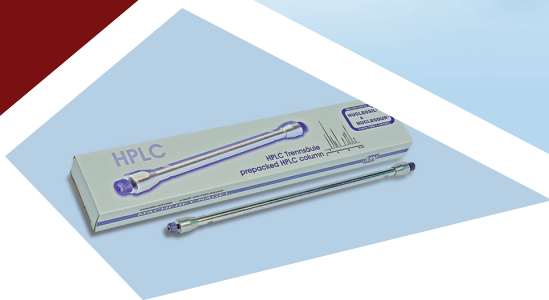
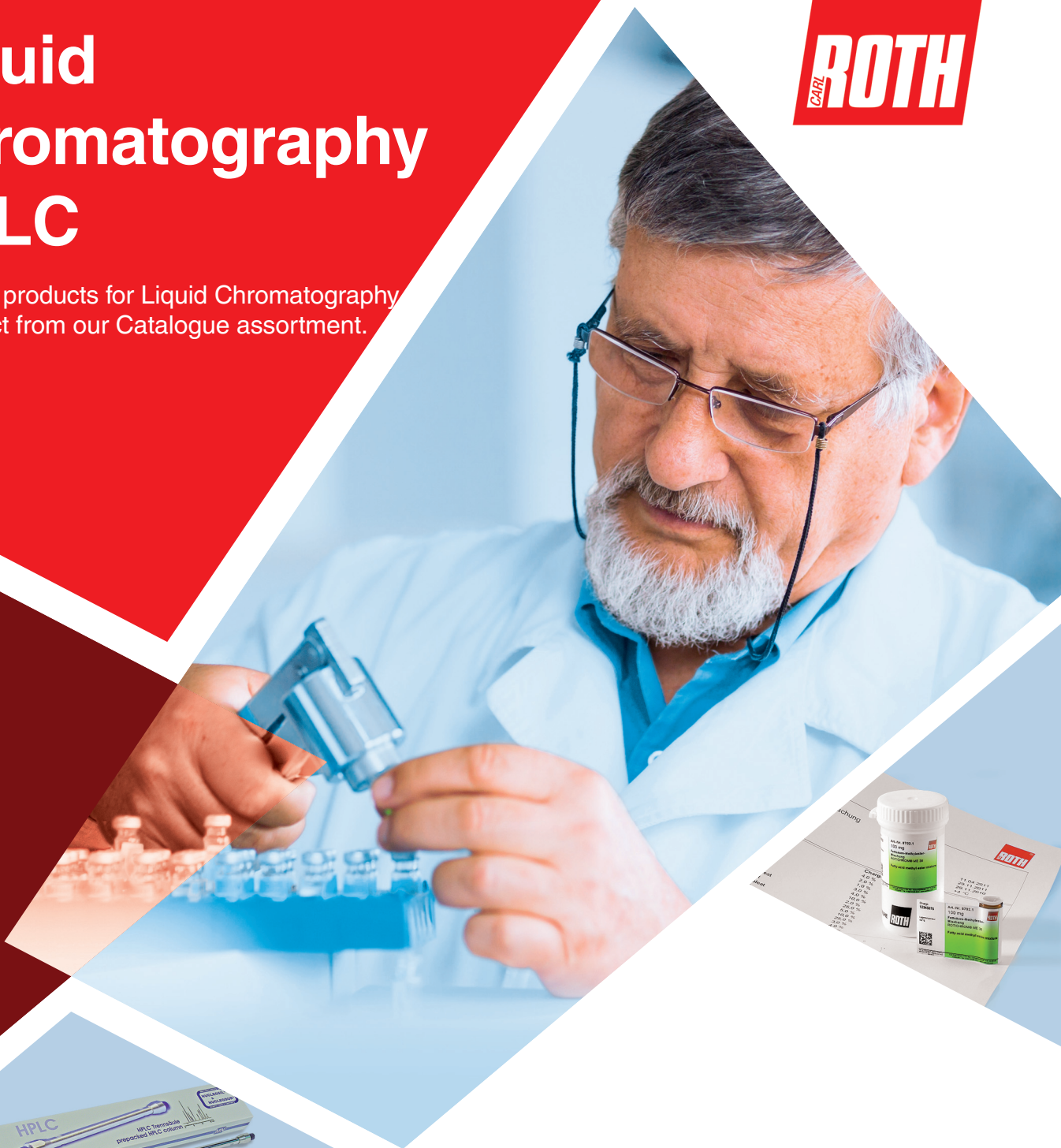




Liquid Chromatography HPLC

Selected products for Liquid Chromatography
An extract from our Catalogue assortment.



Tried and tested product lines for HPLC

Carl Roth GmbH + Co. KG launched their first solvents for HPLC on the market more than 30 years ago. Since then we have been expanding our product line continuously and have developed new products to meet the requirements of modern instrumental chemical analysis.

Today we offer our satisfied customers an extensive range of solvents at different quality levels which are suitable for the respective application. For example, acetonitrile is available in eight quality levels plus as a ready-to-use eluent mixture for LC-MS with three different additives.

Additionally we stock a highly extended range of high-purity reference substances for HPLC as well as a wide range of useful accessories. HPLC columns and ion-pair reagents round off our product range.

Solvents for HPLC



We offer a wide range of **ROTISOLV®** solvents for HPLC in the following quality grades:

HPLC Ultra Gradient Grade
HPLC Gradient Grade
HPLC Gradient
HPLC

Properties:

- High chemical purity
- High UV-permeability
- Low fluorescence
- Low solid residue from evaporation
- Low water and acid content
- Particle filtration through 0.2 µm membrane
- Bottled under protective gas

Our extensive HPLC-solvents range fulfils the highest of requirements and guarantees you a large selection for most applications. Consequent production and quality control guarantee consistent high-grade quality from batch to batch.

Product	Purity	Art. No.	Pack Qty. (l)
Acetic acid ethyl ester	ROTISOLV®HPLC	7336.2	1
		7336.1	2.5
Aceton	ROTISOLV®HPLC	7328.1	1
		7328.2	2.5
1-Butanol	ROTISOLV®HPLC	T178.1	2.5
tert-Butyl methyl ether	ROTISOLV®HPLC	T175.2	1
		T175.1	2.5
Cyclohexane	ROTISOLV®HPLC	7333.2	1
		7333.1	2.5
Dichloromethane	ROTISOLV®HPLC	7334.2	1
		7334.1	2.5
1.4-Dioxane	ROTISOLV® HPLC, not stabilized	X949.1	1
		X949.2	2.5
Ethanol	ROTISOLV®HPLC Gradient Grade	P076.1	1
		P076.2	2.5
n-Heptane	ROTISOLV®≥99 %, HPLC	6828.1	2.5 l
		7337.2	1
		7337.1	2.5

Acetonitril

Purity	Art. No.	Pack Qty. (l)
ROTISOLV®HPLC Ultra Gradient Grade	T195.1	1
	T195.2	2.5
ROTISOLV®HPLC Gradient Grade	8825.1	1
	8825.2	2.5
ROTISOLV®HPLC Gradient	HN44.2	2.5
ROTISOLV®HPLC	7330.1	1
	7330.2	2.5
ROTISOLV®HPLC, isocratic	CN20.1	1
	CN20.2	2.5
ROTISOLV®≥99.8 %, for preparative HPLC	6827.1	2.5
	6827.2	25

Methanol

Purity	Art. No.	Pack Qty. (l)
ROTISOLV®HPLC Ultra Gradient Grade	X948.1	1
	X948.2	2.5
ROTISOLV®HPLC Gradient Grade	7342.2	1
	7342.1	2.5
ROTISOLV®HPLC Gradient	KK39.2	2.5
ROTISOLV®HPLC	P717.2	1
	P717.1	2.5

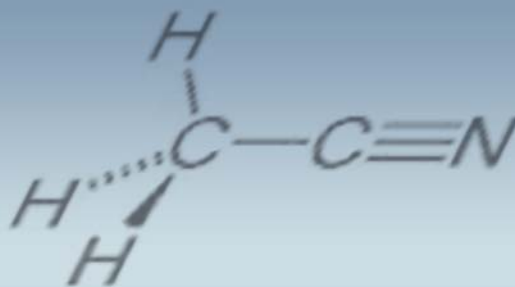
Water

Purity	Art. No.	Pack Qty. (l)
ROTISOLV®HPLC, Gradient Grade	A511.1	1
	A511.2	2.5
	A511.3	5

Product	Purity	Art. No.	Pack Qty. (l)
n-Hexane	ROTISOLV®HPLC	7339.2	1
		7339.1	2.5
Isohexane	ROTISOLV®HPLC	T176.2	1
		T176.1	2.5
Isooctane	ROTISOLV®HPLC	7340.1	2.5
n-Pentane	ROTISOLV® HPLC	CN99.1	1
		CN99.2	2.5
1-Propanol	ROTISOLV® HPLC	T177.1	2.5 l
2-Propanol	ROTISOLV®HPLC	7343.2	1
		7343.1	2.5
Tetrahydrofuran	ROTISOLV®HPLC, not stabilized	7344.1	1
		7344.2	2.5
Toluene	ROTISOLV®HPLC	7346.2	1
		7346.1	2.5
Trichloromethane / Chloroform	ROTISOLV®HPLC	7331.2	1
		7331.1	2.5

For safety information and additional data please see our current catalogue or www.carlroth.com

Acetonitriles by Roth



Overview of ROTISOLV® acetonitriles

We supply you with the ideal acetonitrile for any LC application, from our proven HPLC grade acetonitriles for simple, routine tasks and preparative separations to our premium grade for efficient and super-fast Ultra LC-MS applications.

The overview according to quality levels and specifications will help you find the right product for your application.

Specification	ROTISOLV® Ultra LC-MS	ROTISOLV® LC-MS Grade	ROTISOLV® HPLC Ultra Gra- dient Grade	ROTISOLV® HPLC Gradient Grade	ROTISOLV® HPLC Gradient	ROTISOLV® HPLC	ROTISOLV® HPLC, isocratic	ROTISOLV® for preparative HPLC
Assay	≥99.98 %	≥99.95 %	≥99.95 %	≥99.9 %	≥99.9 %	≥99.9 %	≥99.9 %	≥99.8 %
Water (KF)	≤0.01 %	≤0.01 %	≤0.01 %	≤0.02 %	≤0.02 %	≤0.03 %	≤0.015 %	≤0.05 %
free acid (as CH ₃ COOH)/acidity	≤0.001 %	≤0.001 %	≤0.001 %	≤0.001 %	≤0.002 %	≤0.002 %		≤0.005 %
free alkali (as NH ₃)/alkalinity	≤0.0001 %	≤0.0001 %	≤0.0001 %		≤0.0002 %			≤0.0005 %
Non volatile matter	≤0.0001 %	≤0.0001 %	≤0.0001 %	≤0.0002 %	≤0.0002 %	≤0.0003 %	≤0.0005 %	
UV transmission / UV absorption:								
254 nm					≥99 %			
≥240 nm							≥99 %	
240 nm		≥99 %						
>230 nm						≥99 %		
230 nm	≥99 %		≥99 %				≥96 %	≥96 %
≥220 nm				≥99 %				
220 nm		≥98 %		≥98 %	≥98 %			≥90 %
215 nm	≥98 %		≥98 %			≥95 %		
200 nm	≥97 %	≥95 %	≥96 %	≥96 %	≥95 %		≥80 %	
195 nm	≥85 %	≥78 %	≥85 %	≥85 %	≥80 %	≥80 %		
193 nm					≥60 %			
192 nm				≥50 %				
191 nm	≥30 %		≥25 %					
190 nm				≥10 %				
Gradient test: UV absorption of the greatest eluted peak:								
210 nm	≤0.001 AU	≤0.005 AU	≤1.0 mAU	≤1.0 mAU	≤2.0 mAU			
254 nm	≤0.0003 AU	≤0.002 AU	≤0.2 mAU	≤0.5 mAU				
Fluorescence (as quinine):								
254 nm	≤0.25 ppb	≤0.2 ppb	≤0.2 ppb	≤1.0 ppb	≤0.5 ppb			
365 nm	≤0.25 ppb	≤0.2 ppb	≤0.2 ppb	≤0.5 ppb	≤0.5 ppb			
PAH-test (<2 ppb, HPLC)			complies					
Trace elements:								
Aluminium (Al)	≤20 ppb	≤0.05 ppm						
Calcium (Ca)	≤50 ppb	≤0.05 ppm						
Iron (Fe)	≤20 ppb	≤0.05 ppm						
Potassium (K)	≤50 ppb	≤0.05 ppm						
Magnesium (Mg)	≤20 ppb	≤0.05 ppm						
Sodium (Na)	≤100 ppb	≤0.05 ppm						
Particle filtration through membrane	0.1 µm	0.2 µm	0.2 µm	0.2 µm	0.2 µm	0.2 µm	0.2 µm	0.2 µm
Pack quantities and order numbers:								
1 l (glass)	HN40.1	AE70.1	T195.1	8825.1	HN44.1	7330.1	CN20.1	–
2.5 l (glass)	HN40.2	AE70.2	T195.2	8825.2	HN44.2	7330.2	CN20.2	6827.1
25 l (tinplate)	–	–	–	–	–	–	–	6827.2

For safety information and additional data, see our current catalogue or at www.carlroth.com

Solvents for LC-MS



Modern analysis methods such as LC-MS (combination of liquid chromatography and mass spectroscopy) call for a special solvent quality which has the required purity and which has been tested under application-oriented conditions.

Very high purity and very low metal concentrations are features of these products which allow exact interpretations of the mass spectra.

Properties:

- High chemical purity ($\geq 99.95\%$)
- High UV-permeability
- Low fluorescence
- Superior gradient baseline
- Metal trace impurities (≤ 0.05 ppm)
- Test for LC-MS suitability
- Filtered through $0.2 \mu\text{m}$ membrane
- Bottled under inert gas

Acetic acid ethyl ester

Purity	Art. No.	Pack Qty. (l)
ROTISOLV [®] $\geq 99.95\%$, LC-MS Grade	AE69.1	1
	AE69.2	2.5

Acetonitrile

Purity	Art. No.	Pack Qty. (l)
ROTISOLV [®] $\geq 99.9\%$, LC-MS-Grade	AE70.1	1
	AE70.2	2.5

Methanol

Purity	Art. No.	Pack Qty. (l)
ROTISOLV [®] $\geq 99.95\%$, LC-MS-Grade	AE71.1	1
	AE71.2	2.5

2-Propanol

Purity	Art. No.	Pack Qty. (l)
ROTISOLV [®] $\geq 99.95\%$, LC-MS Grade	AE73.1	1
	AE73.2	2.5

Water

Purity	Art. No.	Pack Qty. (l)
ROTISOLV [®] LC-MS Grade	AE72.1	1
	AE72.2	5

For safety information and additional data please see our current catalogue or www.carlroth.com

UV Cut-off and Miscibility of Solvents Established for HPLC:

UV cut-off (nm)	Solvent	Acetone	Acetonitril	1-Butanol	tert.-Butylmethyl ether	Cyclohexane	Dichloromethane	1,4-Dioxane	Ethyl acetate	Ethanol	n-Heptane	n-Hexane	Isooctane	Methanol	n-Pentane	2-Propanol	Tetrahydrofuran	Toluene	Trichloromethane	Water	
330	Acetone																				
190	Acetonitrile																				
215	1-Butanol																				
210	tert.-Butyl methyl ether																				
200	Cyclohexane																				
233	Dichloromethane																				
215	1,4-Dioxane																				
256	Ethyl acetate																				
210	Ethanol																				
200	n-Heptane																				
195	n-Hexane																				
215	Isooctane																				
206	Methanol																				
190	n-Pentane																				
205	2-Propanol																				
212	Tetrahydrofuran																				
284	Toluene																				
245	Trichloromethane																				
190	Water																				

miscible
 not miscible

Solvents for Ultra LC-MS



Short analysis times in ultrafast HPLC as well as systems coupled to a mass spectrometer require solvents which offer utmost reliability, sensitivity and reproducibility.



Our **ROTISOLV® Ultra LC-MS** solvents are specially suited for meeting these demands and have undergone extremely intensive production and quality controls.

Properties:

- Filtered through 0.1 µm membrane
- Extra high purity (≥99.98 %)
- Bottled under protective gas
- High UV-permeability
- Low fluorescence
- LC-MS suitability tested
- Solid residue from evaporation: max. 1 ppm
- Metal trace impurities: ≤100 ppb

Acetonitril

Trade MarksPurity	Art. No.	Pack Qty. (l)
ROTISOLV®≥99,98 %, Ultra LC-MS	HN40.1	1
	HN40.2	2,5

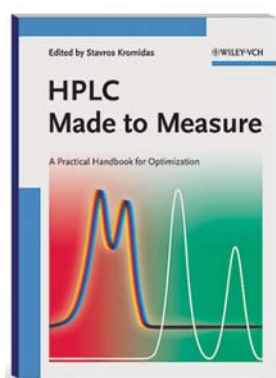
Methanol

Trade MarksPurity	Art. No.	Pack Qty. (l)
ROTISOLV®≥99,98 %, Ultra LC-MS	HN41.1	1
	HN41.2	2,5

Water

Trade MarksPurity	Art. No.	Pack Qty. (l)
ROTISOLV®Ultra LC-MS	HN43.1	1
	HN43.2	2,5

For safety information and additional data, see our current catalogue or at www.carlroth.com



HPLC Made to Measure

A Practical Handbook for Optimization.
Kromidas, Stavros (Ed.)

1st Edition - May 2006, 753 pages, hard cover
ISBN 978-3-527-31377-8

Short description:

The only topical book to focus on optimization, this volume addresses the needs of users wishing to improve their methods in particular in terms of throughput, accuracy and cost-effectiveness. Written by bestseller authors and scientists working for major international companies.

Titel	Art. No.	Pack Qty.
HPLC Made to Measure	HX93.1	1



Cat. III



Butyl-gloves

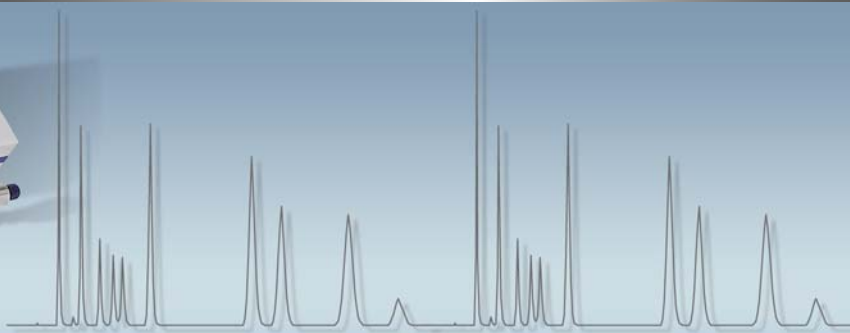
Acc. to EN 420, 388, 374. Thin chemical protection glove with rough surface in hand area to increase grip of smooth and wet objects. Good finger mobility and sens of touch. Long roll-up cuff. Unlined. Length 350 mm, **0.35 mm thick.**

Size	Art. No.	Pack Qty. (pair)
7	CE42.1	1
8	CE43.1	1
9	CE44.1	1
10	CE45.1	1
11	CE46.1	1

**Skin resorbs methanol and acetonitrile.
Effective skin protection is essential!**



HPLC Columns



NUCLEODUR® C₁₈ ec

The ideal standard RP phase for routine HPLC analysis

- Economic and reliable
- Long-life columns
- For all standard routine applications in modern RP-chromatography

Properties:

Octadecyl phase, endcapped

Carbon content: 17.5 %

Pore size: 110 Å

pH-stability: 1-9

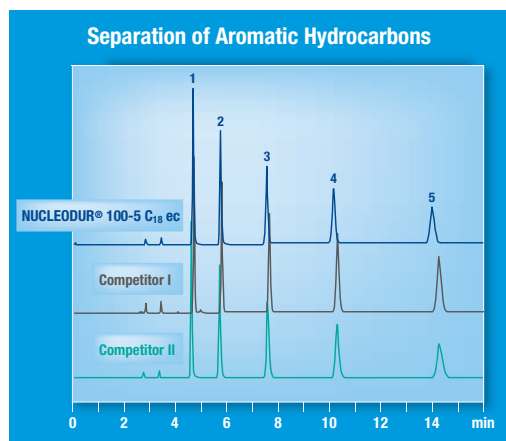
Eluent on column: acetonitrile/water

Applications:

Basic, neutral or acidic pharmaceuticals, derivatized amino acids, pesticides, aldehydes and ketones, fat-soluble vitamins, phenolic compounds, analytics acc. to USP L1

Similar phases:

For many applications the following phases can be replaced with identical or even better results: NUCLEOSIL® C₁₈, Spherisorb® ODS I and II, Hypersil® ODS, Waters Symmetry® C₁₈, Inertsil® ODS II, Kromasil® C₁₈, LiChrospher® RP₁₈ and RP C₁₈ ec.



Legend:

1. Toluene
2. Ethylbenzene
3. Propylbenzene
4. Butylbenzene
5. Pentylbenzene

Conditions: Eluent: acetonitril / water (75:25, v/v),
Flow: 1.3 ml/min, Temperature: 30 °C, Detection: UV, 254 nm

NUCLEODUR® 100-3 C18 ec, particle size 3 µm

Inside Ø (mm)	Length (mm)	Art. No.	Pack Qty.
4	250	KK80.1	1
4.6	150	KK81.1	1
4.6	250	KK82.1	1

NUCLEODUR® 100-5 C18 ec, particle size 5 µm

Inside Ø (mm)	Length (mm)	Art. No.	Pack Qty.
4	250	KK83.1	1
4.6	150	KK84.1	1
4.6	250	KK85.1	1

NUCLEODUR® C₁₈ Gravity

The ideal phase for overall sophisticated analytical separations

- Especially suitable for LC/MS applications due to low bleeding properties
- Ideal for method development
- Superior base deactivation

Properties:

Octadecyl phase, multi-endcapped

Carbon content: 18.0 %

Pore size: 110 Å

pH-stability: 1-11

Eluent on column: acetonitrile/water

Applications:

Pharmaceuticals, e.g. analgesics, antiinflammatory drugs, antidepressants; herbicides; immunosuppressants

Similar phases:

Zorbax® Extend C₁₈, Synergi™ and Max RP, Phenomenex Luna® C₁₈ (2), Waters Xterra® RP₁₈ / MS C₁₈, Inertsil® ODS III, Purospher® RP-18, Star RP-18, USP L1

NUCLEODUR® C18 Gravity, particle size 3 µm

Inside Ø (mm)	Length (mm)	Art. No.	Pack Qty.
4	250	KK86.1	1
4.6	150	KK87.1	1
4.6	250	KK88.1	1

NUCLEODUR® C18 Gravity, particle size 5 µm

Inside Ø (mm)	Length (mm)	Art. No.	Pack Qty.
4	250	KK89.1	1
4.6	150	KK90.1	1
4.6	250	KK91.1	1

Screw-on Guard Column Systems



① Column Protection System

Innovative and universal screw-on guard column holder system. Suitable for all analytical HPLC columns with 1/16" fittings

Features

- Ideal protection for your analytical main column -> significant increase in column lifetime
- Minimized void volume -> suitable also for ultra fast HPLC
- Special ferrules -> pressure stability up to 1034 bar (15 000 psi)
- Visual contamination check -> in-time changing of the guard column
- Guard column length 4 mm, ID 2 mm (for main columns with 2 mm ID) or ID 3 mm (for main columns with 3, 4 and 4.6 mm ID)
- UNIVERSAL RP guard columns suitable for all HPLC columns under RP conditions

Content of the column protection system

- Cartridge holder (1 piece)
- Capillaries (2 pieces)
- Ferrules (3 pieces)
- Wrenches (2 pieces)
- Manual

Art. No.	Pack Qty.
6041.1	1 Kit

② Guard columns UNIVERSAL

Designation	Art. No.	Pack Qty.
Guard column EC 4/2 UNIVERSAL RP for main columns with 2 mm ID	6049.1	3
Guard column EC 4/3 UNIVERSAL RP for main columns with 3, 4 and 4.6 mm ID	6050.1	3

Replacement parts

Designation	Art. No.	Pack Qty.
Replacement ferrules	6042.1	5
Replacement connector including O-ring	6043.1	1
Replacement capillary tubes, nuts and metal ferrules	6045.1	3

Ion Pair Reagents for HPLC

③ Ion pair reagents are strongly hydrophobic ions which form neutral ion pairs with oppositely charged sample molecules. In this way, the simultaneous separation of charged and non-charged molecules is possible.

Features:

- High purity
- High UV permeability
- Broad range of products
- Excellent price/performance ratio

Example of specification:

Octane-1-sulphonic acid sodium salt

≥98.0 %, for ion pair chromatography

Ion pair reagent for HPLC.

Assay (acidim.)	≥98.0 %
Water	≤2 %
A 200 nm (0.25 M in water)	≤0.1 AU
A 210 nm (0.25 M in water)	≤0.05 AU
A 220 nm (0.25 M in water)	≤0.03 AU
A 230 nm (0.25 M in water)	≤0.02 AU
A 240 nm (0.25 M in water)	≤0.01 AU
A 250 nm (0.25 M in water)	≤0.01 AU
A 260 nm (0.25 M in water)	≤0.01 AU

Product	Purity	Art. No.	Pack Qty. (g)
Butane-1-sulphonic acid sodium salt	≥99 %	KK50.1	10
		KK50.2	25
		KK50.3	100
Decane-1-sulphonic acid sodium salt	≥99 %	KK51.1	10
		KK51.2	25
		KK51.3	100
Dodecane-1-sulphonic acid sodium salt	≥99 %	KK52.1	10
		KK52.2	25
		KK52.3	100
Heptane-1-sulphonic acid sodium salt	≥98 %	KK53.1	10
		KK53.2	25
		KK53.3	100

Product	Purity	Art. No.	Pack Qty. (g)
Hexane-1-sulphonic acid sodium salt	≥98 %	KK54.1	10
		KK54.2	25
		KK54.3	100
Octane-1-sulphonic acid sodium salt	≥98 %	KK55.1	10
		KK55.2	25
		KK55.3	100
Pentane-1-sulphonic acid sodium salt	≥98 %	KK56.1	10
		KK56.2	25
		KK56.3	100
Propane-1-sulphonic acid sodium salt	≥98 %	KK57.1	10
		KK57.2	25
		KK57.3	100

For safety information and additional data please see our current catalogue or www.carlroth.com

Eluent Mixtures



ROTISOLV® eluent mixtures by ROTH

- Ready-to-use solvent blends for easy handling
- High chemical purity of the used raw material: HPLC solvents ($\geq 99.9\%$) and acids ($\geq 99.9\%$)
- High accuracy of the ratio of ingredients
- High UV-permeability
- Metal trace impurities: ≤ 0.05 ppm
- LC-MS suitability tested
- Filtered through $0.2\ \mu\text{m}$ membrane
- Bottled under inert gas

Acetonitrile

Solvent	Admixture	Purity	Art. No.	Pack Qty. (l)
Acetonitrile	0.1 % acetic acid	ROTISOLV® $\geq 99.9\%$, LC-MS-Grade	CP01.1	1
			CP01.2	2.5
	0.1 % formic acid	ROTISOLV® $\geq 99.9\%$, LC-MS-Grade	CP00.1	1
			CP00.2	2.5
	0.1 % trifluoroacetic acid	ROTISOLV® $\geq 99.9\%$, LC-MS-Grade	CP02.1	1
			CP02.2	2.5



Methanol

Solvent	Admixture	Purity	Art. No.	Pack Qty. (l)
Methanol	0.1 % trifluoroacetic acid	ROTISOLV® $\geq 99.95\%$, LC-MS Grade	CP06.1	1

Water

Solvent	Admixture	Purity	Art. No.	Pack Qty. (l)
Water	0.1 % acetic acid	ROTISOLV® LC-MS-Grade	CP04.2	2.5
	0.1 % formic acid	ROTISOLV® LC-MS Grade	CP03.1	1
			CP03.2	2.5
0.1 % trifluoroacetic acid	ROTISOLV® LC-MS-Grade	CP05.2	2.5	

Starting material for eluent mixtures

For the preparation of individual eluent mixtures we offer acids and salts of highest purity.

Acetic acid 100 %

Purity	Art. No.	Pack Qty.	Packaging
100 %, p.a.	3738.1	1 l	glass
	3738.4	1 l	plastic
	3738.2	2.5 l	glass
	3738.5	2.5 l	plastic
	3738.3	10 l	plastic

Ammonium acetate

Purity	Art. No.	Pack Qty.	Packaging
$\geq 97\%$, p.a., ACS	7869.2	500 g	plastic
	7869.1	1 kg	plastic
	7869.3	2.5 kg	plastic



Formic acid 98 %

Purity	Art. No.	Pack Qty.	Packaging
$\geq 98\%$, p.a., ACS	4724.3	500 ml	glass
	4724.1	1 l	glass
	4724.2	2.5 l	glass

Trifluoroacetic acid

Purity	Art. No.	Pack Qty.	Packaging
$\geq 99.9\%$	P088.1	100 ml	glass
	P088.2	500 ml	glass
	P088.3	1 l	glass

For safety information and additional data, see our current catalogue or at www.carlroth.com

Sample Preparation · Filtration



① Rotilabo®-syringe filters Mini-Tip

Unsterile, 15 mm, housing made of PP, ultrasonic welded, colourless. Ideally suited for HPLC. The Mini-Tip opening is ideal for filtering in very small sample containers or vials.

Pore size (µm)	Membrane material	Art. No.	Pack Qty.
0.2	RC	PP41.1	100
0.45	RC	PP42.1	100
0.2	Nylon	PP43.1	100
0.45	Nylon	PP44.1	100
0.2	PTFE	PP45.1	100
0.45	PTFE	PP46.1	100
0.2	PVDF	PP47.1	100
0.45	PVDF	PP48.1	100
0.2	CA	PP52.1	100
0.45	CA	PP53.1	100

② Disposable syringe filters

SPARTAN®-syringe filters - certified for HPLC.

Technische Daten:

Membrane-Ø	30 mm	13 mm
Sample capacity	max. 100 ml	max. 5 ml
Retaining capacity	50 µl	10 µl
Filter surface	5.7 cm ²	0.75 cm ²
Max. working pressure	7.0 bar	
Max. working temperature	80 °C	
Connection	Luer-Lock inlet / Luer outlet	

Hydrophil. Especially developed for cleaning of HPLC samples. Ideally suited for filtration of aqueous and organic solvents.

Membrane-Ø 30 mm, Ø outer 34 mm

Pore size (µm)	Membrane material	Colour code	Material housing	Art. No.	Pack Qty.
0.2	reg. Cellulose	dark brown	PP	5824.1	25
0.45	reg. Cellulose	light brown	PP	0062.1	25

Nominal-Ø 13 mm, Ø outer 17 mm

Pore size (µm)	Membrane material	Colour code	Material housing	Art. No.	Pack Qty.
0.2	reg. Cellulose	dark brown	PP	5989.1	25
0.45	reg. Cellulose	light brown	PP	5992.1	25

For our extended assortment of syringe filters, see chapter filtration, water recycling and dialysis in our current catalogue or at www.carlroth.com

DynaGard® Filter Tips

For sterilisation, clarification and filtration of solutions and fluids. Easy aspiration and injection of fluids into and out of vials, ampoules, test tubes and other vessels with small openings.

- Easy to handle
- Time-saving
- High flow-rate
- Maximum sample recovery
- No needle needed

Suitable for all standard luer lock syringes. Maximum operating pressure at room temperature: 5 bar (75 psi).

DynaGard® Polypropylene Filter Tips for HPLC (CL60.1 - CL63.1) are made from hollow polypropylene fibre membranes and are compatible with all of the common chemicals used as organic and aqueous HPLC solvents. Particularly suited for sample preparation prior to HPLC. Fluids can be clarified simply by aspiration into the syringe and loaded directly onto the column. **Autoclavable.**

Filtration surface (cm ²)	Filtration volume	Max. hold-up volume
0.8	<5 ml	8 µl
3.9	>5 ml	30 µl

Filtration surface (cm ²)	Pore size (µm)	Type	Art. No.	Pack Qty.
0.8	0.2	non sterile	CL60.1	200

Disposable syringes Inject®

Acc. to ISO 7886-1. 2-piece, cylinder made of **PP**, piston rod made of **PE**. **Sterile** (EO-sterilised, individually wrapped). Smudge-proof, black graduation. The scale goes beyond the nominal volume. Safe piston stopper for smooth filling up to maximum volume. Latex-, PVC- and silicone-free.

① **Luer-connection**

Nominal capacity (ml)	Max. volume (ml)	Graduations (ml)	Art. No.	Pack Qty.
2	3	0.1	0056.1	100
5	6	0.2	0057.1	100
10	12	0.5	0058.1	100
20	24	1.0	0059.1	100

② **Luer-Lock-connection, suitable for zytostatica**

Nominal capacity (ml)	Max. volume (ml)	Graduations (ml)	Art. No.	Pack Qty.
2	3	0.1	EP95.1	100
5	6	0.2	EP96.1	100
10	12	0.5	EP97.1	100
20	24	1.0	EP98.1	100

Accessories · Autosampler Vials



Rotilabo®-screw neck ND8 vials

Made of borosilicate glass, hydrolytic class 1. Thread 8-425. Flat bottom. Dimensions: Ø 11.6 x H 32 mm. CleanPack, bottles packed in a clean room under class 10.000 conditions. Standard bottles for GC and HPLC. Suitable for automatic samplers. Please order micro inserts, screw caps and septa separately.

Type	Volume (ml)	Art. No.	Pack Qty.
Clear glass	1.5	KE26.1	100
Clear glass, with labelling area	1.5	KE27.1	100
Clear glass, conical base	1.1	KE28.1	100
Brown glass	1.5	KE29.1	100
Brown glass, with labelling area	1.5	KE30.1	100

Micro-inserts

Made of clear borosilicate glass. For screw neck ND8 vials.

Type	Volume (ml)	Dimensions L x Ø (mm)	Art. No.	Pack Qty.
Conical 15 mm tip	0.1	31 x 5	KE31.1	100
With plastic spring	0.1	29 x 5	KE32.1	100
With metal spring	0.05	27.5 x 4	KE33.1	100

Screw caps with bore hole

Made of PP, black. Bore hole Ø 5.5 mm. For screw neck ND8 vials.

Delivery incl. septum, mounted.

Septum materials	Thickness (mm)	Hardness (shore A)	Art. No.	Pack Qty.
PTFE red / silicone white / PTFE red	1.0	45°	KE34.1	100
Silicone white / PTFE red UltraClean	1.3	45°	KE35.1	100
Silicone cream / PTFE red UltraClean	1.5	55°	KE36.1	100
Natural rubber orange red / TEF transparent	1.3	60°	KE37.1	100
Butyl red / PTFE grey	1.3	55°	KE38.1	100

Rotilabo®-screw neck ND10 vials

Made of borosilicate glass, hydrolytic class 1. Thread 10-425. Wide opening for easy filling. Flat bottom. Dimensions: Ø 11.6 x H 32 mm. CleanPack, bottles packed in a clean room under class 10.000 conditions. Standard bottles for GC and HPLC. Suitable for automatic samplers. Please order screw caps separately.

Type	Volume (ml)	Art. No.	Pack Qty.
Clear glass	1.5	LC16.1	100
Brown glass, with labelling area	1.5	LC17.1	100

Micro-inserts

Made of clear borosilicate glass. For short thread ND9 vials.

Type	Volume (ml)	Dimensions L x Ø (mm)	Art. No.	Pack Qty.
Tapered 15 mm tip	0.1	31 x 6	LC07.1	100
With plastic spring	0.1	29 x 5.7	LC08.1	100
Flat base	0.2	31 x 6	LC09.1	100

Screw caps with bore hole

Made of PP, black. Bore hole Ø 7 mm. For screw thread ND10 vials.

Delivery incl. septum, mounted.

Septum materials	Thickness (mm)	Hardness (shore A)	Art. No.	Pack Qty.
Silicone white / PTFE red UltraClean	1.3	45°	LC18.1	100
Silicone white / PTFE beige	1.5	45°	LC19.1	100
Natural rubber orange-red / TEF transparent	1.3	60°	LC20.1	100
Silicone white / PTFE blue, slotted	1.5	55°	LC21.1	100

For additional autosampler vials please see our catalogue 2015 from p. 50 or www.carlroth.com

ND11 Rotilabo®-welt rim vials

With flange rim. Made of borosilicate glass, hydrolytic Class 1. Wide opening for easy filling. Flat bottom. CleanPack, bottles packed in a clean room under class 10.000 conditions. Standard bottles for GC and HPLC. Suitable for automatic samplers. Please order micro-inserts and flange caps separately.

Type	Volume (ml)	Art. No.	Pack Qty.
Clear glass	1.5	LC22.1	100
Clear glass, with labelling area	1.5	LC23.1	100
Brown glass, with labelling area	1.5	LC24.1	100
TPX, with integrated glass-micro-insert	0.2	LC25.1	100

Micro-inserts

Made of clear borosilicate glass. For welt rim ND11 vials.

Type	Volume (ml)	Dimensions L x Ø (mm)	Art. No.	Pack Qty.
Tapered 15 mm tip	0.1	31 x 6	LC07.1	100
With plastic spring	0.1	29 x 5.7	LC08.1	100
Flat base	0.2	31 x 6	LC09.1	100

Flange caps with bore hole

Made of aluminium, with transparent coating. Bore hole Ø 5.5 mm.

For welt rim ND11 vials.

Delivery incl. septum, mounted.

Septum materials	Thickness (mm)	Hardness (shore A)	Art. No.	Pack Qty.
PTFE red / silicone white / PTFE red	1.0	45°	LC26.1	100
Silicone white / PTFE red, UltraClean	1.3	45°	LC27.1	100
Natural rubber orange-red / butyl red / TEF transparent	1.0	45°	LC28.1	100
Natural rubber red-orange / TEF transparent, AGILENT-quality	1.0	60°	LC29.1	100
Butyl red / PTFE grey	1.3	55°	LC30.1	100

Magnetic flanged caps with bore hole

Septum materials	Thickness (mm)	Hardness (shore A)	Art. No.	Pack Qty.
Silicone white / PTFE red UltraClean	1.3	45°	PT63.1	100
PTFE red / silicone white / PTFE red	1.0	45°	PT64.1	100

Rotilabo®-closing and opening pliers

Made of hardened steel with chemical resistant special coating. For sealing and opening standard aluminium crimp caps with ND 8, 11, 13 or 20 mm.

- Special surface coating for excellent grip
- Effortless working thanks to resetting spring
- Adjusting screws in crimping head and handle for optimal sealing and reproducible crimping results



① Closing pliers

for aluminium crimp caps	Art. No.	Pack Qty.
ND 8 mm	C780.1	1
ND 11 mm	C781.1	1
ND 13 mm	5001.1	1
ND 20 mm	C782.1	1

② Opening pliers

For controlled opening of crimped sample vials without the danger of glass breakage.

for aluminium crimp caps	Art. No.	Pack Qty.
ND 8 mm	ATN3.1	1
ND 11 mm	ATN4.1	1
ND 13 mm	ATN5.1	1
ND 20 mm	ATN6.1	1

Sample Injection, Sample Storage



HAMILTON-Microlitre Syringes

① Series 700 MICROLITER®-syringes

For dosing liquids. The piston is firmly fixed in the glass body. Needle and piston are made of stainless steel. Needle 51 mm, bent slightly inwards, sealed in wall.

Tip type 3:

Model	Volume (µl)	Pitch (µl)	Needle-Ø inside (mm)	Needle-Ø outside (mm)	Art. No.	Pack Qty.
701 NR	10	0.1	0.13	0.47	EY37.1	1
702 NR	25	0.5	0.15	0.72	EY38.1	1
705 NR	50	1.0	0.15	0.72	EY39.1	1
710 NR	100	1.0	0.15	0.72	EY40.1	1
725 NR	250	5.0	0.41	0.72	EY41.1	1
750 NR	500	10.0	0.41	0.72	EY42.1	1

Series 7000 MICROLITER®-syringes

For dead volume-free dosing of liquids with a very small nominal volume. The stainless steel needle and Wolfram piston are exactly coordinated. Volume dosing takes place in the needle. Needle 70 mm.

Tip type 3:

Model	Volume (µl)	Pitch (µl)	Needle-Ø outside (mm)	Art. No.	Pack Qty.
7000.5 KH	0.5	0.005	0.50	EY52.1	1
7001 KH	1.0	0.01	0.47	EY53.1	1
7002 KH	2.0	0.02	0.50	EY54.1	1
7105 KH	5.0	0.05	0.56	EY55.1	1

② HPLC-bottles

Made of DURAN®. Vacuum and pressure resistant. With Retrace-Code. Suitable for loading HPLC-equipment and for safe transfer of solvents in closed or sterile systems.



Cap can be rotated freely, which prevents the hose from being twisted when changing the bottle.

Delivery incl. HPLC-screw cap (Made of PP. GL 45, four metric M8-threaded necks) with hose connection set (4 seal inserts each made of silicone for hose Ø 1.6 mm and Ø 3.2 mm, 4 sealing gaskets made of silicone and 4 screw caps with bore hole).

Please order pressure compensation set separately if required.

Type	Art. No.	Pack Qty.
HPLC-bottle 500 ml	KY94.1	2
HPLC-bottle 1000 ml	KY93.1	2

Accessories:

Screw cap GL 45 with 4 threaded necks and hose connectionset	HE24.1	2
Spare hose connection set	HE26.1	1
Spare membrane filter pore size 0.2 µm	HE27.1	2
Pressure compensation set (Screw cap with olive, hose made of tygon, membrane filter)	HE25.1	1
DURAN®-pressure plus-screw thread bottle, 500 ml	CK35.1	1
DURAN®-pressure plus-screw thread bottle, 1000 ml	H995.1	1

Rotilabo®-FEP-tubes

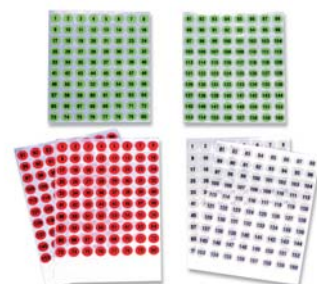
Temperature range -270 to +205 °C. Flexible, pore-free, gasproof. Hardness: 55-60 Shore D. Transparent. Autoclavable.



Inside Ø (mm)	Outside Ø (mm)	Wall thickness (mm)	Art. No.	Pack Qty. (m)
0.8 (1/32")	1.58 (1/16")	0.4	C022.1	10
1.58 (1/16")	3.18 (1/8")	0.8	Y504.1	5
2.0	4.0	1.0	C023.1	10
3.96 (5/32")	6.35 (1/4")	1.2	Y505.1	5
4.0	6.0	1.0	C024.1	10
4.35 (11/64")	6.35 (1/4")	1.0	Y506.1	5
6.0	8.0	1.0	C025.1	5
6.35 (1/4")	9.52 (3/8")	1.59	Y507.1	5
8.0	10.0	1.0	C026.1	5
9.52 (3/8")	12.7 (1/2")	1.59	Y508.1	5
10.0	12.0	1.0	C027.1	5

Sekuroka®-labels

Numbered from 1-160 in red, green and blue. Self-adhesive, made of paper Ø 8 mm. Ideal for labelling test tubes, vials, microcentrifuge tubes, etc. Should be used together with numerical racks to prevent any mix-up. Labels ensure correct positioning of test tubes even during bulk sampling.



Art. No.	Pack Qty.
N376.1	1

Reference Substances



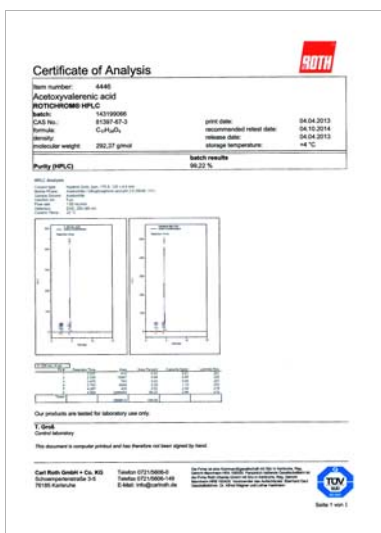
ROTICHROM® HPLC

More than 200 reference substances for HPLC by ROTH

Pure reference substances are essential for precise analysis. They are used for identifying compounds by retention time, for calibrating detectors, and for eliminating errors in quantification of the sample compounds.

Our product segment ROTICHROM®HPLC offers you a broad range of more than 200 reference substances for HPLC. The substances are of high HPLC purity which lies mostly between 98 and 99 %.

Delivery: Our Reference Substances are supplied with certificate of analysis and chromatogramme (in the covering box).



For the whole range of reference substances for HPLC please see Chromatography chapter in our current catalogue or www.carlroth.com

A selection from our range of products

Product	Trade Marks	Purity	Art. No.	Pack Qty. (mg)
Acetoxyvaleric acid	ROTICHROM®HPLC	>99 %	4446.1	25
Acteoside	ROTICHROM®HPLC	>98 %	4451.1	20
Apigenin-7-glucoside	ROTICHROM®HPLC	>99 %	6348.1	10
Asiaticoside	ROTICHROM®HPLC	≥99 %	3972.1	10
Cynarin	ROTICHROM®HPLC	>99 %	4457.1	10
Echimidine	ROTICHROM®HPLC	≥95 %	7992.1	5
Echimidin-N-oxid	ROTICHROM®HPLC	≥97 %	8011.1	5
(-)-Galocatechin	ROTICHROM®HPLC	>99 %	4480.1	10
			4480.2	20
Ginsenoside-Rg1	ROTICHROM®HPLC	≥98 %	7467.1	5
Harpagoside	ROTICHROM®HPLC	>98 %	7471.1	10
Hederacoside C	ROTICHROM®HPLC	≥99 %	7472.1	10
			4481.1	25
			4481.2	50
Hydroxyvaleric acid	ROTICHROM®HPLC	>99 %	4481.3	100
			L543.1	1
Hypericin	ROTICHROM®HPLC	≥98 %	7932.1	10
Hyperoside	ROTICHROM®HPLC	>99 %	7586.1	10
Isoquercitrin	ROTICHROM®HPLC	>99 %	7589.1	10
Isorhamnetin	ROTICHROM®HPLC	≥98 %	7503.1	10
Kaempferol	ROTICHROM®HPLC	>99 %	4546.1	10
Luteolin	ROTICHROM®HPLC	>99 %	4164.1	10
Luteolin-7-glucoside	ROTICHROM®HPLC	≥98 %	K030.1	5
Oenin chloride	ROTICHROM®HPLC	>99 %	7417.1	10
Quercetin dihydrate	ROTICHROM®HPLC	≥99 %	9417.1	10
Quercitrin	ROTICHROM®HPLC	>99 %	4488.1	25
Valeric acid	ROTICHROM®HPLC	>99 %	4488.2	50

For safety information and additional data please see our current catalogue or www.carlroth.com

Contact international

Carl Roth GmbH + Co. KG
Tel: +49 (0)721 5606-0
Fax: +49 (0)721 5606-149

Schoemperlenstr. 3-5
D-76185 Karlsruhe
www.carlroth.com

Contact Netherlands

Tel.: 0180/51 67 04
Fax: +49 721/56 06-260
bestellingen@carlroth.nl
www.carlroth.nl

Carl Roth GmbH + Co. KG · Schoemperlenstr. 3-5 · D-76185 Karlsruhe

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Contact Belgium

Tel.: 03 283 47 10 (Vlaanderen & Brussel) · Fax: +49 721/5606-260
Tél.: 080 447 958 (Wallonie & Bruxelles) · Fax: +49 721/5606-259
bestellingen@carlroth.be · commandes@carlroth.be
www.carlroth.be

Contact Switzerland:

ROTH AG
Tel.: 061/712 11 60 · Fax: 061/712 20 21
info@carlroth.ch · www.carlroth.ch
Fabrikmattenweg 12 · 4144 Arlesheim

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