integrated level sensor for EMD Millipore bottles with S40 thread (supply)	9.67100.2001
Display for level sensor	9.67100.2004
Label set for self-labeling lab-mixtures according to GHS, DIN EN ISO & GLP	1.00801.0001

Safety and the returnable system

Classical analysis and synthesis

Important safety notices

If flammable liquids (e.g. solvents) are to be used, the container (10l and more) must be properly grounded according to valid safety regulations to avoid explosion and fire risks. Appropriate measures must be taken to discharge static electricity.

- General warnings and safety instructions must be observed.
- All components (e.g. container and withdrawal system) must be grounded separately in accordance with the applicable safety regulations.
- Grounding clamps must have metallic contact with both the container and the withdrawal system, and a safe ground connection.
- The grounding of the container and the grounding of the withdrawal system must be installed before opening the container.
- The user must always wear conductive personal protective equipment, especially shoes and gloves, to avoid electrostatic charges. Therefore, the user must always wear conductive personal protective equipment, especially shoes and gloves.
- The floor has to be conductive.
- Sampling vessels made of insulating material with a volume greater than 1 liter should not be used.
- Before using organic solvents, the user must ensure that there are no additional ignition hazards caused by process-specific parameters, such as increased ignitability of the substances due to changed environmental conditions or when sampling in combination with highly charge-generating processes.

These measures reduce the risk of electrostatic separation of charges to increase safety in daily solvents handling dramatically.



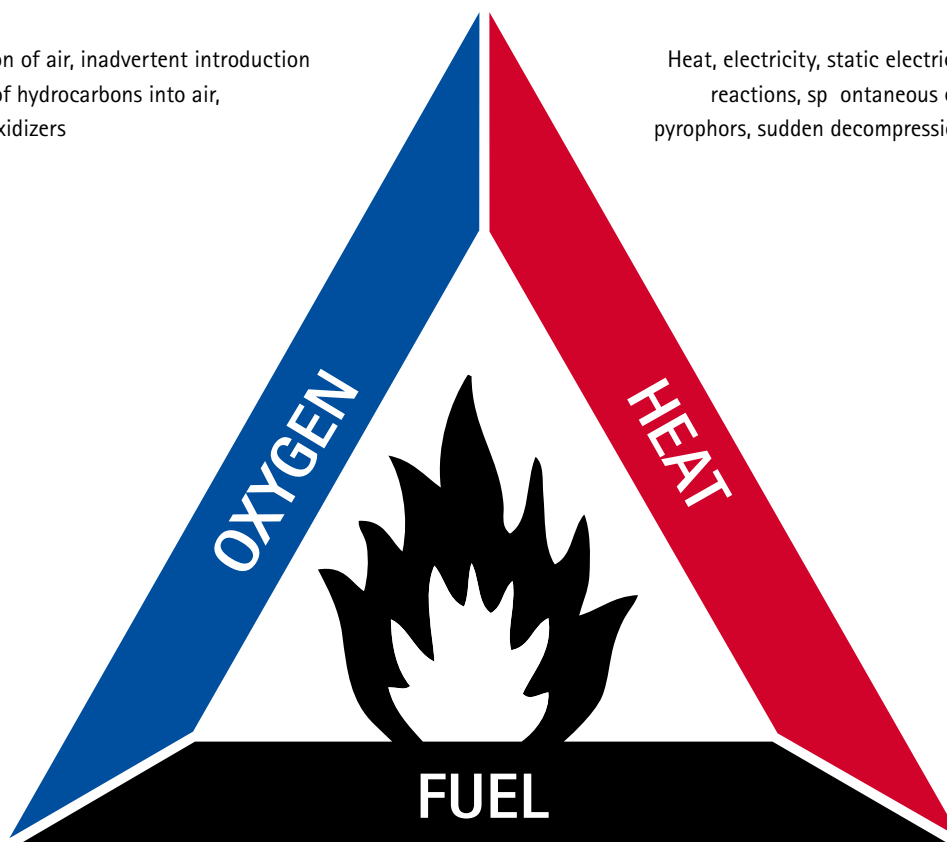
The fire and explosion triangle

Oxidizer

Planned introduction of air, inadvertent introduction of oxygen, release of hydrocarbons into air, weathered fluids, oxidizers

Ignition source

Heat, electricity, static electricity, friction, chemical reactions, spontaneous combustion, dieseling, pyrophors, sudden decompression, catalytic reactions



Heavy and light gases, hydrocarbon liquids and vapours, vapours of chemicals / lubricants / solvents, frac oils, flammable materials

Removing at least one of the component avoids the fire / explosion.

Important safety advice

Our withdrawal systems have been developed and optimized for the use with containers and solvents from Merck Millipore. Merck Millipore therefore disclaims any warranty or liability for the operability of its withdrawal systems in connection with containers or solvents from other manufacturers.

Merck Millipore reserves the right to refrain from the delivery of withdrawal systems if the respective order does not indicate that each withdrawal system will be used in combination with appropriate solvents and containers from Merck Millipore.

We inform and advise our customers to the best of our knowledge and ability but without any engagement or liability on our part. Our customers must obey all existing laws and regulations. This also applies in respect of any protected rights of third parties. Our information and advice does not eliminate the need for our customers to check, on their own responsibility, that our products are suitable for the purpose envisaged.

Packaging details and safety accessories

Classical analysis and synthesis



Metal drums [available from 10 l up to 180 l]



Technical data

Parameter	10 l	25 l	25 l with PE	180 l	180 l with PE
Height	34 cm	52 cm	52 cm	88 cm	88.5 cm
Diameter	24.5 cm	29 cm	29 cm	59.5 cm	60 cm
Volume	13.5 l	28 l	28 l	216.5 l	203 l
Filling quantity	10 l	25 l	25 l	180 l	180 l
Weight (empty)	1.8 kg	3.6 kg	3.4 kg	21.3 kg	21.5 kg
Number per pallet	13	11	11	2	2
Openings [located]	2" [decentr.]	2" [centr.] and 3/4" [decentr.]	S56x4 (PP)	2" [centr.] and 3/4" [decentr.] (steel, galvanized)	2" with 3/4" (PP)
Material	steel	steel	steel with PE	steel	steel with PE

Safety accessories

Antistatic set (3 cables)	1.07070.0001
Drum opening key	1.08803.0001



Important notice:

Must not be pressurized with inert gas!

► Withdrawal systems see page 92



Stainless steel drums [available from 10 l up to 190 l]



Technical data			
Parameter	10 l	25 l	190 l
Height	35 cm	52 cm	88 cm
Diameter	24 cm	29 cm	59.5 cm
Volume	13 l	28 l	215 l
Filling quantity	10 l	25 l	190 l
Weight (empty)	1.9 kg	3.8 kg	18 kg
Number per pallet	15	11	2
Openings	2" centrally and 3/4" decentrally located		
Material	stainless steel 1.4301		

Safety accessories	
Antistatic set (3 cables)	1.07070.0001
Drum opening key	1.08803.0001

► Withdrawal systems see page 92

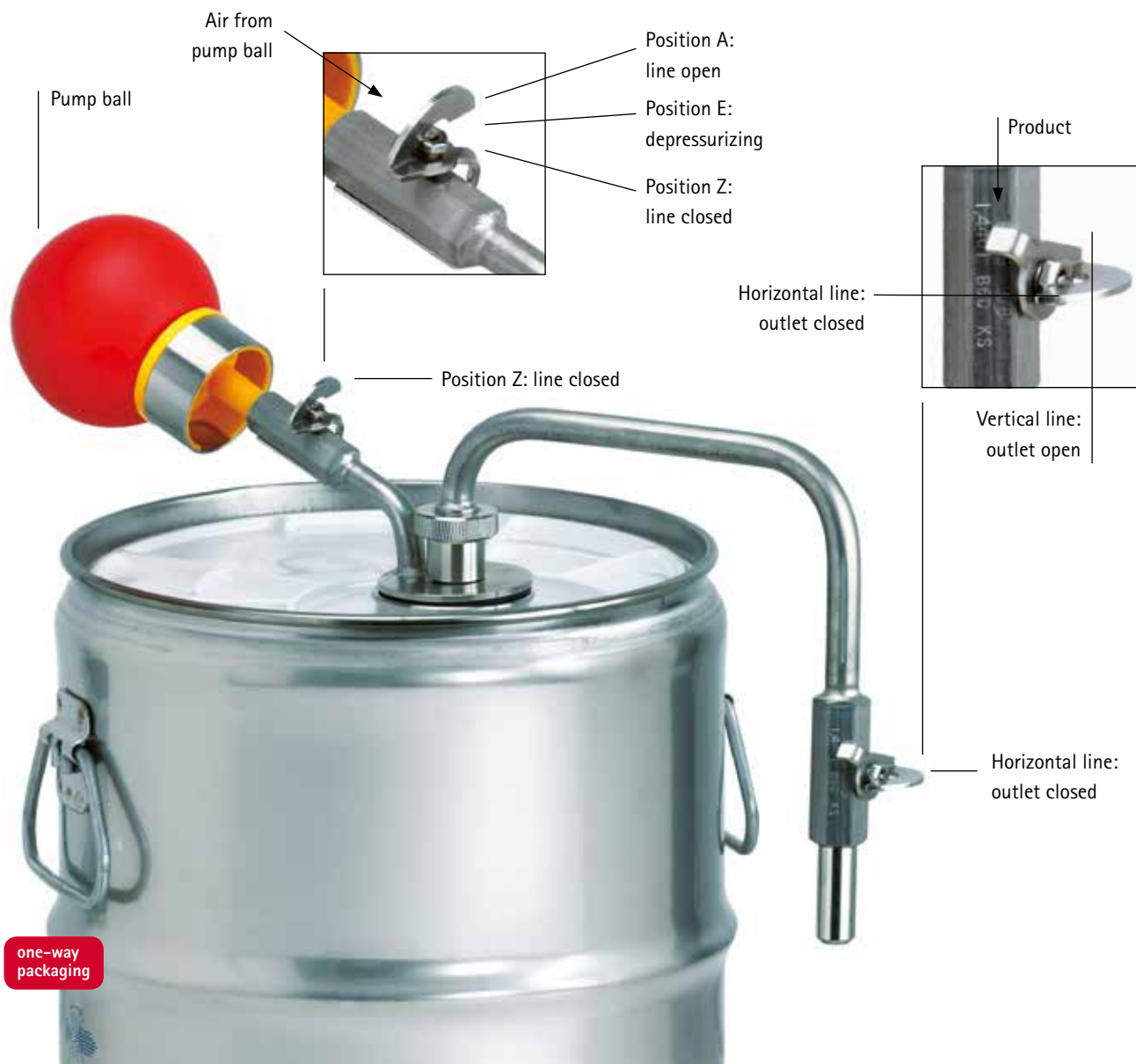
Withdrawal systems for drums

Classical analysis and synthesis



Manual pressure build-up

- Safe, easy and convenient solvent handling
- Usage of tested high quality materials to ensure a reliable, contamination free and safe handling of EMD Millipore solvents
- High flexibility due to independence on gas supply



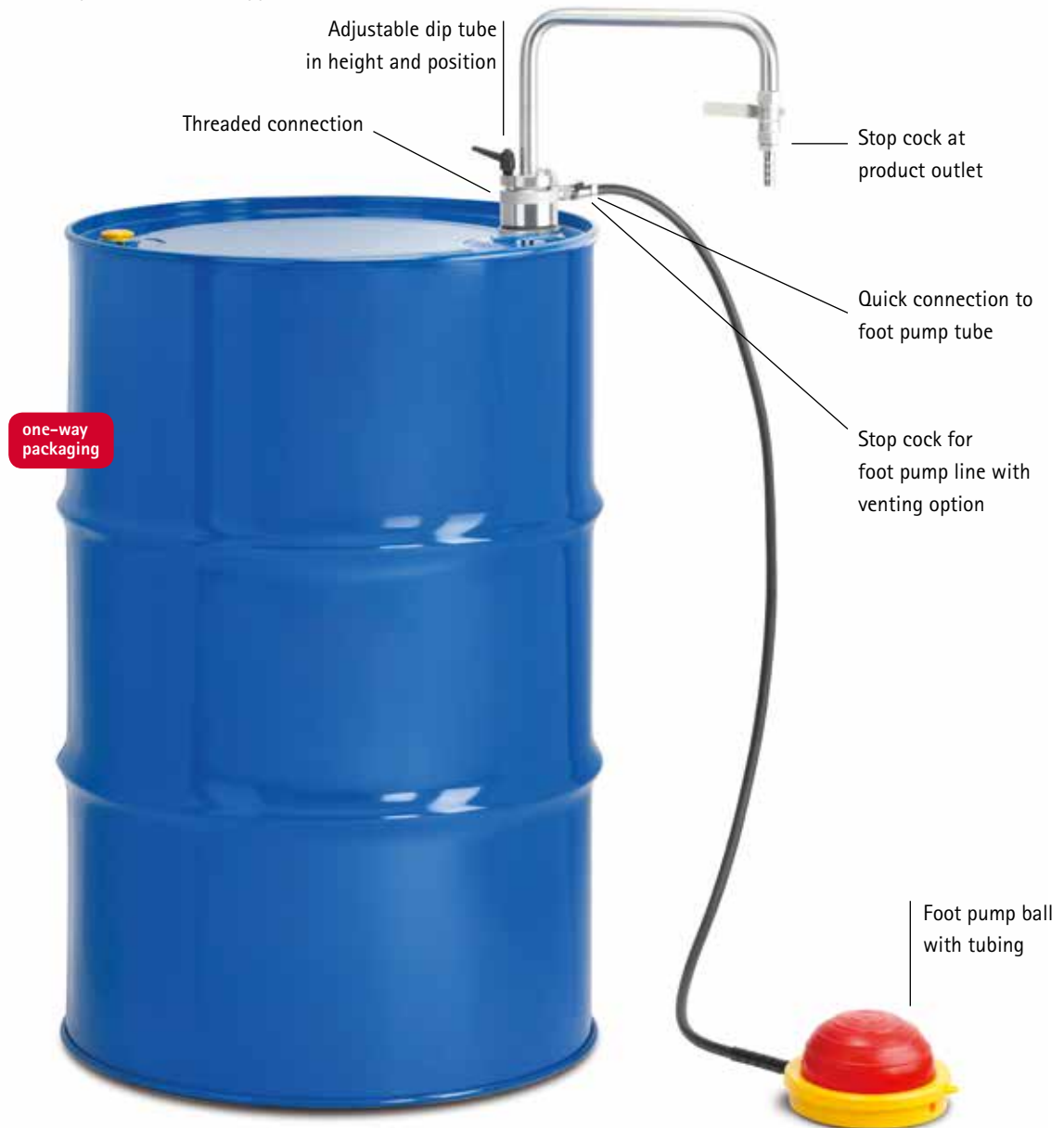
System at a glance

Order number	1.01114.0001	Necessary complete products	9.67100.1026 Dip tube for 25 l composite drum (steel/PE)
Suitability	10 l and 25 l metal and stainless steel drums	Recommended safety products	Antistatic set (3 cables) 1.07070.0001
Operation mode	Manual pressure build-up by pump ball		Drum opening key 1.08803.0001
Set components	Withdrawal system body with 2" clamp Hand pump ball with rapid action connector 10 l dip tube 25 l dip tube	Spare parts	Dip tube for 10 l drums 9.67100.1012 Dip tube for 25 l drums 9.67100.1028 Hand pump ball 9.67114.0000



Manual pressure build-up for high volumes

- Safe, easy and convenient solvent handling
- Usage of tested high quality materials to ensure a reliable, contamination free and safe handling of EMD Millipore solvents
- High flexibility due to independence on gas supply



System at a glance

Order number	1.19171.0001	Necessary complete products	-	
Suitability	180 l / 190 l / 200 l metal and stainless steel drums	Recommended safety products	Antistatic set (3 cables)	1.07070.0001
Operation mode	Manual pressure build-up by foot pump ball		Drum opening key	1.08803.0001
Set components	Withdrawal system body with 2" thread Foot pump ball with flexible tube and rapid action connector Adjustable dip tube	Spare parts	-	

Withdrawal systems for drums

Classical analysis and synthesis



Pressurizing with inert gas [only for stainless steel drums]

- Safe, easy and convenient solvent handling
- Usage of tested high quality materials to ensure a reliable, contamination free and safe handling of EMD Millipore solvents
- Cost effective solution due to economic concept of returnable container handling
- Construction of a central supply system, direct connection to instruments or individual installations as options



System at a glance

Order number	1.06710.0001	Necessary completeive products	Dip tube for 10 l stainless steel drums	9.67100.1010
Suitability	10 l, 25 l and 190 l stainless steel drums		Dip tube for 25 l stainless steel drums	9.67100.1025
			Dip tube for 190 l stainless steel drums	9.67100.1190
			Stainless steel clamp for filling nozzle attachment to drums	9.67106.0001
Operation mode	Pressurizing with inert gas (house gas / gas bottle)			
Set components	Filling nozzle with stainless steel coated, flexible PTFE-tube (80 cm)	9.67100.9090	Recommended safety products	Antistatic set (3 cables)
	Gas feeding tube	9.67100.9051		Drum opening key
	Threaded adapter with vertical connections	9.67100.9002	Spare parts	Filling nozzle with stainless steel coated, flexible PTFE-tube (80 cm)
				Gas feeding tube
				Threaded adapter with horizontal connections
				Threaded adapter with vertical connections

Service & Support

EMD Millipore provides numerous ways for getting information, handling instructions, technical data or individual consultation. Please do not hesitate to use all of them:

- **Online services**
Solvents website www.emdmillipore.com/solvents
Website "Solvent Management System" www.emdmillipore.com/solvents-withdrawal
Safety film & Handling video manuals www.emdmillipore.com/safety-film
Safety & Regulations www.emdmillipore.com/safety
- EMD Millipore Catalog with separate section and product pictures
- Handling manuals with extensive information and step-by-step pictures
- Technical drawings and product details on request
- Individual consulting and technical drawings for customized installations
- On-the-spot consultancy



Accessories

Our wide range of withdrawal accessories includes all the safety items you need for maximum withdrawal safety – for example, gas reducing valve or anti-static device. All components and accessories are easily interconnectable, thanks to a comprehensive selection of reducers, adapters and couplings that covers virtually all application scenarios.

When large amounts of solvents are used regularly in the lab, we recommend installing a complete supply system. This can be fitted in the lab safety cabinet, and provides a convenient, highly efficient system where solvent withdrawal takes place directly in the fume hood. We also offer accessories for connecting barrels in series to ensure uninterrupted solvent delivery (please contact us for details). When withdrawing high purity solvents from horizontal vessels, self-closing stainless steel nozzles must be specified.





Safe and easy handling

In close consultation with our customers for many years now, we have been engaged in a development program for withdrawal systems that are tailor-made for our solvents containers with main focus on customer's safety. EMD Millipore withdrawal systems include all the relevant safety features, e.g. self-closing nozzles, pressure relief mechanisms and anti-static devices.

For easy handling the withdrawal system components are ergonomically shaped (e.g. filling nozzle) and easily interconnectable by a broad range of connectors (e.g. quick connectors) and adapters.

Contamination free withdrawal

The way in which the withdrawal systems are perfectly matched to the various containers and to the special needs of certain grades of solvent, ensures that withdrawal occurs without solvent contamination for safe and reproducible customer results.

Application orientated material developments as well as the optimally match of solvent, container and withdrawal system to one another provide perfect suitability to a contamination free solvents handling.

By using e.g. 10-l-drums with the appropriate withdrawal system, the customer is able to minimize the solvents contamination with air humidity. The customer just needs to open the 10-l-drum once in comparison to 4 times opening a 2.5 l glass bottle for 10-l-needs.

Your benefits

Accessories

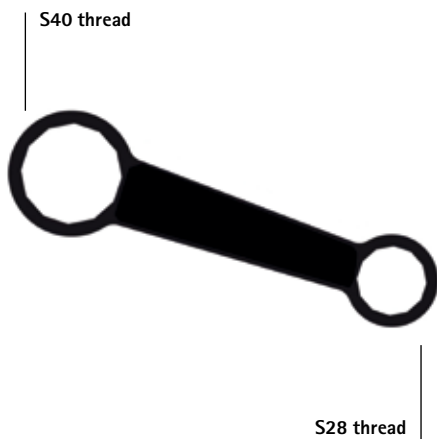
- Application and demand orientated packaging sizes
- Easy, safe and contamination-free solvent handling
- Maximum safety due to an extensive portfolio of safety accessories
- Direct connection to laboratory equipment possible (e.g. HPLC-instruments)
- Individual user installation or other customized solutions possible
- High lab safety with process automation by level sensor technology

Safety accessories for bottles

Accessories

Handling hazardous goods daily demand highest health protection. Specially for solvents in glass bottles there are several additional safety products available that increases your lab safety dramatically.

Bottle key



Bottle key for safe and convenient bottle opening
[1.08801.0001]

- Bottle key for opening and closing EMD Millipore bottles with S40 and S28 screw cap
- Perfectly adapted to EMD Millipore bottles
- Maximum user safety
- User-friendly and convenient

Safety carrier for glass bottles



Safety carrier for glass bottles
[9.20078.0001 (up to 2.5 l) and 1.40140.0001 (up to 4 l)]

Maximum safety in case of accident:

- Optimal bottle protection due to very effective PE-foam buffer
- Additional time buffer for disposal due to solvent resistant materials
- No risk of laceration by glass splinters and no contact with solvents and vapours due to leak proof top cover
- Convenient handling due to stable and broad handle

HPLC-Adapter



Adapter for solvent supply
(Ord. No. 1.03830.0001)



Adapter for solvent disposal
(Ord. No. 1.03831.0001)

HPLC-Adapter for direct instrument connection
[1.03830.0001 (supply) and 1.03831.0001 + 1.03833.0001 (disposal)]

- Direct instrument adapter for S40-threaded EMD Millipore bottles
- No harmful evaporations
- Contamination-free solvent handling
- Stable eluent mixture ratio without contamination
- Easy exchange of bottles
- Multiple connection possibilities

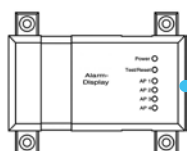
Process automation by level sensor technology

Accessories

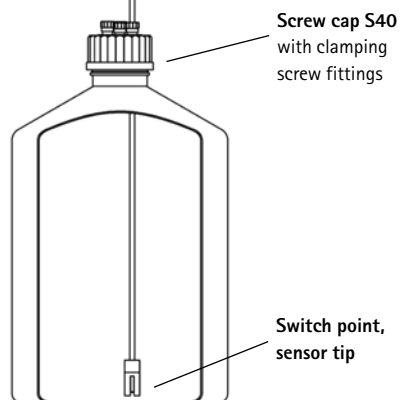
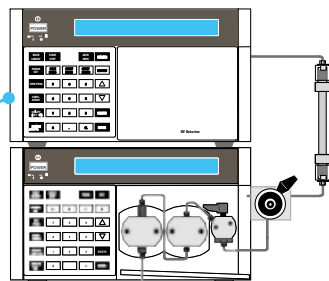


Level sensors for bottles

Alarm display
(Ord. No. 9.67100.2004)

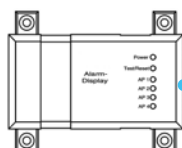


HPLC-instrument

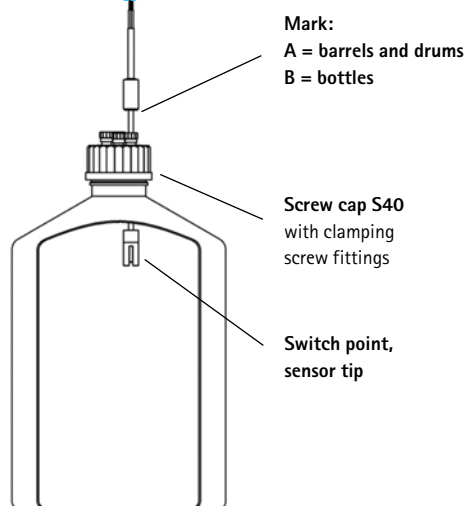
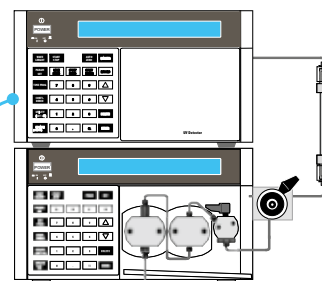


Bottle level sensor for solvent supply
(Ord. No. 9.67100.2001)

Alarm display
(Ord. No. 9.67100.2004)



HPLC-instrument



Bottle level sensor for solvent disposal
(Ord. No. 9.67100.2002)

Mark:

A = barrels and drums
B = bottles

As the pioneer in lab scale level sensing EMD Millipore provides now a safe and convenient solution for process automation in laboratories. Primary for aluminum bottles but also for all other EMD Millipore solvent bottles with S40 thread the sensor is pre-assembled in a screw cap with 3 connection positions to connect e.g. HPLC tubes of 3 mm directly to the bottle. The S40-screw cap is screwed onto the top of the bottle. With a clamping screw the sensor can be adjusted to several bottle sizes or also to the desired level.

- **Connecting the sensor to an alarm display for optical and acoustic signalling** purposes at the workplace with a built-in acknowledgement function.
- **Connecting the bottle sensor signal directly to an HPLC-instrument** it stops the HPLC-run automatically to ensure a consistent supply of mobile phase and thus avoiding any reconditioning of the column. For disposal side the sensor prevents from overfilling and from the occurrence of harmful situations.



Ordering information

Accessories | Safety accessories for bottles

Categories	Products	Ord. No.
Connection screw caps	Adapter S40 for the direct aspiration of solvents through tubes of 3 mm O.D. from bottles with S40 thread	1.09996.0001
	HPLC bottle adapter with 3 tube connections ID 3.2 mm, solvents supply by EMD Millipore bottles	1.03830.0001
	HPLC bottle adapter S40 with 3 tube connections and 1 connection for exhaust air filter, solvents disposal	1.03831.0001
	Air valve for HPLC bottle adapter S40	1.03832.0001
	Exhaust air filter for HPLC bottle adapter S40, disposal	1.03833.0001
	Fittings for capillaries with 3.2 mm O.D., for HPLC bottle adapter S40 (pack of 10)	1.03834.0001
	PTFE-ferrule for capillaries with 3.2 mm A.D., for HPLC bottle adapter S40 (pack of 10)	1.03835.0001
	Blanking plug for capillary connections with 3.2 mm I.D., for HPLC bottle adapter S40	1.03836.0001
	Bottle adapter (PTFE), S40 (bottle thread) to GL45 (outer thread)	1.67206.0001
	Reducer (PE) from S40 to GL45	9.67206.0001
	Reducer (PTFE) from S40 to S38	1.67207.0001
	Labels	Labels Geöffnet am / verw. bis (only German text) 100 adhesive labels
Level sensors	Adapter with S40 thread with level sensor for emptying EMD Millipore solvents in bottles	9.67100.2001
	Adapter with S40 thread with sensor for filling EMD Millipore bottles (waste solvent)	9.67100.2002
	Display and alarm device for bottle level sensor	9.67100.2004
Opening tools	Bottle key for opening an closing bottles with S40 and S28 screw caps	1.08801.0001
Safety carrier	Safety carrier for EMD Millipore 2.5 l glass bottles	9.20078.0001
	Safety carrier for EMD Millipore 4 l glass bottles	1.40140.0001

HPLC-Adapter for bottles
with S40 thread



Ordering information

Accessories | Safety accessories for barrels and drums

Categories	Products	Ord. No.
Essential safety equipment	Antistatic device for earthing metal containers when dispensing and filling with flammable solvents (set of 3 cables)	1.07070.0001
	Pressure safety device 0.5 bar with 2 tube connections (6 x 8 mm)	9.67100.9004
	Reducing valve 0.2 bar with integrated excess pressure safety device 0.5 bar	9.67100.9100
Filling nozzle clamps	Stainless steel clamp for filling nozzles for drums	9.67106.0001
	Stainless steel clamp for filling nozzles for wall attachment	9.67107.0001
Labels	Labels Geöffnet am / verw. bis (only German text) 100 adhesive labels	1.08899.0001
Opening tools	Drum key for opening and closing containers with 2" and 3/4" screw caps	1.08803.0001

Accessories | Withdrawal systems for barrels and drums

Categories	Products	Ord. No.
Withdrawal systems	Withdrawal system for solvents with manual pressure build-up for 10 l and 25 l metal and stainless steel drums	1.01114.0001
	Withdrawal system for solvents with manual pressure build-up for 200 l barrels and drums	1.19171.0001
	Withdrawal system for stainless steel barrels and drums with threaded adapter, gas feeding tube and filling nozzle with flexible line (necessary in addition: dip tube suit the particular type of container)	1.06710.0001
Spare parts and optional products for withdrawal systems	Dip tube for 10 l stainless steel drum for withdrawal system Ord. No. 1.01114.0001	9.67100.1012
	Dip tube for 25 l stainless steel drum for withdrawal system Ord. No. 1.01114.0001	9.67100.1028
	Hand pump ball for withdrawal system Ord. No. 1.01114.0001	9.67114.0000
	Hand pump with rapid-action connector	9.67100.1079
	Seal (O-Ring, 14 x 2.5 mm) for withdrawal systems Ord. No. 1.01114.0001	9.67100.1048
	Seal (O-Ring, 56 x 3.6 mm) for withdrawal systems Ord. No. 1.01114.0001 and threaded adapter	9.67100.1047

Ordering information

Accessories | Withdrawal components for individual installations

Categories	Products	Ord. No.
Adapters and reducers	Coupling part between tube (6 x 8 mm) and pipe (O.D. 10 mm)	9.67100.1055
	Rapid-action connection nipple (product side) with G3/8 thread	9.67100.1051
	Rapid-action connector for gas feed tube (8 x 6 mm) or for system venting	9.67100.1052
	Rapid-action connector for product tube 3 x 1.5 mm	9.67100.1076
	Rapid-action connector (gas side) with G3/8 thread	9.67100.1050
	Rapid-action nipple for product tube 8 x 6 mm	9.67100.1061
	Rapid-action nipple with tube connection 6 x 4 mm	9.67100.1064
	Reducer (PE) from S56 x 4 to 2" thread (2" coarse to 2" fine thread)	9.67202.0000
	Reducer (stainless steel) from 2" to 3/4" thread	9.67204.0000
	Reducer (stainless steel) from 2" to S40 thread	1.01111.0001
Filling nozzles and taps	Filling nozzle (stainless steel) self-closing, with stainless steel-coated PTFE-tube (80 cm) with rapid-action connector	9.67100.9090
	Filling nozzle (stainless steel) with stainless steel-coated PTFE-tube with larger rapid-action connector (type 25) for threaded adapter 9.67100.9006	9.67100.9065
	Filling nozzle (tap), self closing, with G3/8 thread	9.67100.1090
	Filling nozzle (tap), self closing, with G3/8 thread for wall attachment	9.67100.1084
	Tap (stainless steel) attachable, self closing, for vessels with 3/4" internal thread	1.09070.0001
Dip tubes	Dip tube for 10 l stainless steel drum for withdrawal system with 2" threaded adapter	9.67100.1010
	Dip tube for 25 l stainless steel drum for withdrawal system with 2" threaded adapter	9.67100.1025
	Dip tube for 190 l stainless steel drum for withdrawal system with 2" threaded adapter	9.67100.1190
	Dip tube for 25 l combi container for withdrawal system Ord. No. 1.01114.0001	9.67100.1026
Threaded adapters	Threaded adapter 2" (stainless steel) with 2 vertical rapid-action connectors	9.67100.9002
	Threaded adapter 2" (stainless steel) with 2 horizontal rapid-action connectors	9.67100.9003
Tubings	Spiral gas feeding tube (Nylon) with rapid-action connector (length: 180 cm)	9.67100.9051
	Stainless steel-coated PTFE-tube (80 cm) with rapid action nipple and threaded connector G3/8	9.67100.9052
	Stainless steel-coated PTFE-tube (80 cm) with 2 rapid action connectors	9.67100.9058
	Stainless steel-coated PTFE-tube (80 cm) with rapid action connector and pipe connector (O.D. 10 mm)	9.67100.9062
	Stainless steel-coated PTFE-tube (80 cm) with rapid action nipple and pipe connector (O.D. 10 mm)	9.67100.9057
	Stainless steel-coated PTFE-tube (100 cm) with pipe connector (O.D. 10 mm) on both sides	9.67100.9061

Overview

Packaging and withdrawal systems

Withdrawal system	Stainless steel drums			Metal drums		Combi drums with PE-Inliner		Accessories	Ord. No.
	10 l	25 l	190 l	25 l	190 l	25 l	180 l		
Withdrawal system for solvents with manual pressure build-up for 10 l and 30 l returnable barrels								-	1.01123.0001
Withdrawal system for solvents with manual pressure build-up for 10 l and 25 l returnable drums	■	■		■		□		- Dip tube for 25 l combi drum	1.01114.0001 9.67100.1026
Withdrawal system for inert gas pressurizing	□	□	□					Dip tube required: Dip tube for 10 l drum Dip tube for 25 l drum Dip tube for 190 l drum	1.06710.0001 9.67100.1010 9.67100.1025 9.67100.1190
Withdrawal system for solvents with manual pressure build-up for 200 l barrels and drums			■		■		■	- Adapter 2" coarse to 2" fine thread for combi drum (drum with PE-inliner)	1.19171.0001 9.67202.0000

■ suitability | □ installation possible, the appropriate dip tube has to be ordered separately

Please contact your local agent for further information for your individual installation.

Stainless steel clamp (9.67106.0001) for filling nozzles for drums.



Important safety advice

Our withdrawal systems have been developed and optimized for the use with containers and solvents from EMD Millipore. EMD Millipore therefore disclaims any warranty or liability for the operability of its withdrawal systems in connection with containers or solvents from other manufacturers.

EMD Millipore reserves the right to refrain from the delivery of withdrawal systems if the respective order does not indicate that each withdrawal system will be used in combination with appropriate solvents and containers from EMD Millipore.

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