High purity solvents and acids 2011/2012

LGC Standards

Excellence through measurement

LGC Standards

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Why choose LGC Standards?

The benefits for our customers:

- Fast delivery
- Optional lot reservation, saving time and money
- Flexible range of packaging options
- Customised solvent mixtures to individual specifications
- Experienced and knowledgable staff
- Value Added Services
- Technical support

Our product range:

- Picograde® – solvents for residue analysis
- Optigrade® – solvents for HPLC
- LC-MS solvents
- ULC-MS solvents
- Buffer for LC-MS
- Customised solvents mixtures
- High purity acids for trace analysis

For more information or to receive any of our catalogues please contact us or visit our website:

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Content

Introduction

Picograde® solvents for residue analysis

Picograde® solvents form the heart of the LGC Standards solvent range. Each batch undergoes rigorous testing in order to meet the demanding requirements of organic trace analysis every time.

Environmental analysts are now expected to detect trace levels of an increasingly wide range of organic environmental contaminants including pesticides, PAHs, PCBs, PCDDs/PCDFs etc. with the highest possible accuracy. Consequently even the lowest levels of impurity in the solvent can affect the precision of analytical results. Picograde® solvents are specifically tailored to this application.

Carefully selected raw materials are chemically pre-treated and then fractionated in glass in the absence of air. Distillation and filling are similarly carried out in air free conditions. The glass bottles are sterile and dust free and are rinsed with the appropriate solvent prior to filling. Caps used to seal the bottles are subjected to the same stringent cleaning processes. The specification of the solvent includes the determination of water content, residue on evaporation and a comprehensive gas chromatographic analysis.

To confirm the absence of contaminants samples of the solvent are concentrated to varying degrees and then analysed by gas chromatography. Flame ionisation and electron capture detectors (ECD) are used for the quantification of the contaminants. The specification of the Picograde® solvent guarantees that no signal due to contamination will be larger than the internal standard peak (10 pg/mL heptachlor-epoxide) in the retention time window from 1,4-dichlorobenzene to decachlorobiphenyl. The very high specification of the Picograde® solvents allows them to be used for residue analysis of trace quantities of organic contaminants right down to ppb and ppt levels.

Optigrade® - High purity solvents for HPLC

High performance liquid chromatography is now an essential analytical tool especially in the areas of research and development, pharmaceutical quality control and analysis in the food and environmental sectors. This technique demands the highest quality solvents to allow reproducible separations. The basic requirements include a high UV-transmission factor, low particle levels, slight acidity and alkalinity coupled with low levels of water and other non-volatile components. In addition there must be consistency between batches.

Solvents for isocratic analytical HPLC together with gradient grade quality solvents are included in the HPLC range. Gradient grade has the highest purity and is specially designed for use with gradient elution HPLC using reversed phase materials and UV or fluorescence detection. Quality assurance procedures allow LGC Standards to offer a consistently premium quality product. Each batch is checked to make sure that the solvent has the required high level of UV-transmission in the wavelength range 190-350 nm.

Solvents for LC/MS

The presence of alkali and alkaline earth metals in the mobile phase when using LC/MS can make the interpretation of the mass spectrum very difficult. LGC Standards offers solvents designed for this technique with extremely low levels of these metals, at 0.1 ppm and less.

Solvents for Ultra HPLC (UHPLC)

ULTRA HPLC (UHPLC) requires solvents of superior quality. This range of high purity Optigrade® solvents from LGC Standards has been designed to allow high resolution and sensitivity. Such Ultra HPLC solvents combine the highest specification for: UV, low gradient shift, minimal peak impurities and lowest ionic background for MS detection. All Ultra HPLC solvents are micro filtered at 0.1 µm, have a residue following evaporation of max 1 ppm and are packed under inert gas for improved shelf life. Also available are selected buffers for mobile phase preparation and several blends of water and acetonitrile with formic acid, acetic acid and trifluoroacetic acid are offered.

Specialist solvents

Solvents for VOCs and aromatic hydrocarbons

It has become increasingly necessary to be able to determine a range of organic compounds in environmental samples including volatile organic compounds (VOCs) and BTEX-aromatics. Various extraction techniques are used for the separation and concentration of organic trace constituents from the sample matrix and it is essential to use solvents with very low levels of contamination. LGC Standards can provide the solvents to meet these exacting requirements.

Solvents for GC headspace techniques

Analysis of volatile organic impurities using the GC headspace technique, has become an important quality control tool in pharmaceutical and food related industries. The International Conference on Harmonization of technical requirements for registration of pharmaceuticals for Human use (ICH) has issued recommendations concerning the safe levels of residual solvents in pharmaceutical compounds. These solvents are divided into 3 classes according to their toxicity. Limit values of residual solvents in pharmaceutical products are specified by the United States and European Pharmacopeia. The quality of the solvent used to dissolve the sample is of prime importance. It must be of the highest purity and show virtually no background signal with both polar and non polar GC capillary columns. These headspace solvents are high boiling point solvents, specifically developed, analysed and packed for the headspace analysis of volatile solvent impurities.

Solvents for the analysis of nitrosamines

When extracting trace levels of nitrosamines in samples it is important to use a solvent that is free of nitrosamine contamination. For this application LGC Standards has solvents with a maximum level of 0.1ppb of specific nitrosamines.

Solvents for the tobacco industry

High purity acids

LGC Standards offers the most frequently used mineral acids for trace analysis: hydrochloric acid, nitric acid, hydrofluoric acid, sulfuric acid, perchloric acid and acetic acid. These are produced by sub-boiling distillation of very pure starting materials. This purification results in most metallic impurities reduced to (or bellow) ppb ranges. The acids are delivered in special bottles (long - term leached borosilicate glass or modified HDPE) which ensure minimum contamination of the acid from the material of the bottle.

Important note: Element concentrations are at the point of bottling. Concentrations of some elements may increase due to the storage container.

Trademarks

Reagents / Sorbents

Code	Product	Unit
SC-4592-A005	ICN-Alumina A - Super I (acid) (50 - 200 µm)	500 g
SC-4568-A005	ICN Alumina B - Super I (basic) (50 - 200 µm)	500 g
SC-4569-A005	ICN-Alumina B - Super I (50 - 200 µm) for dioxin analysis	500 g
SC-4181-B005	Florisil® (Standard), 60 - 100 mesh (150 - 250 µm)	500 g
SC-4181-S010	Florisil® (Standard), 60 - 100 mesh (150 - 250 µm)	10 kg
SC-4182-B005	Florisil® PR for residue analysis, 60 - 100 mesh (150 - 250 µm)	500 g
SC-4182-S010	Florisil® PR for residue analysis, 60 - 100 mesh (150 - 250 µm)	10 kg
SC-4182-S020	Florisil® PR for residue analysis, 60 - 100 mesh (150 - 250 µm)	20 kg
SC-9700-B005	Florisil® (Standard), 60 - 100 mesh (suitable for ISO 9377-2/H53)	500 g
SC-4183-B005	Florisil® (Standard), 100-200 mesh	500 g
SC-4183-S010	Florisil® (Standard), 100-200 mesh	10 kg
SC-4183-S020	Florisil® (Standard), 100-200 mesh	20 kg
SC-9982-B010	Silica gel 60 (63 - 200 µm)	1 kg
SC-9950-B005	Sodium sulfate anhydrous, for analysis (ACS), powder	500 g
SC-9950-B025	Sodium sulfate anhydrous, for analysis (ACS), powder	2.5 kg
SC-8024-B005	Sodium sulfate anhydrous, for analysis, in granular form	500 g
SC-8024-B025	Sodium sulfate anhydrous, for analysis, in granular form	2.5 kg
SC-8024-S025	Sodium sulfate anhydrous, for analysis, in granular form	25 kg
SC-1024-B005	Sodium sulfate Picograde® anhydrous, for residue analysis (ACS), in granular form	500 g
SC-1024-B025	Sodium sulfate Picograde® anhydrous, for residue analysis (ACS), in granular form	2.5 kg

Ion pair reagents

Code	Product	Unit
SC-5330-F025	1-Butanesulfonic acid sodium salt for HPLC	25 g
SC-5330-F100	1-Butanesulfonic acid sodium salt for HPLC	100 g
SC-5650-F025	1-Decanesulfonic acid sodium salt for HPLC	25 g
SC-5650-F100	1-Decanesulfonic acid sodium salt for HPLC	100 g
SC-5430-F025	1-Dodecanesulfonic acid sodium salt for HPLC	25 g
SC-5430-F100	1-Dodecanesulfonic acid sodium salt for HPLC	100 g
SC-5230-F025	1-Heptanesulfonic acid sodium salt for HPLC	25 g
SC-5230-F100	1-Heptanesulfonic acid sodium salt for HPLC	100 g
SC-5550-F025	1-Hexanesulfonic acid sodium salt for HPLC	25 g
SC-5550-F100	1-Hexanesulfonic acid sodium salt for HPLC	100 g
SC-5150-F025	1-Octanesulphonic acid sodium salt for HPLC	25 g
SC-5150-F100	1-Octanesulphonic acid sodium salt for HPLC	100 g
SC-5730-F025	1-Pentanesulfonic acid sodium salt for HPLC	25 g
SC-5730-F100	1-Pentanesulfonic acid sodium salt for HPLC	100 g

LC-MS additives

Code	Product	Unit
SO-9685-B001	Ammonium acetate UHPLC-MS Optigrade®	100 g

CAS number 631-61-8

Assay (GC, on anhydrous basis) ..... 99 % min.
Water (KF) ..... 0.1 % max.
Filter test (1M in water) .....Passes test
pH (1M in water) 6.0-7.5

Transmission

at 260 nm (1M in water) ..... 96 %
at 280 nm (1M in water) ..... 98 %

Chloride (Cl)..... 0.0005% max.
Sulfate (SO_4)..... 001% max.

Al.....1 ppm max.
Ca .....5 ppm max.
Fe.....1 ppm max.
K.....5 ppm max.
Mg.....1 ppm max.
Na .....5 ppm max.

Code	Product	Unit
SO-9679-B001	Formic acid UHPLC-MS Optigrade®	100 mL

UN 1779

CAS number 64-18-6

Assay (T, on anhydrous basis) .....99 % min.
Water (KF) ..... 1 % max.
Residue after evaporation.....0.001 %w/w max.
Color (APHA) ..... 10 max.

Gradient specification

HPLC gradient at 254 nm - H. Peak 0.005 AU max.
HPLC gradient at 254 nm - Drift 0.02 AU max.

Transmission

at 260 nm ..... 15 % min.
at 270 nm .....83% min.
at 280 nm .....90 % min.
at 300 nm .....97% min.
at 320 nm .....98% min.

Code	Product	Unit
SO-9668-B001	Trifluoroacetic acid UHPLC-MS Optigrade®	100 mL

UN 2699

CAS-Nr. 76-05-1

Assay (T).....99.95-100 %
Water (KF) ..... 0-0.02 %
Residue after evaporation.....0-0.001 %w/w
Color (APHA) 0-10

Gradient specification

HPLC gradient 254 nm - H. Peak ..... 0-0.002 AU
HPLC gradient at 254 nm - Drift ..... 0-0.010 AU

Fluorescence at 254 nm (25%, as quinine) ..... 0-1 ppb
Fluorescence at 365 nm (25%, as quinine) ..... 0-1 ppb

Transmission

at 260 nm ..... 10-100 %
at 270 nm .....79-100 %
at 280 nm .....93-100 %
at 300 nm .....95-100 %
at 320 nm .....96-100 %

High purity solvents and acids

Acetic acid

Code	Product	Unit
HPA-0050-B010	Acetic acid for trace analysis min 99.5 % (glass bottle)	1 L

UN 2789

Assay	> 99.5 %	Chloride	< 0.4 ppm
Colour (APHA)	< 10	Phosphate	< 0.5 ppm
Residue	< 2 ppm	Sulfate	< 0.4 ppm

Ag	< 0.1 ppb	Cr	< 0.1 ppb	Ni	< 0.1 ppb
Al	< 0.1 ppb	Cu	< 0.1 ppb	Pb	< 0.1 ppb
As	< 0.1 ppb	Fe	< 0.5 ppb	Se	< 0.5 ppb
Ba	< 0.1 ppb	K	< 0.1 ppb	Sn	< 0.1 ppb
Be	< 0.1 ppb	Li	< 0.1 ppb	Sr	< 0.1 ppb
Bi	< 0.1 ppb	Mg	< 0.1 ppb	Th	< 0.1 ppb
Ca	< 0.5 ppb	Mn	< 0.1 ppb	Ti	< 0.1 ppb
Cd	< 0.1 ppb	Mo	< 0.1 ppb	V	< 0.1 ppb
Co	< 0.1 ppb	Na	< 0.5 ppb	Zn	< 0.5 ppb

Hydrochloric acid stored in glass bottles will see a rise in: Al, B, Ca, K, Mg, Mn, Na and Si.

Acetone

SO-2435-B010	Acetone HPLC Optigrade®	1 L
SO-2435-B025	Acetone HPLC Optigrade®	2.5 L
SO-2435-B040	Acetone HPLC Optigrade®	4 L

UN 1090

CAS-Nr. 67-64-1

C_3H_6O

Assay ..... 99.5% min.

Water ..... 0.5% max.

Non-volatile matter ..... 0.0005% max.

Filtered through 0.2 µm

1 L = 0.792 kg (at 20°C)

Specification

Transmission

at 330 nm ..... 10% min.
at 340 nm ..... 79% min.
at 350 nm ..... 89% min.
at 370 nm ..... 98% min.

SO-1142-B010	Acetone Picograde® for residue analysis	1 L
SO-1142-B025	Acetone Picograde® for residue analysis	2.5 L
SO-1142-B040	Acetone Picograde® for residue analysis	4 L

UN 1090

CAS number 67-64-1

C_3H_6O

Assay ..... 99.0% min.

Water ..... 0.5% max.

Non-volatile matter ..... 0.0005% max.

1 L = 0.792 kg (at 20°C)

Specification

GC/ECD
In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide.

GC/FID
In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).

Acetonitrile

SO-9128-B010	Acetonitrile HPLC Optigrade® Gradient Grade	1 L
SO-9128-B025	Acetonitrile HPLC Optigrade® Gradient Grade	2.5 L

Code	Product	Unit
SO-9128-B040	Acetonitrile HPLC Optigrade® Gradient Grade	4 L

UN 1648

CAS-Nr. 75-05-8

C_2H_3N

Assay ..... 99.8% min.
Water ..... 0.02% max.
Non-volatile matter..... 0.0003% max.
Gradientspecification (210 nm)..... 3.0 mAU max.
Fluorescence (as Quinine at 254 nm).....1 ppb max.

Filtered through 0.2 µm

1 L = 0.783 kg (at 20°C)

Specification

Transmission

at 190 nm ..... 20% min
at 193 nm ..... 62% min
at 195 nm ..... 76% min
at 210 nm ..... 89% min
at 220 nm ..... 98% min
at 230 nm ..... 99% min

This solvent in glass bottles fulfills the specifications according to chapter 4 of the European Pharmacopoeia.

SO-9154-B010	Acetonitrile HPLC Optigrade® Super Gradient Grade	1 L
SO-9154-B025	Acetonitrile HPLC Optigrade® Super Gradient Grade	2.5 L

UN 1648

CAS-Nr. 75-05-8

C_2H_3N

Assay ..... 99.8% min.
Water ..... 0.02% max.
Non-volatile matter..... 0.0003% max.
Gradient specification (210 nm).....3.0 mAE max.
Fluorescence (as Quinine at 254 nm).....1 ppb max.

Filtered through 0.2 µm

1 L = 0.783 kg (at 20°C)

Specification

Transmission

at 190 nm 40% min
at 191 nm 50% min
at 193 nm 66% min
at 195 nm 83% min
at 200 nm 95% min
at 215 nm 98% min
at 230 nm 99% min

This solvent in glass bottles fulfills the specifications according to chapter 4 of the European Pharmacopoeia.

SO-2856-B010	Acetonitrile HPLC Optigrade®	1 L
SO-2856-B025	Acetonitrile HPLC Optigrade®	2.5 L
SO-2856-B040	Acetonitrile HPLC Optigrade®	4 L

UN 1648

CAS-Nr. 75-05-8

C_2H_3N

Assay ..... 99.8% min.
Water ..... 0.02% max.
Non-volatile matter..... 0.0003% max.

Filtered through 0.2 µm

1 L = 0.783 kg (at 20°C)

Specification

Transmission

at 190 nm ..... 10% min.
at 200 nm ..... 79% min.
at 210 nm ..... 89% min.
at 220 nm ..... 95% min.
at 230 nm ..... 98% min.
at 235 nm ..... 99% min.

SO-9184-B010	Acetonitrile HPLC Optigrade® (for analysis of PAHs and pesticides)	1 L

High purity solvents and acids

Code	Product	Unit
SO-9184-B025	Acetonitrile HPLC Optigrade® (for analysis of PAHs and pesticides) UN 1648 CAS-Nr. 75-05-8 C_2H_3N Assay ..... 99.8% min Water ..... 0.02% max. Non-volatile matter..... 0.0003% max. Filtered through 0.2 µm 1 L = 0,783 kg (at 20°C) Specification Transmission at 195 nm ..... 80% min. at 200 nm ..... 96% min. at 215 nm ..... 98% min. at 230 nm ..... 99% min.	2.5 L
SO-9340-B010	Acetonitrile für LC-MS Optigrade®	1 L
SO-9340-B025	Acetonitrile für LC-MS Optigrade® UN 1648 CAS-Nr. 75-05-8 C_2H_3N Assay ..... 99.8% min Water ..... 0.02% max. Non-volatile matter..... 0.0003% max. Filtered through 0.2 µm 1 L = 0.783 kg (at 20°C) Specification Ca ..... 0.1 ppm max. K..... 0.1 ppm max. Mg ..... 0.1 ppm max. Na ..... 0.1 ppm max. Transmission at 195 nm ..... 78 % min. at 200 nm ..... 95 % min. at 220 nm ..... 98 % min. at 240 nm ..... 99 % min.	2.5 L
SO-9640-B010	Acetonitrile UHPLC-MS Optigrade®	1 L
SO-4680-B025	Acetonitrile 0.1 % formic acid UHPLC-MS Optigrade® UN 1648 CAS number 75-05-8 C_2H_3N Assay .....0.095-0.105 % Water (KF) ..... 0.02 % max. Purity of ACN (GC) ..... 99.97 % min. Purity of formic acid ..... 99.0% min. Gradient specification HPLC gradient at 254 nm - H. Peak ..... 0.002 AU max. Fluorescence at 254 nm (as quinine).....0.5 ppb max. Fluorescence at 365 nm (as quinine).....0.5 ppb max. Transmission at 210 nm ..... 5 % min. at 230 nm ..... 15 % min. at 254 nm ..... 90 % min. Al .....30 ppb max. Ca ..... 100 ppb min. Fe..... 50 ppb min. K..... 100 ppb min. Mg ..... 30 ppb min. Na ..... 100 ppb min. Microfiltered through 0.1 µm/bottled under inert gas	2.5 L

Code	Product	Unit
SO-4686-B025	Acetonitrile 0.1 % acetic acid UHPLC-MS Optigrade®	2.5 L

UN 1648

CAS number 75-05-8

C_2H_3N

Assay ..... 0.095-0.105 %

Purity of ACN (GC) ..... 99.97% min.

Purity of acetic acid (GC) ..... 99.9% min.

Gradient specification

HPLC gradient at 254 nm - H. Peak .....0.002 AU max.
HPLC gradient at 254 nm - Drift .....0.010 AU max.

Fluorescence at 254 nm (as quinine) .....0.5 ppb max.
Fluorescence at 365 nm (as quinine) .....0.5 ppb max.

Transmission

at 210 nm ..... 20 % min.
at 230 nm ..... 50 % min.
at 254 nm ..... 98 % min.

Al .....30 ppb max.
Ca .....100 ppb max.
Fe.....50 ppb max.
K.....100 ppb max.
Mg .....30 ppb max.
Na .....100 ppb max.

Microfiltered through 0.1 µm/bottled under inert gas

SO-4692-B025	Acetonitrile 0.1 % trifluoroacetic acid UHPLC-MS Optigrade®	2.5 L

UN 1648

CAS number 75-05-8

C_2H_3N

Assay ..... 0.095-0.105 %

Water (KF) ..... 0.02 % max.

Purity of ACN (GC) ..... 99.97 % min.

Purity of trifluoroacetic acid..... 99.95 % min.

Gradient specification

HPLC gradient at 254 nm - H. Peak .....0.0002 AU max.

Fluorescence at 254 nm (as quinine) .....0.5 ppb max.
Fluorescence at 365 nm (as quinine) .....0.5 ppb max.

Transmission

at 210 nm ..... 20 % min.
at 230 nm ..... 50 % min.
at 254 nm ..... 90 % min.

Al .....30 ppb max.
Ca .....100 ppb max.
Fe.....50 ppb max.
K.....100 ppb max.
Mg .....30 ppb max.
Na .....100 ppb max.

Microfiltered through 0.1 µm/bottled under inert gas

SO-9186-B025	Acetonitrile DNA. max. 0.001% water	2.5 L

UN 1648

CAS-Nr. 75-05-8

C_2H_3N

Assay ..... 99.9% min.

Water by Karl Fischer titration ..... 0.001% max.

Non-volatile matter..... 0.0005% max.

1 L = 0.783 kg (at 20°C)

SO-9180-B025	Acetonitrile DNA. max. 0.003% water	2.5 L

UN 1648

CAS-Nr. 75-05-8

C_2H_3N

Assay ..... 99.9% min.

Water by Karl Fischer titration ..... 0.003% max.

Non-volatile matter..... 0.0005% max.

1 L = 0.783 kg (at 20°C)

SO-1151-B010	Acetonitrile Picograde® for residue analysis	1 L
SO-1151-B025	Acetonitrile Picograde® for residue analysis	2.5 L

High purity solvents and acids

Code	Product	Unit
SO-1151-B040	Acetonitrile Picograde® for residue analysis	4 L

UN 1648

CAS-Nr. 75-05-8

C_2H_3N

Assay ..... 99.5% min.

Water ..... 0.02% max.

Non-volatile matter..... 0.001% max.

1 L = 0.783 kg (at 20°C)

Specification

GC/ECD
In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide.

GC/FID
In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).

Ammonia solution

Code	Product	Unit
HPA-0070-B010	Ammonia solution for trace analysis (glass bottle)	1 L

UN 2672

Assay	> 21 %	Chloride	< 500 ppb
Colour (Hazen)	< 10	Phosphate	< 50 ppb
Carbonate	< 10 ppm	Sulfate	< 500 ppb

Al	< 0.5 ppb	Cu	< 0.5 ppb	Se	< 0.1 ppb
As	< 0.1 ppb	Fe	< 0.5 ppb	Ag	< 0.1 ppb
Ba	< 0.1 ppb	Pb	< 0.1 ppb	Na	< 0.5 ppb
Be	< 0.1 ppb	Li	< 0.1 ppb	Sr	< 0.1 ppb
Bi	< 0.1 ppb	Mg	< 0.2 ppb	Th	< 0.1 ppb
Cd	< 0.1 ppb	Mn	< 0.1 ppb	Sn	< 0.1 ppb
Ca	< 0.5 ppb	Mo	< 0.1 ppb	Ti	< 0.1 ppb
Cr	< 0.1 ppb	Ni	< 0.1 ppb	V	< 0.1 ppb
Co	< 0.1 ppb	K	< 0.2 ppb	Zn	< 0.2 ppb

Benzene

Code	Product	Unit
SO-1163-B010	Benzene Picograde® for residue analysis	1 L
SO-1163-B025	Benzene Picograde® for residue analysis	2.5 L

UN 1114

CAS-Nr.71-43-2

C_6H_6

Assay ..... 99.0% min.

Water ..... 0.05% max.

Non-volatile matter..... 0.0005% max.

1 L = 0.871 kg (at 20°C)

Specification

GC/ECD
In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide.

GC/FID
In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).

Benzyl alcohol

Code	Product	Unit
SO-9505-B005	Benzyl alcohol for the analysis of highly volatile halogenated compounds and EOX	500 mL

CAS-Nr. 100-51-6

C_7H_8O

Assay ..... 99.0% min.

Water ..... 0.1% max.

Non-volatile matter..... 0.05% max.

1 L = 1.05 kg (at 20°C)

Specification

Highly volatile halogenated hydrocarbons
In the GC/ECD chromatogram there are no interfering single signals in the retention time interval between 1,1-dichloroethene and tribromomethane greater than that, given by 5 µg/L parathion-methyl.

BTEX for FID
In the GC-FID chromatogram the sum of the signals of BTEX-compounds is not greater than the signal, given by 10 µg/L n-Decane.

Coulometric determination of EOX gives a halogen content as chloride of less than 0.3 mg/L.

Code	Product	Unit

Carbon disulfide

SO-9056-B005	Carbon disulfide free from aromatic hydrocarbons UN 1131 CAS-Nr. 75-15-0 CS_2 Assay ..... 99.8% min. Water ..... 0.03% max. Non-volatile matter..... 0.0005% max. 1 L = 1.261 kg (at 20°C) Specification BTEX for FID In the GC-FID chromatogram the sum of the signals of BTEX-compounds is not greater than the signal, given by 10 µg/L n-Decane.	500 mL

Chloroform

SO-4443-B010	Chloroform HPLC Optigrade® (alcohol-free. stabilised with amylene)	1 L
SO-4443-B025	Chloroform HPLC Optigrade® (alcohol-free. stabilised with amylene)	2.5 L
SO-4443-B040	Chloroform HPLC Optigrade® (alcohol-free. stabilised with amylene) UN 1888 CAS-Nr. 67-66-3 $CHCl_3$ Assay ..... 99.9% min. Water ..... 0.03% max. Non-volatile matter..... 0.0002% max. Filtered through 0.2 µm 1 L = 1.475 kg (at 20°C) stabilized with 50 - 200 ppm Amylen Specification Transmission at 245 nm ..... 10% min. at 255 nm ..... 70% min. at 260 nm ..... 89% min. at 270 nm ..... 96% min. at 290 nm ..... 98% min.	4 L
SO-1174-B010	Chloroform Picograde® for residue analysis (stabilised with 0.2-1.8 % ethanol)	1 L
SO-1174-B025	Chloroform Picograde® for residue analysis (stabilised with 0.2-1.8 % ethanol)	2.5 L
SO-1174-B040	Chloroform Picograde® for residue analysis (stabilised with 0.2-1.8 % ethanol) UN 1888 CAS-Nr. 67-66-3 $CHCl_3$ Assay ..... 99.8% min. Acid and phosgene (as HCl)..... 0.0005% max. Non-volatile matter..... 0.0005% max. 1 L = 1.475 kg (at 20°C) stabilized with 0.2 - 1.8% Ethanol Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L

Code	Product	Unit

Cyclohexane

SO-9052-B010	Cyclohexane HPLC Optigrade®	1 L
SO-9052-B025	Cyclohexane HPLC Optigrade®	2.5 L

UN 1145

CAS-Nr. 110-82-7

C_6H_{12}

Assay ..... 99,5% min.

Water ..... 0,02% max.

Non-volatile matter..... 0,0003% max.

Filtered through 0.2 µm

1 L = 0,779 kg (at 20°C)

Specification

Transmission

at 210 nm ..... 20% min.
at 220 nm ..... 48% min.
at 230 nm ..... 75% min.
at 245 nm ..... 94% min.
at 260 nm ..... 99% min.

SO-1179-B010	Cyclohexane Picograde® for residue analysis	1 L
SO-1179-B025	Cyclohexane Picograde® for residue analysis	2.5 L
SO-1179-B040	Cyclohexane Picograde® for residue analysis	4 L

UN 1145

CAS-Nr. 110-82-7

C_6H_{12}

Assay ..... 99.0% min.

Water ..... 0.01% max.

Non-volatile matter..... 0.0005% max.

1 L = 0.779 kg (at 20°C)

Specification

GC/ECD
In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide.

GC/FID
In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).

Cyclopentane

SO-6157-B010	Cyclopentane HPLC Optigrade®	1 L

UN 1146

CAS-Nr. 287-92-3

C_5H_{10}

Assay ..... 75% min.

Water ..... 0.005% max.

Non-volatile matter..... 0.0001% max.

Filtered through 0.2 µm

1 L = 0.751 kg (at 20°C)

Specification

Transmission

at 200 nm ..... 10% min.
at 215 nm ..... 50% min.
at 225 nm ..... 95% min.
at 300 nm ..... 99% min.

Code	Product	Unit

n-Decane

SO-1182-B010	n-Decane Picograde® for residue analysis UN 2247 CAS-Nr. 124-18-5 $CH_3(CH_2)_8CH_3$ Assay ..... 97,0% min. Water ..... 0,01% max. Non-volatile matter..... 0,0005% max. 1 L = 0,731 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	1 L

Dichloromethane

SO-4879-B010	Dichloromethane HPLC Optigrade® (stabilised with amylene)	1 L
SO-4879-B025	Dichloromethane HPLC Optigrade® (stabilised with amylene)	2.5 L
SO-4879-B040	Dichloromethane HPLC Optigrade® (stabilised with amylene) UN 1593 CAS-Nr. 75-09-2 CH_2Cl_2 Assay ..... 99.8% min. Water ..... 0.02% max. Non-volatile matter..... 0.0003% max. Filtered through 0.2 µm 1 L = 1.335 kg (at 20°C) stabilized with 60 - 100 ppm Amylene Specification Transmission at 233 nm ..... 10% min. at 240 nm ..... 70% min. at 254 nm ..... 98% min. at 280 nm ..... 99% min.	4 L
SO-1185-B010	Dichloromethane Picograde® for residue analysis (stabilised with amylene)	1 L
SO-1185-B025	Dichloromethane Picograde® for residue analysis (stabilised with amylene)	2.5 L
SO-1185-B040	Dichloromethane Picograde® for residue analysis (stabilised with amylene) UN 1593 CAS-Nr. 75-09-2 CH_2Cl_2 Assay ..... 99.5% min. Water ..... 0.02% max. Non-volatile matter..... 0.0002% max. 1 L = 1.335 kg (at 20°C) stabilized with 60 - 100 ppm amylene Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1.4-dichlorobenzene and decachlorobiphenyl. by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40). by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L

Code	Product	Unit
SO-9800-B025	Dichloromethane nitrosamine-free Specification N-Nitrosodimethylamine.....0.1 ppb max. N-Nitrosodiethylamine.....0.1 ppb max. N-Nitrosodi-n-propylamine .....0.1 ppb max. N-Nitrosodi-i-propylamine .....0.1 ppb max. N-Nitrosodi-n-butylamine .....0.1 ppb max. N-Nitrosopiperidine .....0.1 ppb max. N-Nitrosopyrrolidine .....0.1 ppb max. N-Nitrosomorpholine.....0.1 ppb max.	2.5 L

Diethyl ether

SO-9012-B010	Diethyl ether HPLC Optigrade® (stabilised with ethanol)	1 L
SO-9012-B025	Diethyl ether HPLC Optigrade® (stabilised with ethanol) UN 1155 CAS-Nr. 60-29-7 $C_4H_{10}O$ Assay ..... 99.0% min. Water ..... 0.01% max. Non-volatile matter..... 0.0005% max. Peroxide..... 5 ppm max. Filtered through 0.2 µm 1 L = 0.713 kg (at 20°C) stabilized with 2% Ethanol Specification Transmission at 215 nm ..... 10% min. at 230 nm ..... 50% min. at 254 nm ..... 83% min. at 270 nm ..... 91% min. at 280 nm ..... 95% min. at 300 nm ..... 99% min.	2.5 L
SO-2854-B010	Diethyl ether HPLC Optigrade® (not stabilised)	1 L
SO-2854-B025	Diethyl ether HPLC Optigrade® (not stabilised) UN 1155 CAS-Nr. 60-29-7 $C_4H_{10}O$ Assay ..... 99.0% min. Water ..... 0.01% max. Non-volatile matter..... 0.0005% max. Peroxide..... 5 ppm max. Filtered through 0.2 µm 1 L = 0.713 kg (at 20°C) not stabilized Specification Transmission at 215 nm ..... 10% min. at 254 nm ..... 83% min. at 280 nm ..... 95% min.	2.5 L
SO-1187-B010	Diethyl ether Picograde® for residue analysis (stabilised with 1.5-2.5 % ethanol)	1 L

Code	Product	Unit
SO-1187-B025	Diethyl ether Picograde® for residue analysis (stabilised with 1.5-2.5 % ethanol) UN 1155 CAS-Nr. 60-29-7 $C_4H_{10}O$ Assay ..... 99.0% min. Water ..... 0.1%max. Non-volatile matter..... 0.001%max. Peroxide.....5 ppm max. 1 L = 0.6502 kg (at 20°C) stabilized with 1.5 - 2.5% Ethanol Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	2.5 L

N,N-Dimethylacetamide

SO-5407-B025	N,N-Dimethylacetamide HPLC Optigrade®	2.5 L
SO-5407-B040	N,N-Dimethylacetamide HPLC Optigrade® CAS-Nr. 127-19-5 C_4H_9NO Assay ..... 99.0% min. Water ..... 0.03% max. Non-volatile matter..... 0.0006% max. Filtered through 0.2 µm 1 L = 0.937 kg (at 20°C) Specification Transmission at 270 nm ..... 10% min. at 280 nm ..... 50% min. at 290 nm ..... 71% min. at 310 nm ..... 89% min. at 360 nm ..... 98% min.	4 L
SO-3240-B010	N,N-Dimethylacetamide Headspace Grade CAS number 127-19-5 C_4H_9NO Assay (GC, on anhydrous basis) ..... 99.99 % min. Acidity (as acetic acid) ..... 0.05 % max. Water (KF) ..... 0.03 % max. UV cutoff wavelength ..... 190-268 nm Transmission at 268 nm ..... 10 % min. at 275 nm ..... 55 % min. at 300 nm ..... 85 % min. at 350 nm ..... 98 % min. at 400 nm ..... 99 % min. Headspace test for O.V.I..... passes test	1 L

Code	Product	Unit

N,N-Dimethylformamide

SO-5356-B025	N,N-Dimethylformamide HPLC Optigrade®	2.5 L
	UN 2265	
	CAS-Nr. 68-12-2	
	C_3H_7NO	
	Assay ..... 99.7% min.	
	Water ..... 0.05% max.	
	Non-volatile matter ..... 0.0006% max.	
	Filtered through 0.2 µm	
	1 L = 0.951 kg (at 20°C)	
	Specification	
	Transmission	
	at 270 nm ..... 10% min. at 275 nm ..... 50% min. at 295 nm ..... 79% min. at 310 nm ..... 89% min. at 340 nm ..... 98% min.	
SO-1189-B010	N,N-Dimethylformamide Picograde®	1 L
SO-1189-B025	N,N-Dimethylformamide Picograde®	2.5 L
	UN 2265	
	CAS-Nr. 68-12-2	
	C_3H_7NO	
	Assay ..... 99.0% min.	
	Water ..... 0.2% max.	
	Non-volatile matter ..... 0.001% max.	
	1 L = 0.951 kg (at 20°C)	
	Specification	
	GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide.	
	GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	
SO-3230-B010	N,N-Dimethylformamide Headspace Grade	1 L
	UN 2265	
	CAS number 68-12-2	
	C_3H_7NO	
	Assay (GC, on anhydrous basis) ..... 99.99 % min.	
	Refractive index (20 °C) 1.430-1.440	
	Water (KF) ..... 0.03 % max.	
	UV cutoff wavelength ..... 190-268 nm	
	Transmission	
	at 270 nm ..... 30 % min. at 275 nm ..... 60 % min. at 300 nm ..... 90 % min. at 320 nm ..... 97 % min.	
	Headspace test for O.V.I. ..... passes test	

1,3-Dimethyl-2-imidazolidinone (N,N'-Dimethylethyleneurea)

SO-3260-B005	1,3-Dimethyl-2-imidazolidinone (DMI) Headspace Grade	500 mL
	Assay (GC, on anhydrous basis) ..... 99.5 % min.	
	Refractive index (20 °C) 1.470-1473	
	Water (KF) ..... 0.1 % max.	
	UV cutoff wavelength ..... 190-270 nm	
	Transmission	
	at 275 nm ..... 40 % min. at 300 nm ..... 85 % min. at 325 nm ..... 95 % min. at >350 nm ..... 98 % min.	
	Headspace test for O.V.I. ..... passes test	

Code	Product	Unit

Dimethylsulfoxide (DMSO)

SO-3210-B010	Dimethylsulfoxide Headspace Grade	1 L

CAS-Nr 67-68-5

Assay (GC, on anhydrous basis) ..... 99.99 % min.

Refractive index (20 °C)..... 1.477-1.480

Water (KF) ..... 0.04 % max.

UV cutoff wavelength ..... 190-265 nm

Transmission

at 268 nm ..... 30 % min.
at 275 nm ..... 60 % min.
at 300 nm ..... 85 % min.
at 350 nm ..... 95 % min.
at 400 nm ..... 98 % min.

Headspace test for O.V.I..... passes test

1,4-Dioxane

SO-9002-B010	1,4-Dioxane HPLC Optigrade® (not stabilised)	1 L
SO-9002-B025	1,4-Dioxane HPLC Optigrade® (not stabilised)	2.5 L

UN 1165

CAS-Nr. 123-91-1

$C_4H_8O_2$

Assay ..... 99.5% min.

Water ..... 0.05% max.

Non-volatile matter..... 0.0002% max.

Filtered through 0.2 µm

1 L = 1.034 kg (at 20°C)

not stabilized

Specification

Transmission

at 225 nm ..... 31% min.
at 250 nm ..... 56% min.
at 270 nm ..... 79% min.
at 280 nm ..... 89% min.
at 295 nm ..... 98% min.

Ethanol

SO-9063-B010	Ethanol HPLC Optigrade®	1 L
SO-9063-B025	Ethanol HPLC Optigrade®	2.5 L

UN 1170

CAS-Nr. 64-17-5

C_2H_5OH

Assay ..... 99.7% min.

Water ..... 0.1% max.

Non-volatile matter..... 0.0004% max.

Filtered through 0.2 µm

1 L = 0.789 kg (at 20°C)

Specification

Transmission

at 210 nm ..... 20% min.
at 240 nm ..... 79% min.
at 260 nm ..... 98% min.

Code	Product	Unit

2-Ethoxyethanol

SO-2925-B025	2-Ethoxyethanol HPLC Optigrade®	2.5 L
	UN 1171	
	CAS-Nr. 110-80-5	
	$C_4H_{10}O_2$	
	Assay ..... 99.5% min.	
	Water ..... 0.08% max.	
	Non-volatile matter..... 0.0002% max.	
	Filtered through 0.2 µm	
	1 L = 0.932 kg (at 20°C)	
	Specification	
	Transmission	
	at 222 nm ..... 10% min. at 225 nm ..... 18% min. at 250 nm ..... 56% min. at 300 nm ..... 98% min.	

Ethyl acetate

SO-3442-B010	Ethyl acetate HPLC Optigrade®	1 L
SO-3442-B025	Ethyl acetate HPLC Optigrade®	2.5 L
SO-3442-B040	Ethyl acetate HPLC Optigrade®	4 L
	UN 1173	
	CAS-Nr. 141-78-6	
	$CH_3COOC_2H_5$	
	Assay ..... 99.5% min.	
	Water ..... 0.05% max.	
	Non-volatile matter..... 0.0005% max.	
	Filtered through 0.2 µm	
	1 L = 0.897 kg (at 20°C)	
	Specification	
	Transmission	
	at 225 nm ..... 10% min. at 260 nm ..... 79% min. at 280 nm ..... 89% min. at 300 nm ..... 98% min.	
SO-9345-B010	Ethyl acetate for LC-MS Optigrade®	1 L
SO-9345-B025	Ethyl acetate for LC-MS Optigrade®	2.5 L
	UN 1173	
	CAS-Nr. 141-78-6	
	$CH_3COOC_2H_5$	
	Assay ..... 99,5% min.	
	Water ..... 0,05% max.	
	Non-volatile matter..... 0,0005% max.	
	Filtered through 0.2 µm	
	1 L = 0,897 kg (at 20°C)	
	Specification	
	Ca ..... 0,1 ppm max. K..... 0,1 ppm max. Mg ..... 0,1 ppm max. Na ..... 0,1 ppm max.	
	Transmission	
	at 260 nm ..... 70 % min. at 280 nm ..... 99 % min.	
SO-1191-B010	Ethyl acetate Picograde® for residue analysis	1 L
SO-1191-B025	Ethyl acetate Picograde® for residue analysis	2.5 L

Code	Product	Unit
SO-1191-B040	Ethyl acetate Picograde® for residue analysis UN 1173 CAS-Nr. 141-78-6 $CH_3COOC_2H_5$ Assay ..... 99.0% min. Water ..... 0.05% max. Non-volatile matter..... 0.0005% max. 1 L = 0.897 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L

n-Heptane

SO-5139-B010	n-Heptane HPLC Optigrade®	1 L
SO-5139-B025	n-Heptane HPLC Optigrade®	2.5 L
SO-5139-B040	n-Heptane HPLC Optigrade® UN 1206 CAS-Nr. 142-82-5 C_7H_{16} Assay ..... 95.0% min. Water ..... 0.02% max. Non-volatile matter..... 0.0003% max. Filtered through 0.2 µm 1 L = 0.685 kg (at 20°C) Specification Transmission at 197 nm ..... 10% min. at 210 nm ..... 39% min. at 225 nm ..... 79% min. at 254 nm ..... 98% min.	4 L
SO-1210-B025	n-Heptane Picograde® for residue analysis UN 1206 CAS-Nr. 142-82-5 C_7H_{16} Assay ..... 97.0% min. Water ..... 0.01% max. Non-volatile matter..... 0.0002% max. 1 L = 0.682 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4 dichlorobenzene and decachlorobiphenyl, by a 500 fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500 fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	2.5 L

n-Hexane

SO-5167-B010	n-Hexane HPLC Optigrade®	1 L
SO-5167-B025	n-Hexane HPLC Optigrade®	2.5 L

Code	Product	Unit
SO-5167-B040	n-Hexane HPLC Optigrade®	4 L
	UN 1208	
	CAS-Nr. 110-54-3	
	C_6H_{14}	
	Assay (of C_6-isomers)..... 99.8% min.	
	Water ..... 0.1% max.	
	Non-volatile matter..... 0.0003% max.	
	Filtered through 0.2 µm	
	1 L = 0.659 kg (at 20°C)	
	Specification	
	Transmission	
	at 195 nm ..... 10% min. at 210 nm ..... 56% min. at 220 nm ..... 79% min. at 254 nm ..... 98% min. at 280 nm ..... 99% min. at 350 nm ..... 99% min.	
SO-1244-B010	n-Hexane Picograde® for residue analysis	1 L
SO-1244-B025	n-Hexane Picograde® for residue analysis	2.5 L
SO-1244-B040	n-Hexane Picograde® for residue analysis	4 L
	UN 1208	
	CAS-Nr. 110-54-3	
	C_6H_{14}	
	Assay (of C_6-isomers)..... 97.0% min.	
	Water ..... 0.01% max.	
	Non-volatile matter..... 0.0002% max.	
	PCBs (#28,52,77,81,101,105,114,118,123,126,138,153,156,157,167,169,180,189)..... passes test	
	1 L = 0.659 kg (at 20°C)	
	Specification	
	GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide.	
	GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	
SO-9500-B010	n-Hexane for the analysis of highly volatile halogenated hydrocarbons and EOX	1 L
SO-9500-B025	n-Hexane for the analysis of highly volatile halogenated hydrocarbons and EOX	2.5 L
	UN 1208	
	CAS-Nr. 110-54-3	
	C_6H_{14}	
	Assay (of C_6-isomers)..... 95.0% min.	
	Wasser/Water..... 0.01% max.	
	Non-volatile matter..... 0.0002% max.	
	1 L = 0.651 kg (at 20°C)	
	Specification	
	Highly volatile halogenated hydrocarbons/EOX In the GC/ECD chromatorgram there are no interfering single signals in the retention time interval between 1,1-dichloroethene and tribromomethane greater than that, given by 5 µg/L parathion-methyl.	
	Coulometric determination of EOX gives a halogen content as chloride of less than 0.3 mg/L.	

Code	Product	Unit

Iso-Hexane

SO-9043-B025 — Iso-Hexane HPLC Optigrade® — 2.5 L

UN 1208

CAS-Nr. 107-83-5

C_6H_{14}

Assay of C_6-isomers ..... 95.0% min.

Water ..... 0.01% max.

Non-volatile matter ..... 0.0002% max.

1 L = 0.653 kg (at 20°C)

Specification

Transmission

at 195nm ..... 10% min.
at 210nm ..... 56% min.
at 217nm ..... 63% min.
at 220nm ..... 75% min.
at 245nm ..... 95% min.

SO-1251-B025 — Iso-Hexane Picograde® for residue analysis — 2.5 L

UN 1208

CAS-Nr. 107-83-5

C_6H_{14}

Gehalt/Assay (of C_6-isomers) ..... 95.0% min.

Water ..... 0.01% max.

Non-volatile matter ..... 0.0002% max.

1 L = 0.653 kg (at 20°C)

Specification

GC/ECD
In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide.

GC/FID
In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).

Hydrochloric acid

HPA-0010-B010 — Hydrochloric acid for trace analysis min. 36 % (glass bottle) — 1 L

UN 1789

Assay	> 36 %	free chlorine	< 0.5 ppm
Residue	< 3 ppm	Phosphate	< 0.05 ppm
Colour (APHA)	< 10	Sulfite	< 0.5 ppm
Bromide	< 50 ppm	Sulfate	< 0.5 ppm

Ag	< 0.1 ppb	Cu	< 0.1 ppb	Sb	< 0.1 ppb
Al	< 0.5 ppb	Fe	< 1 ppb	Se	< 0.1 ppb
As	< 0.1 ppb	Hg	< 0.2 ppb	Sn	< 0.1 ppb
B	< 1 ppb	K	< 0.1 ppb	Sr	< 0.1 ppb
Ba	< 0.1 ppb	Li	< 0.1 ppb	Th	< 0.1 ppb
Be	< 0.1 ppb	Mg	< 0.5 ppb	Ti	< 0.1 ppb
Bi	< 0.1 ppb	Mn	< 0.1 ppb	U	< 0.1 ppb
Ca	< 0.5 ppb	Mo	< 0.1 ppb	V	< 0.1 ppb
Cd	< 0.1 ppb	Na	< 0.5 ppb	Zn	< 0.5 ppb
Co	< 0.1 ppb	Ni	< 0.1 ppb	Zr	< 0.1 ppb
Cr	< 0.1 ppb	Pb	< 0.1 ppb		

Hydrochloric acid stored in glass bottles will see a rise in: Al, B, Ca, K, Mg, Mn, Na and Si.

Code	Product	Unit

Hydrofluoric acid

HPA-0030-B010 — Hydrofluoric acid for trace analysis min. 48 % (HDPE bottle) — 1 L

UN 1790

Assay	> 48 %	Phosphate	< 0.1 ppm
Colour (HAZEN)	< 10	Sulfate	< 0.5 ppm
Chloride	< 1 ppm	Hexafluorosilicate	< 20 ppm

Ag	< 1 ppb	Cu	< 1 ppb	Pb	< 1 ppb
Al	< 1 ppb	Fe	< 1 ppb	Se	< 1 ppb
As	< 1 ppb	Hg	< 1 ppb	Si	< 1 ppb
Ba	< 1 ppb	K	< 1 ppb	Sn	< 1 ppb
Be	< 1 ppb	Li	< 1 ppb	Sr	< 1 ppb
Bi	< 1 ppb	Mg	< 1 ppb	Ti	< 1 ppb
Ca	< 1 ppb	Mn	< 1 ppb	V	< 1 ppb
Cd	< 1 ppb	Mo	< 1 ppb	Zn	< 1 ppb
Co	< 1 ppb	Na	< 1 ppb		
Cr	< 1 ppb	Ni	< 1 ppb		

Hydrofluoric acid stored in polyethylene bottles will see a rise in: Al, Ca, Fe, Na and Zn.

Methanol

SO-9510-B010 — Methanol Purge & Trap — 1 L

UN 1230

CAS-Nr. 67-56-1

CH_3OH

Assay	99,9% min.
Water	< 0.1%
Non-volatile matter	< 0,10%
2-Butanone (GC/MS; P&T)	< 10 µg/l
Other volatile impurities	passes tests

1 L = 0,792 kg (at 20°C)

SO-9260-B010 — Methanol HPLC Optigrade® Gradient Grade — 1 L

SO-9260-B025 — Methanol HPLC Optigrade® Gradient Grade — 2.5 L

UN 1230

CAS-Nr. 67-56-1

CH_3OH

Assay	99.9% min.
Water	0.05% max.
Non-volatile matter	0.0003% max.
Gradientspecification (235 nm)	0.002 AU max.
Gradientspecification (254 nm)	0.001 AU max.
Fluorescence (as Quinine at 254 nm)	1 ppb max.

Filtered through 0.2 µm

1 L = 0.792 kg (at 20°C)

Specification

Transmission

at 210 nm	37% min.
at 220 nm	56% min.
at 230 nm	76% min.
at 235 nm	83% min.
at 254 nm	97% min.
at 280 nm	99% min.

This solvent in glass bottles fulfills the specifications according to chapter 4 of the European Pharmacopoeia.

SO-3041-B010 — Methanol HPLC Optigrade® — 1 L

SO-3041-B025 — Methanol HPLC Optigrade® — 2.5 L

Code	Product	Unit
SO-3041-B040	Methanol HPLC Optigrade®	4 L
	UN 1230	
	CAS-Nr. 67-56-1	
	CH_3OH	
	Assay ..... 99.9% min.	
	Water ..... 0.05% max.	
	Non-volatile matter..... 0.0003% max.	
	Filtered through 0.2 µm	
	1 L = 0.792 kg (at 20°C)	
	Specification	
	Transmission	
	at 205 nm ..... 10% min. at 220 nm ..... 56% min. at 240 nm ..... 89% min. at 254 nm ..... 96% min. at 280 nm ..... 98% min. at 350 nm ..... 99% min.	
	This solvent in glass bottles fulfills the specifications according to chapter 4 of the European Pharmacopoeia.	
SO-9658-B010	Methanol UHPLC-MS Optigrade®	1 L
SO-9658-B025	Methanol UHPLC-MS Optigrade®	2.5 L
	UN 1230	
	CAS number 67-56-1	
	CH_3OH	
	Assay (GC, on anhydrous basis) ..... 99.98 % min.	
	Water (KF) ..... 0.03% max.	
	Residue after evaporation..... 0.0001 %w/w max.	
	Acidity (as acetic acid) ..... 0.002 % max.	
	Alkalinity (as ammonia)..... 0.0001 % max.	
	Color (APHA) .....5 max.	
	Gradient specification	
	HPLC gradient at 220 nm - Drift .....0.01 AU max. HPLC gradient at 235 nm - Drift .....0.005 AU max. HPLC gradient at 220 nm - H. Peak .....0.004 AU max. HPLC gradient at 235 nm - H. Peak .....0.002 AU max.	
	Fluorescence at 254 nm (as quinine) .....0.5 ppb max. Fluorescence at 365 nm (as quinine) .....0.3 ppb max.	
	1 L = 0.783 kg (at 20°C)	
	Transmission	
	at 210 nm ..... 40 % min. at 220 nm ..... 65 % min. at 230 nm ..... 80 % min. at 260 nm ..... 98 % min.	
	Al.....20 ppb max. Ca .....100 ppb max. Fe.....20 ppb max. K.....50 ppb max. Mg .....20 ppb max. Na .....100 ppb max.	
	Microfiltered through 0.1 µm/bottled under inert gas	
SO-9356-B010	Methanol for LC-MS Optigrade®	1 L
SO-9356-B025	Methanol for LC-MS Optigrade®	2.5 L
	UN 1230	
	CAS number 67-56-1	
	CH_3OH	
	Assay ..... 99.9% min.	
	Water ..... 0.05% max.	
	Non-volatile matter..... 0.0003% max.	
	Filtered through 0.2 µm	
	1 L = 0.792 kg (at 20°C)	
	Ca .....0.1 ppm max. K.....0.1 ppm max. Mg .....0.1 ppm max. Na .....0.1 ppm max.	
	Transmission	
	at 210 nm ..... 40 % min. at 220 nm ..... 60 % min. at 235 nm ..... 80 % min. at 260 nm ..... 98 % min.	
SO-1263-B010	Methanol Picograde® for residue analysis	1 L

Code	Product	Unit
SO-1263-B025	Methanol Picograde® for residue analysis	2.5 L
SO-1263-B040	Methanol Picograde® for residue analysis UN 1230 CAS-Nr. 67-56-1 CH_3OH Assay ..... 99.0% min. Water ..... 0.1% max. Non-volatile matter..... 0.0005% max. 1 L = 0.792 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L

2-Methoxyethanol

SO-9509-B010	2-Methoxyethanol for the analysis of highly volatile halogenated hydrocarbons UN 1188 CAS-Nr. 109-86-4 $C_3H_8O_2$ Assay ..... 99.7% min. Water ..... 0.08% max. Non-volatile matter..... 0.0006% max. 1 L = 0.961 kg (at 20°C) Highly volatile halogenated hydrocarbons In the GC/ECD chromatorgram there are no interfering single signals in the retention time interval between 1,1-dichloroethene and tribromomethane greater than that, given by 5 µg/L parathion-methyl. BTEX for FID In the GC-FID chromatogram the sum of the signals of BTEX-compounds is not greater than the signal, given by 10 µg/L n-decane.	1 L

Methyl-tert-butyl ether

SO-5398-B025	Methyl-tert-butylether HPLC Optigrade® UN 2398 CAS-Nr. 1634-04-4 $C_5H_{12}O$ Assay ..... 99.7% min. Water ..... 0.05% max. Non-volatile matter..... 0.0006% max. Filtered through 0.2 µm 1 L = 0.742 kg (at 20°C) Specification Transmission at 225 nm ..... 32% min. at 250 nm ..... 71% min. at 300 nm ..... 89% min.	2.5 L
SO-1265-B010	Methyl-tert-butylether Picograde®	1 L
SO-1265-B025	Methyl-tert-butylether Picograde® UN 2398 CAS-Nr. 1634-04-4 $C_5H_{12}O$ Assay ..... 99.8% min. Water ..... 0.05% max. Non-volatile matter..... 0.0005% max. 1 L = 0.742 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	2.5 L

Code	Product	Unit

Nitric acid

HPA-0020-B010 — Nitric acid for trace analysis min 67 % (glass bottle) — 1 L

UN 2031

Assay	> 67 %	Phosphate	< 0.1 ppm
Residue	< 1 ppm	Sulfate	< 0.5 ppm
Chloride	< 0.08 ppm		

Ag	< 0.1 ppb	Cu	< 0.1 ppb	Pb	< 0.1 ppb
Al	< 0.5 ppb	Fe	< 0.5 ppb	Se	< 0.1 ppb
As	< 0.1 ppb	Hg	< 0.2 ppb	Sn	< 0.1 ppb
Ba	< 0.1 ppb	K	< 0.2 ppb	Sr	< 0.1 ppb
Be	< 0.1 ppb	Li	< 0.1 ppb	Th	< 0.1 ppb
Bi	< 0.1 ppb	Mg	< 0.5 ppb	Ti	< 0.1 ppb
Ca	< 0.5 ppb	Mn	< 0.1 ppb	V	< 0.1 ppb
Cd	< 0.1 ppb	Mo	< 0.1 ppb	Zn	< 0.5 ppb
Co	< 0.1 ppb	Na	< 0.5 ppb		
Cr	< 0.2 ppb	Ni	< 0.1 ppb		

Nitric Acid stored in glass bottles will see a rise in: Al, B, Ca, K, Mg, Mn, Na and Si.

n-Nonane

SO-4436-B010 — n-Nonane HPLC Optigrade® — 1 L

UN 1920

CAS-Nr. 111-84-2

C_9H_{20}

Assay	95% min.
Water	0.01% max.
Non-volatile matter	0.0003% max.

Filtered through 0.2 µm

1 L = 0.719 kg (at 20°C)

Specification

Transmission

at 200 nm	10% min.
at 225 nm	79% min.
at 250 nm	89% min.
at 300 nm	99% min.

SO-1271-B010 — n-Nonane Picograde® for residue analysis — 1 L

SO-1271-B025 — n-Nonane Picograde® for residue analysis — 2.5 L

UN 1920

CAS-Nr. 111-84-2

C_9H_{20}

Assay	95.0% min.
Water	0.01% max.
Non-volatile matter	0.0005% max.

1 L = 0.719 kg (at 20°C)

Specification

GC/ECD
In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide.

GC/FID
In the GC-FID chromatogram there are no interfering single signals in the retention time interval between decane (C10) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).

Code	Product	Unit
n-Octane		
SO-1279-B010	n-Octane Picograde® for residue analysis UN 1262 CAS-Nr. 111-65-9 $CH_3(CH_2)_6CH_3$ Assay ..... 95.0% min. Water ..... 0.01% max. Non-volatile matter..... 0.0005% max. 1 L = 0.703 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	1 L
n-Pentane		
SO-9081-B010	n-Pentane HPLC Optigrade® UN 1265 CAS-Nr. 109-66-0 C_5H_{12} Assay ..... 95.0% min. Water ..... 0.01% max. Non-volatile matter..... 0.001% max. Filtered through 0.2 µm 1 L = 0.626 kg (at 20°C) Specification Transmission at 200 nm ..... 10% min. at 210 nm ..... 20% min. at 215 nm ..... 50% min. at 225 nm ..... 89% min. at 240 nm ..... 98% min.	1 L
SO-1282-B010	n-Pentane Picograde® for residue analysis	1 L
SO-1282-B025	n-Pentane Picograde® for residue analysis	2.5 L
SO-1282-B040	n-Pentane Picograde® for residue analysis UN 1265 CAS-Nr. 109-66-0 C_5H_{12} Assay ..... 98.0% min. Water ..... 0.01% max. Non-volatile matter..... 0.0005% max. 1 L = 0.626 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L
SO-9501-B010	n-Pentane for the analysis of highly volatile halogenated hydrocarbons UN 1265 CAS-Nr. 109-66-0 C_5H_{12} Assay ..... 95.0% min. Water ..... 0.01% max. Non-volatile matter..... 0.0005% max. 1 L = 0.632 kg (at 20°C) Specification Highly volatile halogenated hydrocarbons In the GC/ECD chromatogram there are no interfering single signals in the retention time interval between 1,1-dichloroethene and tribromomethane greater than that, given by 5 µg/L parathion-methyl.	1 L

Code	Product	Unit
SO-9610-B005	n-Pentane for the analysis of highly volatile halogenated hydrocarbons, aromatic hydrocarbons and EOX UN 1265 CAS-Nr. 109-66-0 C_5H_{12} Assay ..... 98.0% min. Water ..... 0.01% max. Non-volatile matter..... 0.0005% max. 1 L = 0.626 kg (at 20°C) Specification Highly volatile halogenated hydrocarbons In the GC/ECD chromatorgram there are no interfering single signals in the retention time interval between 1,1-dichloroethene and tribromomethane greater than that, given by 5 µg/L parathion-methyl. BTEX for FID In the GC-FID chromatogram the sum of the signals of BTEX-compounds is not greater than the signal, given by 10 µg/L n-Decane. Coulometric determination of EOX gives a halogen content as chloride of less than 0.3 mg/L.	500 mL

Perchloric acid

Code	Product	Unit
HPA-0060-B010	Perchloric acid for trace analysis min 68 % (glass bottle) UN 1802 Assay ..... > 68 % Colour (APHA) ..... < 10 Phosphate..... < 0.1 ppm Sulfate ..... < 5 ppm Total nitrogen ..... < 10 ppm Ag..... < 0.1 ppb Al..... < 0.5 ppb Ba..... < 0.1 ppb Be..... < 0.1 ppb Bi..... < 0.1 ppb Ca ..... < 0.5 ppb Cd ..... < 0.1 ppb Co ..... < 0.1 ppb Cu..... < 0.1 ppb Fe ..... < 0.5 ppb K ..... < 0.5 ppb Li..... < 0.1 ppb Mg..... < 0.5 ppb Mn..... < 0.1 ppb Mo..... < 0.1 ppb Na..... < 0.5 ppb Ni..... < 0.1 ppb Pb..... < 0.1 ppb Sn..... < 0.1 ppb Sr ..... < 0.1 ppb Th..... < 0.1 ppb Tl..... < 0.1 ppb V..... < 0.5 ppb Zn..... < 0.5 ppb Perchloric acid stored in glass bottles will see a rise in: Al, B, Ca, K, Mg, Mn, Na and Si.	1 L

Petroleum ether

Code	Product	Unit
SO-1320-B010	Petroleum ether Picograde® for residue analysis (30 - 60°C)	1 L
SO-1320-B025	Petroleum ether Picograde® for residue analysis (30 - 60°C)	2.5 L
SO-1320-B040	Petroleum ether Picograde® for residue analysis (30 - 60°C) UN 1268 CAS-Nr. 8032-32-4 Boiling point range ..... 30 - 60°C min. Water ..... 0.01% max. Non-volatile matter..... 0.0005% max. 1 L = 0.625...0.655 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L
SO-9502-B010	Petroleum ether for the analysis of highly volatile halogenated hydrocarbons and EOX (40 - 60°C)	1 L
SO-9502-B025	Petroleum ether for the analysis of highly volatile halogenated hydrocarbons and EOX (40 - 60°C) UN 1268 CAS-Nr. 8032-32-4 Boiling point ..... 40 - 60°C min. Water ..... 0.01% max. Non-volatile matter..... 0.0005% max. 1 L = 0.625...0.655 kg (bei/at 20°C) Specification Highly volatile halogenated hydrocarbons/EOX In the GC/ECD chromatorgram there are no interfering single signals in the retention time interval between 1,1-dichloroethene and tribromomethane greater than that, given by 5 µg/L parathion-methyl. Coulometric determination of EOX gives a halogen content as chloride of less than 0.3 mg/L.	2.5 L

Code	Product	Unit
Propan-1-ol		
SO-5351-B025	Propan-1-ol HPLC Optigrade®	2.5 L
	UN 1274	
	CAS-Nr. 71-23-8	
	$CH_3CH_2CH_2OH$	
	Assay ..... 99.8% min.	
	Water ..... 0.05% max.	
	Non-volatile matter..... 0.001% max.	
	Filtered through 0.2 µm	
	1 L = 0.804 kg (at 20°C)	
	Specification	
	Transmission	
	at 225 nm ..... 31% min. at 250 nm ..... 89% min. at 270 nm ..... 98% min. at 300 nm ..... 99% min.	
Propan-2-ol		
SO-3043-B010	Propan-2-ol HPLC Optigrade®	1 L
SO-3043-B025	Propan-2-ol HPLC Optigrade®	2.5 L
SO-3043-B040	Propan-2-ol HPLC Optigrade®	4 L
	UN 1219	
	CAS-Nr. 67-63-0	
	C_3H_8O	
	Assay ..... 99.5% min.	
	Water ..... 0.05% max.	
	Non-volatile matter..... 0.0006% max.	
	Filtered through 0.2 µm	
	1 L = 0.786 kg (at 20°C)	
	Specification	
	Transmission	
	at 205 nm ..... 10% min. at 220 nm ..... 50% min. at 230 nm ..... 71% min. at 254 nm ..... 95% min. at 350 nm ..... 98% min.	
SO-9352-B010	Propan-2-ol for LC-MS Optigrade®	1 L
SO-9352-B025	Propan-2-ol for LC-MS Optigrade®	2.5 L
	UN 1219	
	CAS number 67-63-0	
	C_3H_8O	
	Assay ..... 99.5% min.	
	Water ..... 0.05% max.	
	Non-volatile matter..... 0.0006% max.	
	Filtered through 0.2 µm	
	1 L = 0.786 kg (at 20°C)	
	Ca ..... 0.1 ppm max. K..... 0.1 ppm max. Mg ..... 0.1 ppm max. Na ..... 0.1 ppm max.	
	Transmission	
	at 220 nm ..... 60 % min. at 250 nm ..... 99 % min.	
SO-1334-B010	Propan-2-ol Picograde® for residue analysis	1 L
SO-1334-B025	Propan-2-ol Picograde® for residue analysis	2.5 L

Code	Product	Unit
SO-1334-B040	Propan-2-ol Picograde® for residue analysis UN 1219 CAS-Nr. 67-63-0 C_3H_8O Assay ..... 99.5% min. Water ..... 0.2% max. Non-volatile matter..... 0.0005% max. 1 L = 0.786 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L
SO-3044-B040	Propan-2-ol for the tobacco industry contains n-Heptadecan ..... 0.3 g/L Ethanol..... 2.0 g/L	4 L
SO-3046-B040	Propan-2-ol for the tobacco industry contains n-Heptandecan ..... 0.8 g/L Ethanol abs..... 4.0 g/L Wasser.....0.1 %	4 L
SO-3047-B040	Propan-2-ol for the tobacco industry contains n-Heptandecan ..... 0.4 g/L Ethanol abs. ..... 2.0 g/ L	4 L

Sulfuric acid

Code	Product	Unit
HPA-0040-B010	Sulfuric acid min 95 % (glass bottle) UN 1830 Assay ..... 95 % Density..... 1.83 g/mL Colour (APHA)..... < 10 Residue..... < 2 ppm Chloride..... < 0.1 ppm Phosphate ..... < 0.5 ppm Nitrate..... < 0.07 ppm Ag..... < 0.1 ppb Al..... < 0.5 ppb As..... < 1 ppb Ba..... < 0.1 ppb Be..... < 0.1 ppb Bi..... < 0.1 ppb Ca ..... < 0.5 ppb Cd ..... < 0.1 ppb Co ..... < 0.1 ppb Cr ..... < 0.1 ppb Cu ..... < 0.1 ppb Fe .....< 0.5 ppb Hg.....< 1 ppb K .....< 0.5 ppb Li.....< 0.1 ppb Mg.....< 0.5 ppb Mn.....< 0.1 ppb Mo.....< 0.1 ppb Na.....< 0.5 ppb Ni .....< 0.1 ppb Pb .....< 0.1 ppb Sb .....< 0.1 ppb Se..... < 5 ppb Sn..... < 0.1 ppb Sr ..... < 0.1 ppb Th..... < 0.1 ppb Ti..... < 1 ppb U ..... < 0.1 ppb V..... < 0.1 ppb Zn..... < 0.1 ppb Zr..... < 0.1 ppb Sulfuric acid stored in glass bottles will see a rise in: Al, B, Ca, K, Mg, Mn, Na and Si.	1 L

Tetrahydrofuran

Code	Product	Unit
SO-2858-B010	Tetrahydrofuran HPLC Optigrade®	1 L
SO-2858-B025	Tetrahydrofuran HPLC Optigrade®	2.5 L

High purity solvents and acids

Code	Product	Unit
SO-2858-B040	Tetrahydrofuran HPLC Optigrade®	4 L
	UN 2056	
	CAS-Nr. 109-99-9	
	C_4H_8O	
	Assay ..... 99.8% min.	
	Water ..... 0.03% max.	
	Non-volatile matter ..... 0.0007% max.	
	Filtered through 0.2 µm	
	1 L = 0.887 kg (at 20°C)	
	not stabilized	
	Specification	
	Transmission	
	at 212 nm ..... 10% min. at 225 nm ..... 31% min. at 250 nm ..... 68% min. at 300 nm ..... 98% min.	
SO-9364-B010	Tetrahydrofuran for LC-MS Optigrade®	1 L
SO-9364-B025	Tetrahydrofuran for LC-MS Optigrade®	2.5 L
	UN 2056	
	CAS number 109-99-9	
	C_4H_8O	
	Assay ..... 99.8% min.	
	Water ..... 0.03% max.	
	Non-volatile matter ..... 0.0007% max.	
	Filtered through 0.2 µm	
	1 L = 0.887 kg (at 20°C)	
	not stabilised	
	Ca ..... 0.1 ppm max. K ..... 0.1 ppm max. Mg ..... 0.1 ppm max. Na ..... 0.1 ppm max.	
	Transmission	
	at 250 nm ..... 80 % min. at 290 nm ..... 99 % min.	

Toluene

SO-4483-B010	Toluene HPLC Optigrade®	1 L
SO-4483-B025	Toluene HPLC Optigrade®	2.5 L
SO-4483-B040	Toluene HPLC Optigrade®	4 L
	UN 1294	
	CAS-Nr. 108-88-3	
	C_7H_8	
	Assay ..... 99.7% min.	
	Water ..... 0.03% max.	
	Non-volatile matter ..... 0.0005% max.	
	Filtered through 0.2 µm	
	1 L = 0.866 kg (at 20°C)	
	Specification	
	Transmission	
	at 285 nm ..... 10% min. at 288 nm ..... 39% min. at 300 nm ..... 70% min. at 335 nm ..... 95% min. at 350 nm ..... 98% min.	
SO-1350-B010	Toluene Picograde® for residue analysis	1 L
SO-1350-B025	Toluene Picograde® for residue analysis	2.5 L

Code	Product	Unit
SO-1350-B040	Toluene Picograde® for residue analysis UN 1294 CAS-Nr. 108-88-3 C_7H_8 Assay ..... 99.8% min. Water ..... 0.02% max. Non-volatile matter..... 0.0005% max. 1 L = 0.866 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between decane (C10) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L

1,1,2-Trichloro-1,2,2-trifluoroethane

Code	Product	Unit
SO-9145-B025	1,1,2-Trichloro-1,2,2-trifluoroethane for IR-Spectroscopy UN 3082 CAS-Nr. 76-13-1 $C_2Cl_3F_3$ Assay ..... 99,8% min. Non-volatile matter.....2 mg/L max. Water .....10 mg/kg max. Hydrocarbons.....5 mg/kg max. 1 L = 1.57 kg (at 20°C)	2.5 L

2,2,4-Trimethylpentane

Code	Product	Unit
SO-6043-B010	2,2,4-Trimethylpentane HPLC Optigrade® (Isooctane)	1 L
SO-6043-B025	2,2,4-Trimethylpentane HPLC Optigrade® (Isooctane)	2.5 L
SO-6043-B040	2,2,4-Trimethylpentane HPLC Optigrade® (Isooctane) UN 1262 CAS-Nr. 540-84-1 C_8H_{18} Assay ..... 99.5% min. Water ..... 0.02% max. Non-volatile matter..... 0.0005% max. Filtered through 0.2 µm 1 L = 0.690 kg (at 20°C) Specification Transmission at 205 nm ..... 10% min. at 220 nm ..... 63% min. at 230 nm ..... 79% min. at 254 nm ..... 98% min.	4 L
SO-1364-B010	2,2,4-Trimethylpentane (Isooctane) Picograde® for residue analysis	1 L
SO-1364-B025	2,2,4-Trimethylpentane (Isooctane) Picograde® for residue analysis	2.5 L
SO-1364-B040	2,2,4-Trimethylpentane (Isooctane) Picograde® for residue analysis UN 1262 CAS-Nr. 540-84-1 C_8H_{18} Assay ..... 95.0% min. Water ..... 0.02% max. Non-volatile matter..... 0.0005% max. 1 L = 0.690 kg (at 20°C) Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between decane (C10) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	4 L

Code	Product	Unit
Water		
SO-6795-B025	Water HPLC Optigrade®	2.5 L
SO-6795-B040	Water HPLC Optigrade®	4 L
	CAS-Nr. 7732-18-5	
	H_2O	
	Specification	
	Fluorescence at 254 nm (as Quinine).....0.1 ppb max.	
	Fluorescence at 365 nm (as quinine).....0.1 ppb max.	
	Non-volatile matter..... 1 mg/L max.	
	Filtered through 0.2 µm	
	pH ..... 5,0 - 8,0	
	This solvent in glass bottles fulfills the specifications according to chapter 4 of the European Pharmacopoeia.	
SO-9662-B010	Water UHPLC-MS Optigrade®	1 L
SO-9662-B025	Water UHPLC-MS Optigrade®	2.5 L
	CAS number 7732-18-5	
	H_2O	
	Residue after evaporation..... 0.0001 %w/w max.	
	Acidity (as Acetic acid)..... 0.002 % max.	
	Alkalinity (as Ammonia) ..... 0.00005 % max.	
	Resistivity (at manuf.) ..... 18.2 Mohm*cm min.	
	Gradient specification	
	HPLC gradient at 210 nm - H. Peak ..... 0.002 AU max. HPLC gradient at 254 nm - H. Peak ..... 0.0005 AU max.	
	Fluorescence at 254 nm (as quinine).....0.5 ppb max. Fluorescence at 365 nm (as quinine).....0.5 ppb max.	
	TOC .....10 ppb max.	
	Filter test .....Passes test	
	Ca ..... 0.1 ppm max. K..... 0.1 ppm max. Mg ..... 0.1 ppm max. Na ..... 0.1 ppm max.	
	Microfiltered through 0.1 µm/bottled under inert gas	
SO-4661-B025	Water 0.1 % formic acid UHPLC-MS Optigrade®	2.5 L
	Assay .....0.095-0.105 %	
	Purity of formic acid (GC)..... 99.0 % min.	
	Gradient specification	
	HPLC gradient at 254 nm - H. Peak ..... 0.002 AU max. HPLC gradient at 254 nm - Drift..... 0.010 AU max.	
	Fluorescence at 254 nm (as quinine).....0.5 ppb max. Fluorescence at 365 nm (as quinine)..... 0.5 ppb max.	
	Transmission	
	at 210 nm ..... 5 % min. at 230 nm .....45% min. at 254 nm ..... 99% min.	
	Al .....30 ppb max. Ca .....100 ppb max. Fe.....50 ppb max. K.....100 ppb max. Mg .....30 ppb max. Na .....100 ppb max.	
	Microfiltered through 0.1 µm/bottled under inert gas	

Code	Product	Unit
SO-4667-B025	Water 0.1 % acetic acid UHPLC-MS Optigrade®	2.5 L
	Assay ..... 0.095-0.105 % pH ..... 3.2-3.4 Purity of acetic acid (GC) ..... 99.9 % min. Gradient specification HPLC gradient at 254 nm - H. Peak .....0.002 AU max. HPLC gradient at 254 nm - Drift .....0.010 AU max. Fluorescence at 254 nm (as quinine) .....0.5 ppb max. Fluorescence at 365 nm (as quinine) .....0.5 ppb max. Transmission at 210 nm ..... 20 % min. at 230 nm ..... 75 % min. at 254 nm ..... 99 % min. Al .....30 ppb max. Ca .....100 ppb max. Fe .....50 ppb max. K .....100 ppb max. Mg .....30 ppb max. Na .....100 ppb max. Microfiltered through 0.1 µm/bottled under inert gas	
SO-4673-B025	Water 0.1 % trifluoroacetic acid UHPLC-MS Optigrade®	2.5 L
	Assay ..... 0.095-0.105 % Purity of trifluoroacetic acid (GC) ..... 99.95% min. Gradient specification HPLC gradient at 254 nm - H. Peak .....0.002 AU max. HPLC gradient at 254 nm - Drift .....0.010 AU max. Fluorescence at 254 nm (as quinine) ..... 0.5 ppb max. Fluorescence at 365 nm (as quinine) .....0.5 ppb max. Transmission at 210 nm ..... 25 % min. at 230 nm ..... 85% min. at 254 nm ..... 99% min. Al .....30 ppb max. Ca .....100 ppb max. Fe .....50 ppb max. K .....100 ppb max. Mg .....30 ppb max. Na .....100 ppb max. Microfiltered through 0.1 µm/bottled under inert gas	
SO-9368-B010	Water for LC-MS Optigrade®	1 L
SO-9368-B025	Water for LC-MS Optigrade®	2.5 L
	Specification Fluorescence (as Quinine at 450 nm). 1.10-7 g max. Non-volatile matter.....5 mg/L max. Filtered through 0.2 µm pH ..... 5,0 - 8,0 Ca .....0.1 ppm max. K .....0.1 ppm max. Mg .....0.1 ppm max. Na .....0.1 ppm max. Transmission at 200 nm - 400 nm..... 99 % min.	

Solvent mixtures

SO-9534-B040	Mixture Cyclohexane/Ethylacetate 1:1	4 L
	Specification GC/ECD In the GC-ECD chromatogram there are no interfering single signals in the retention time interval between 1,4-dichlorobenzene and decachlorobiphenyl, by a 500-fold concentration greater than that, given by 10 pg/mL heptachlor-epoxide. GC/FID In the GC-FID chromatogram there are no interfering single signals in the retention time interval between n-octane (C8) and n-tetracontane (C40), by a 500-fold concentration greater than that, given by 50 ng/mL n-undecane (C11).	

Ordering Information

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Orders may be placed by mail, telephone, fax or email.
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