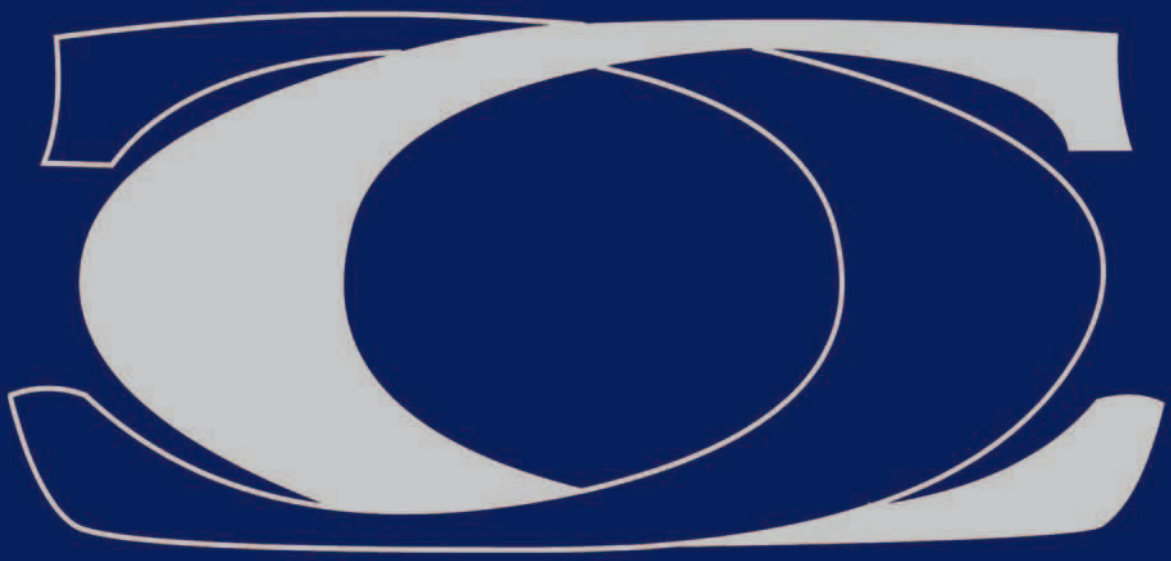


CATALOGUE

CHIRAL
TECHNOLOGIES EUROPE

DAICEL CHEMICAL INDUSTRIES, LTD.

To match the growing demand "in chiral separations": we have established sites in all major world areas involved in pharmaceutical development.

DAICEL CHEMICAL INDUSTRIES Ltd in Japan (Arai), **CHIRAL TECHNOLOGIES Inc** in the USA (Exton), and **CHIRAL TECHNOLOGIES EUROPE SAS** in France (Illkirch).

DAICEL chiral columns are the most widely used and referenced chiral chromatography products in the world. Due to their broad selectivity, good durability and especially high loading capacity, **DAICEL** Chiral Stationary Phases have become the leading chromatography products for enantiomeric analysis and chiral separations.

The Chiral Stationary Phase is the key to achieving lower cost in a chiral separation at a large scale.

Technical support is an integral component of the mission of **CHIRAL TECHNOLOGIES EUROPE**.

DAICEL CHEMICAL INDUSTRIES Ltd

DAICEL CHEMICAL INDUSTRIES Ltd is a speciality chemical company with its headquarters in Japan. **DAICEL**'s major products include organic chemicals, cellulose derivatives, functional products, plastics, aerospace and defence systems.

The business unit, at **DAICEL**, responsible for the production of the chiral chromatography products and related services is the Chiral Pharmaceuticals Ingredients Company (CPI Company). In addition, this unit offers extensive capabilities in biotransformation and a complementary range of specialized pharmaceutical chemicals from **DAICEL** portfolio that brings value to our customers.

CHIRAL TECHNOLOGIES EUROPE

Established in 1995 at Strasbourg (France), **CHIRAL TECHNOLOGIES EUROPE** is a subsidiary of **DAICEL CHEMICALS INDUSTRIES Ltd** and is responsible for marketing, sales and technical support of **DAICEL** chiral separation products, techniques and services in Europe.
With the increasing interest in development of single enantiomeric drugs, we are able to help you convert racemic small molecules into single enantiomer chiral products.

Equiped with the experience, knowledge and proprietary technologies of **DAICEL** we offer the pharmaceutical industry, a complete range of products and services for separation of enantiomeric mixtures :

The Chiral Chromatographic Experts

Daicel can help you find a chiral phase that meets your project needs. We have the largest portfolio of chiral phases available - including immobilised polysaccharides, coated polysaccharides, proteins, crown ethers and ion exchange columns. They can be used in SFC, SMB and HPLC (Normal, Polar and Reverse phase).

As the original developer of polysaccharide phases we have the largest range of coated phases in addition to the new robust immobilised phases.

We have phases available in ultra fast 3 µm, high-resolution 5 µm, traditional 10 µm and preparative 20 µm particle sizes.

We are sure that we can find a chiral chromatographic separation that will allow you to analyse, isolate or manufacture your chiral compound.

To help you with the process of finding the right chiral column we now offer a range of services that are designed to match how you want to work.

Screening to Success

We offer to screen for free your racemic chiral molecule. Within 5 days of sample receipt we will give you the details of the column you need.

For more complex analytical projects we are able to offer a method development service that will develop the method that you need. For a set price of 7,000 Euros we will quickly screen all available phases that match the project requirements.

For those customers who have method development capability but are restricted by IP concerns – we can offer a combination of method development guidance in combination with a loan of a set of immobilised chiral columns.

- **DAICEL chromatography products**
  for separation of racemic mixtures, the world most widely used and referenced chiral chromatography products
- **DAICEL chiral HPLC columns**
- **DAICEL bulk chiral stationary phases**
- **Development of optimal separation chromatography methods**
  for analytical and preparative separation of racemic mixtures
- **Custom separation services** for isolation and purification of enantiomers in quantities ranging from mg to tons
- **DAICEL technical assistance and support**

CONTENTS

CHIRAL HPLC COLUMNS

DAICEL chiral HPLC columns are the most referenced chiral HPLC columns. Used for their high quality, broad selectivity, durability and high loading capacities, they separate > 99% of all racemic compounds.

With the new **DAICEL** immobilised polysaccharide-derived Chiral Stationary Phase (CSP), the user gains compatibility with all solvents in addition to highly selective Chiral Stationary Phases for enantiomer resolution, which results in an extremely versatile range of CSP's.

As a **DAICEL** subsidiary we can supply the complete range of **DAICEL** chiral columns for HPLC and SFC applications. The products are available in a range of sizes to meet your application needs whether analytical, semi-preparative or preparative:

- **CHIRALPAK® IA, CHIRALPAK® IB & CHIRALPAK® IC**

NEW
- **CHIRALPAK® IA-3, IB-3 & IC-3**
  Immobilised stationary phases for increased solvent versatility

- **CHIRALPAK® & CHIRALCEL®**
  Standard coated polysaccharide stationary phases

NEW
- **CHIRALPAK® AZ-3, AY-3 & CHIRALCEL® OZ-3**
  Coated stationary phases on our new 3 µm support

NEW
- **CHIRALPAK® AD-3, AS-3 & CHIRALCEL® OD-3, OJ-3**
  Coated stationary phases on our new 3 µm supports for fast analysis and higher resolution

- **CHIRALPAK® -R, [-RH] & CHIRALCEL® -R, [-RH]**

NEW
- **CHIRALPAK® AD-3R, AS-3R, AY-3R, AZ-3R, & CHIRALCEL® OD-3R, OJ-3R, OZ-3R**
  For reverse phase separation using aqueous-organic mobile phases

- **DAICEL chiral HPLC columns for special applications**
  For separation of acidic chiral compounds

- **Preparative columns and bulk stationary phases (CSPs)**
  For larger scale separations

NEW IMMOBILISED CHIRALPAK®

for increased robustness and improved solvent compatibility

CHIRALPAK® IA, CHIRALPAK® IB & CHIRALPAK® IC HPLC and SFC columns are packed with NEW chiral stationary phases - consisting of a silica support onto which the polymeric chiral selector (polysaccharide derivatives) has been immobilised. Immobilisation of the polysaccharide derivatives on a matrix is an excellent approach to provide universal solvent compatibility on these highly selective chiral stationary phases. This broadens the range of solvents to be used as mobile phases, thereby introducing new selectivity profiles, improved productivity and robustness in use.

CHIRALPAK® IA, CHIRALPAK® IB & CHIRALPAK® IC offer:

- High solvent versatility in the selection of the mobile phase composition
- Solvent flexibility for the resolution of compounds with limited solubility
- High selectivity in the resolution of enantiomers
- Robustness and extended durability
- Excellent column efficiency
- Easy use of the columns

NEW **CHIRALPAK® IA-3, CHIRALPAK® IB-3 & CHIRALPAK® IC-3** are columns with Chiral selector immobilised on our new 3 µm silica support for:

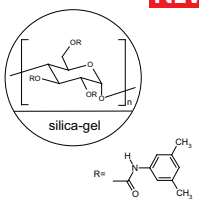
- Fast analysis
- Higher resolution
- Direct use in most HPLC systems
- Direct method transfer between 5 µm and 3 µm
- As always, **DAICEL** high quality

Columns are available in a variety of diameters and lengths to meet all your application needs. For larger scale applications, the CSP is also available as a bulk stationary phase (20 µm particle size).

Our laboratory evaluation of the immobilised chiral phases show that they are extremely suitable for analytical method development under reverse phase conditions. Many RP and LCMS conditions have been defined using these columns.

NEW IMMOBILISED CHIRALPAK® IA

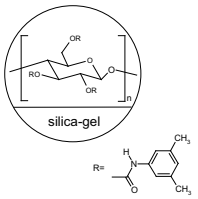
AMYLOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) IMMOBILISED ON A 3 µm & 5 µm SILICA SUPPORT



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALPAK® IA-3 HPLC ANALYTICAL COLUMNS 3 µm					
80511	CHIRALPAK® IA-3	10	4	3	Guard Cartridges (x3)
80522	CHIRALPAK® IA-3	50	4,6	3	Analytical
80523	CHIRALPAK® IA-3	100	4,6	3	Analytical
80524	CHIRALPAK® IA-3	150	4,6	3	Analytical
80525	CHIRALPAK® IA-3	250	4,6	3	Analytical
• CHIRALPAK® IA HPLC ANALYTICAL COLUMNS 5 µm					
80311	CHIRALPAK® IA	10	4	5	Guard Cartridges (x3)
80324	CHIRALPAK® IA	150	4,6	5	Analytical
80325	CHIRALPAK® IA	250	4,6	5	Analytical
• CHIRALPAK® IA HPLC ANALYTICAL SPECIAL COLUMNS 5 µm					
803C4	CHIRALPAK® IA	150	0,3	5	Microflow
80394	CHIRALPAK® IA	150	2,1	5	Analytical
• CHIRALPAK® IA HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
80335	CHIRALPAK® IA	250	10	5	Semi-Prep
80337	CHIRALPAK® IA	20	10	5	Guard Semi-Prep
80345	CHIRALPAK® IA	250	20	5	Semi-Prep
• CHIRALPAK® IA HPLC PREPARATIVE COLUMNS 5 µm					
80375	CHIRALPAK® IA	250	30	5	Prep
80355	CHIRALPAK® IA	250	50	5	Prep
• CHIRALPAK® IA SFC COLUMNS 5 µm					
80423	CHIRALPAK® IA SFC	100	4,6	5	Analytical
80435	CHIRALPAK® IA SFC	250	10	5	Semi-Prep
80445	CHIRALPAK® IA SFC	250	20	5	Semi-Prep
80475	CHIRALPAK® IA SFC	250	30	5	Prep
80455	CHIRALPAK® IA SFC	250	50	5	Prep

NEW IMMOBILISED CHIRALPAK® IB

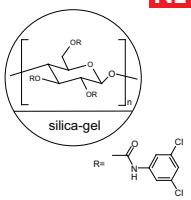
CELLULOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) IMMOBILISED ON A 3 µm & 5 µm SILICA SUPPORT



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALPAK® IB-3 HPLC ANALYTICAL COLUMNS 3 µm					
81511	CHIRALPAK® IB-3	10	4	3	Guard Cartridges (x3)
81522	CHIRALPAK® IB-3	50	4,6	3	Analytical
81523	CHIRALPAK® IB-3	100	4,6	3	Analytical
81524	CHIRALPAK® IB-3	150	4,6	3	Analytical
81525	CHIRALPAK® IB-3	250	4,6	3	Analytical
• CHIRALPAK® IB HPLC ANALYTICAL COLUMNS 5 µm					
81311	CHIRALPAK® IB	10	4	5	Guard Cartridges (x3)
81324	CHIRALPAK® IB	150	4,6	5	Analytical
81325	CHIRALPAK® IB	250	4,6	5	Analytical
• CHIRALPAK® IB HPLC ANALYTICAL SPECIAL COLUMNS 5 µm					
813C4	CHIRALPAK® IB	150	0,3	5	Microflow
81394	CHIRALPAK® IB	150	2,1	5	Analytical
• CHIRALPAK® IB HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
81335	CHIRALPAK® IB	250	10	5	Semi-Prep
81337	CHIRALPAK® IB	20	10	5	Guard Semi-Prep
81345	CHIRALPAK® IB	250	20	5	Semi-Prep
• CHIRALPAK® IB HPLC PREPARATIVE COLUMNS 5 µm					
81375	CHIRALPAK® IB	250	30	5	Prep
81355	CHIRALPAK® IB	250	50	5	Prep
• CHIRALPAK® IB SFC COLUMNS 5 µm					
81423	CHIRALPAK® IB SFC	100	4,6	5	Analytical
81435	CHIRALPAK® IB SFC	250	10	5	Semi-Prep
81445	CHIRALPAK® IB SFC	250	20	5	Semi-Prep
81475	CHIRALPAK® IB SFC	250	30	5	Prep
81455	CHIRALPAK® IB SFC	250	50	5	Prep

NEW IMMOBILISED CHIRALPAK® IC

CELLULOSE TRIS (3,5-DICHLOROPHENYLCARBAMATE) IMMOBILISED ON A 3 µm & 5 µm SILICA-GEL



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALPAK® IC-3 HPLC ANALYTICAL COLUMNS 3 µm					
83511	CHIRALPAK® IC-3	10	4	3	Guard Cartridges (x3)
83522	CHIRALPAK® IC-3	50	4,6	3	Analytical
83523	CHIRALPAK® IC-3	100	4,6	3	Analytical
83524	CHIRALPAK® IC-3	150	4,6	3	Analytical
83525	CHIRALPAK® IC-3	250	4,6	3	Analytical
• CHIRALPAK® IC HPLC ANALYTICAL COLUMNS 5 µm					
83311	CHIRALPAK® IC	10	4	5	Guard Cartridges (x3)
83324	CHIRALPAK® IC	150	4,6	5	Analytical
83325	CHIRALPAK® IC	250	4,6	5	Analytical
• CHIRALPAK® IC HPLC ANALYTICAL SPECIAL COLUMNS 5 µm					
833C4	CHIRALPAK® IC	150	0,3	5	Microflow
83394	CHIRALPAK® IC	150	2,1	5	Analytical
• CHIRALPAK® IC HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
83335	CHIRALPAK® IC	250	10	5	Semi-Prep
83337	CHIRALPAK® IC	20	10	5	Guard Semi-Prep
83345	CHIRALPAK® IC	250	20	5	Semi-Prep
• CHIRALPAK® IC HPLC PREPARATIVE COLUMNS 5 µm					
83375	CHIRALPAK® IC	250	30	5	Prep
83355	CHIRALPAK® IC	250	50	5	Prep
• CHIRALPAK® IC SFC COLUMNS 5 µm					
83423	CHIRALPAK® IC SFC	100	4,6	5	Analytical
83435	CHIRALPAK® IC SFC	250	10	5	Semi-Prep
83445	CHIRALPAK® IC SFC	250	20	5	Semi-Prep
83475	CHIRALPAK® IC SFC	250	30	5	Prep
83455	CHIRALPAK® IC SFC	250	50	5	Prep

CHIRALPAK® & CHIRALCEL®

DAICEL CHIRALPAK® AD, CHIRALPAK® AS, CHIRALCEL® OD & CHIRALCEL® OJ

The predecessors to the new generation of immobilised columns, traditional **CHIRALPAK® & CHIRALCEL® DAICEL** coated polysaccharide Chiral Stationary Phases are made with a spherical high quality silica support onto which the polymeric chiral selector (amylose or cellulose derivatives) is physically coated. Due to the coated nature of these chiral supports, solvents should be carefully selected.

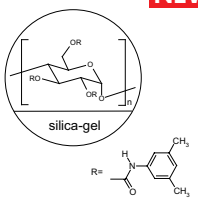
NEW **CHIRALPAK® AD-3, AS-3 & CHIRALCEL® OD-3, OJ-3,** are columns with Chiral Stationary Phase coated on our new 3 µm silica support for:

- Fast analysis
- Higher resolution
- Direct use in most HPLC systems
- Direct method transfer between 5 µm and 3 µm
- As always, **DAICEL** high quality

Analytical and semi-preparative columns for HPLC and SFC applications **CHIRALPAK® & CHIRALCEL®** chromatography columns are available in a variety of diameters and lengths to meet your application needs. For larger application scales, the CSP is also available as bulk stationary phase (20 µm).
Analytical and semi-preparative columns are available with 5 µm and 10 µm particle sizes. The 5 µm columns (-H series) offer higher resolution than the traditional 10 µm columns.

COATED CHIRALPAK® AD & AD-H

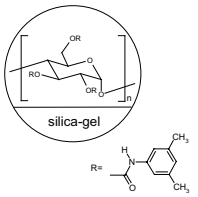
AMYLOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) ON A 3 µm & 5 µm SILICA SUPPORT



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALPAK® AD-3 HPLC ANALYTICAL COLUMNS 3 µm					
19511	CHIRALPAK® AD-3	10	4	3	Guard Cartridges (x3)
19522	CHIRALPAK® AD-3	50	4,6	3	Analytical
19523	CHIRALPAK® AD-3	100	4,6	3	Analytical
19524	CHIRALPAK® AD-3	150	4,6	3	Analytical
19525	CHIRALPAK® AD-3	250	4,6	3	Analytical
19594	CHIRALPAK® AD-3	150	2,1	3	Analytical
• CHIRALPAK® AD-H HPLC ANALYTICAL COLUMNS 5 µm					
19311	CHIRALPAK® AD-H	10	4	5	Guard Cartridges (x3)
19324	CHIRALPAK® AD-H	150	4,6	5	Analytical
19325	CHIRALPAK® AD-H	250	4,6	5	Analytical
• CHIRALPAK® AD-H HPLC ANALYTICAL SPECIAL COLUMNS 5 µm					
193C4	CHIRALPAK® AD-H	150	0,3	5	Microflow
19394	CHIRALPAK® AD-H	150	2,1	5	Analytical
• CHIRALPAK® AD-H HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
19335	CHIRALPAK® AD-H	250	10	5	Semi-Prep
19337	CHIRALPAK® AD-H	20	10	5	Guard Semi-Prep
19345	CHIRALPAK® AD-H	250	20	5	Semi-Prep
• CHIRALPAK® AD-H HPLC PREPARATIVE COLUMNS 5 µm					
19375	CHIRALPAK® AD-H	250	30	5	Prep
19355	CHIRALPAK® AD-H	250	50	5	Prep
• CHIRALPAK® AD-H SFC COLUMNS 5 µm					
19423	CHIRALPAK® AD-H SFC	100	4,6	5	Analytical
19435	CHIRALPAK® AD-H SFC	250	10	5	Semi-Prep
19445	CHIRALPAK® AD-H SFC	250	20	5	Semi-Prep
19475	CHIRALPAK® AD-H SFC	250	30	5	Prep
19455	CHIRALPAK® AD-H SFC	250	50	5	Prep

COATED CHIRALPAK® AD

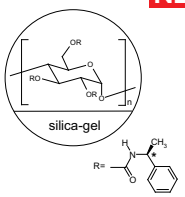
AMYLOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) ON A 10 µm SILICA SUPPORT



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® AD HPLC ANALYTICAL COLUMN 10 µm					
19025	CHIRALPAK® AD	250	4,6	10	Analytical
• CHIRALPAK® AD HPLC ANALYTICAL SPECIAL COLUMNS 10 µm					
19094	CHIRALPAK® AD	150	2,1	10	Analytical
• CHIRALPAK® AD HPLC SEMI-PREPARATIVE COLUMNS 10 µm					
19032	CHIRALPAK® AD	50	10	10	Guard Semi-Prep
19035	CHIRALPAK® AD	250	10	10	Semi-Prep
19042	CHIRALPAK® AD	50	20	10	Guard Semi-Prep
19045	CHIRALPAK® AD	250	20	10	Semi-Prep
• CHIRALPAK® AD SFC COLUMN 10 µm					
19145	CHIRALPAK® AD SFC	250	20	10	Semi-Prep

COATED CHIRALPAK® AS & AS-H

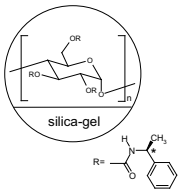
AMYLOSE TRIS ((S)-α-METHYLBENZYLCARBAMATE) ON A 3 µm & 5 µm SILICA SUPPORT



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® AS-3 HPLC ANALYTICAL COLUMNS 3 µm					
NEW **20511**	CHIRALPAK® AS-3	10	4	3	Guard Cartridges (x3)
20522	CHIRALPAK® AS-3	50	4,6	3	Analytical
20523	CHIRALPAK® AS-3	100	4,6	3	Analytical
20524	CHIRALPAK® AS-3	150	4,6	3	Analytical
20525	CHIRALPAK® AS-3	250	4,6	3	Analytical
• CHIRALPAK® AS-H HPLC ANALYTICAL COLUMNS 5 µm					
20311	CHIRALPAK® AS-H	10	4	5	Guard Cartridges (x3)
20324	CHIRALPAK® AS-H	150	4,6	5	Analytical
20325	CHIRALPAK® AS-H	250	4,6	5	Analytical
• CHIRALPAK® AS-H HPLC ANALYTICAL SPECIAL COLUMNS 5 µm					
203C4	CHIRALPAK® AS-H	150	0,3	5	Microflow
20394	CHIRALPAK® AS-H	150	2,1	5	Analytical
• CHIRALPAK® AS-H HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
20335	CHIRALPAK® AS-H	250	10	5	Semi-Prep
20337	CHIRALPAK® AS-H	20	10	5	Guard Semi-Prep
20345	CHIRALPAK® AS-H	250	20	5	Semi-Prep
• CHIRALPAK® AS-H HPLC PREPARATIVE COLUMNS 5 µm					
20375	CHIRALPAK® AS-H	250	30	5	Prep
20355	CHIRALPAK® AS-H	250	50	5	Prep
• CHIRALPAK® AS-H SFC COLUMNS 5 µm					
20423	CHIRALPAK® AS-H SFC	100	4,6	5	Analytical
20435	CHIRALPAK® AS-H SFC	250	10	5	Semi-Prep
20445	CHIRALPAK® AS-H SFC	250	20	5	Semi-Prep
20475	CHIRALPAK® AS-H SFC	250	30	5	Semi-Prep
20455	CHIRALPAK® AS-H SFC	250	50	5	Prep

COATED CHIRALPAK® AS

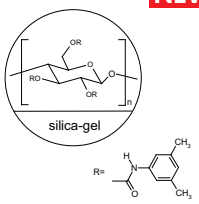
AMYLOSE TRIS ((S)-α-METHYLBENZYLCARBAMATE) ON A 10 µm SILICA SUPPORT



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® AS HPLC ANALYTICAL COLUMN 10 µm					
20025	CHIRALPAK® AS	250	4,6	10	Analytical
• CHIRALPAK® AS HPLC ANALYTICAL SPECIAL COLUMN 10 µm					
20094	CHIRALPAK® AS	150	2,1	10	Analytical
• CHIRALPAK® AS HPLC SEMI-PREPARATIVE COLUMNS 10 µm					
20032	CHIRALPAK® AS	50	10	10	Guard Semi-Prep
20035	CHIRALPAK® AS	250	10	10	Semi-Prep
20042	CHIRALPAK® AS	50	20	10	Guard Semi-Prep
20045	CHIRALPAK® AS	250	20	10	Semi-Prep
• CHIRALPAK® AS SFC COLUMN 10 µm					
20145	CHIRALPAK® AS SFC	250	20	10	Semi-Prep

COATED CHIRALCEL® OD & OD-H

CELLULOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) ON A 3 µm & 5 µm SILICA SUPPORT

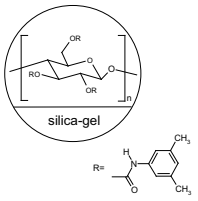


Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALCEL® OD-3 HPLC ANALYTICAL COLUMNS 3 µm					
14511	CHIRALCEL® OD-3	10	4	3	Guard Cartridges (x3)
14522	CHIRALCEL® OD-3	50	4,6	3	Analytical
14523	CHIRALCEL® OD-3	100	4,6	3	Analytical
14524	CHIRALCEL® OD-3	150	4,6	3	Analytical
14525	CHIRALCEL® OD-3	250	4,6	3	Analytical
14594	CHIRALCEL® OD-3	150	2,1	3	Analytical
• CHIRALCEL® OD-H HPLC ANALYTICAL COLUMNS 5 µm					
14311	CHIRALCEL® OD-H	10	4	5	Guard Cartridges (x3)
14324	CHIRALCEL® OD-H	150	4,6	5	Analytical
14325	CHIRALCEL® OD-H	250	4,6	5	Analytical
• CHIRALCEL® OD-H HPLC ANALYTICAL SPECIAL COLUMNS 5 µm					
143C4	CHIRALCEL® OD-H	150	0,3	5	Microflow
14394	CHIRALCEL® OD-H	150	2,1	5	Analytical
• CHIRALCEL® OD-H HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
14335	CHIRALCEL® OD-H	250	10	5	Semi-Prep
14337	CHIRALCEL® OD-H	20	10	5	Guard Semi-Prep
14345	CHIRALCEL® OD-H	250	20	5	Semi-Prep
• CHIRALCEL® OD-H HPLC PREPARATIVE COLUMNS 5 µm					
14375	CHIRALCEL® OD-H	250	30	5	Prep
14355	CHIRALCEL® OD-H	250	50	5	Prep
• CHIRALCEL® OD-H SFC COLUMNS 5 µm					
14423	CHIRALCEL® OD-H SFC	100	4,6	5	Analytical
14435	CHIRALCEL® OD-H SFC	250	10	5	Semi-Prep
14445	CHIRALCEL® OD-H SFC	250	20	5	Semi-Prep
14475	CHIRALCEL® OD-H SFC	250	30	5	Semi-Prep
14455	CHIRALCEL® OD-H SFC	250	50	5	Prep

COATED CHIRALCEL® OD

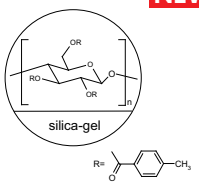
CELLULOSE TRIS (3,5 - DIMETHYLPHENYLCARBAMATE) ON A 10 µm SILICA SUPPORT

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALCEL® OD HPLC ANALYTICAL COLUMN 10 µm					
14025	CHIRALCEL® OD	250	4,6	10	Analytical
• CHIRALCEL® OD HPLC SEMI-PREPARATIVE COLUMNS 10 µm					
14032	CHIRALCEL® OD	50	10	10	Guard Semi-Prep
14035	CHIRALCEL® OD	250	10	10	Semi-Prep
14042	CHIRALCEL® OD	50	20	10	Guard Semi-Prep
14045	CHIRALCEL® OD	250	20	10	Semi-Prep
• CHIRALCEL® OD SFC COLUMN 10 µm					
14145	CHIRALCEL® OD SFC	250	20	10	Semi-Prep



COATED CHIRALCEL® OJ & OJ-H

CELLULOSE TRIS (4-METHYLBENZOATE) ON A 3 µm & 5 µm SILICA SUPPORT



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALCEL® OJ-3 HPLC ANALYTICAL COLUMNS 3 µm					
17511	CHIRALCEL® OJ-3	10	4	3	Guard Cartridges (x3)
17522	CHIRALCEL® OJ-3	50	4,6	3	Analytical
17523	CHIRALCEL® OJ-3	100	4,6	3	Analytical
17524	CHIRALCEL® OJ-3	150	4,6	3	Analytical
17525	CHIRALCEL® OJ-3	250	4,6	3	Analytical
• CHIRALCEL® OJ-H HPLC ANALYTICAL COLUMNS 5 µm					
17311	CHIRALCEL® OJ-H	10	4	5	Guard Cartridges (x3)
17324	CHIRALCEL® OJ-H	150	4,6	5	Analytical
17325	CHIRALCEL® OJ-H	250	4,6	5	Analytical
• CHIRALCEL® OJ-H HPLC ANALYTICAL SPECIAL COLUMNS 5 µm					
173C4	CHIRALCEL® OJ-H	150	0,3	5	Microflow
17394	CHIRALCEL® OJ-H	150	2,1	5	Analytical
• CHIRALCEL® OJ-H HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
17335	CHIRALCEL® OJ-H	250	10	5	Semi-Prep
17337	CHIRALCEL® OJ-H	20	10	5	Guard Semi-Prep
17345	CHIRALCEL® OJ-H	250	20	5	Semi-Prep
• CHIRALCEL® OJ-H HPLC PREPARATIVE COLUMNS 5 µm					
17375	CHIRALCEL® OJ-H	250	30	5	Prep
17355	CHIRALCEL® OJ-H	250	50	5	Prep
• CHIRALCEL® OJ-H SFC COLUMNS 5 µm					
17423	CHIRALCEL® OJ-H SFC	100	4,6	5	Analytical
17435	CHIRALCEL® OJ-H SFC	250	10	5	Semi-Prep
17445	CHIRALCEL® OJ-H SFC	250	20	5	Semi-Prep
17475	CHIRALCEL® OJ-H SFC	250	30	5	Semi-Prep
17455	CHIRALCEL® OJ-H SFC	250	50	5	Prep

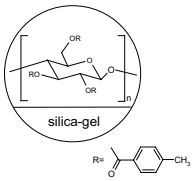
COATED CHIRALCEL®
OJ, OA, OF, OG & OK

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type

• CHIRALCEL® OJ HPLC ANALYTICAL COLUMN 10 µm

CELLULOSE TRIS (4-METHYLBENZOATE) ON A 10 µm SILICA SUPPORT

17025	CHIRALCEL® OJ	250	4,6	10	Analytical



• CHIRALCEL® OJ HPLC SEMI-PREPARATIVE COLUMNS 10 µm

17032	CHIRALCEL® OJ	50	10	10	Guard Semi-Prep
17035	CHIRALCEL® OJ	250	10	10	Semi-Prep
17042	CHIRALCEL® OJ	50	20	10	Guard Semi-Prep
17045	CHIRALCEL® OJ	250	20	10	Semi-Prep

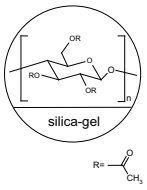
• CHIRALCEL® OJ SFC COLUMN 10 µm

17145	CHIRALCEL® OJ SFC	250	20	10	Semi-Prep

• CHIRALCEL® OA HPLC ANALYTICAL COLUMNS 10 µm

CELLULOSE TRIACETATE ON A 10 µm SILICA SUPPORT

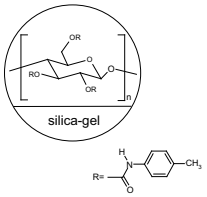
11022	CHIRALCEL® OA	50	4,6	10	Guard
11025	CHIRALCEL® OA	250	4,6	10	Analytical



• CHIRALCEL® OF HPLC ANALYTICAL COLUMNS 10 µm

CELLULOSE TRIS (4-CHLOROPHENYLCARBAMATE) ON 10 µm SILICA SUPPORT

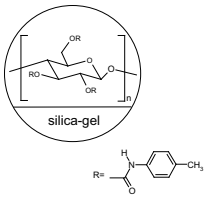
15022	CHIRALCEL® OF	50	4,6	10	Guard
15025	CHIRALCEL® OF	250	4,6	10	Analytical



• CHIRALCEL® OG HPLC ANALYTICAL COLUMNS 10 µm

CELLULOSE TRIS (4-METHYLPHENYLCARBAMATE) ON 10 µm SILICA SUPPORT

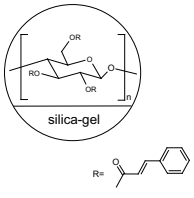
16022	CHIRALCEL® OG	50	4,6	10	Guard
16025	CHIRALCEL® OG	250	4,6	10	Analytical



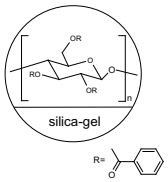
• CHIRALCEL® OK HPLC ANALYTICAL COLUMNS 10 µm

CELLULOSE TRICINNAMATE ON A 10 µm SILICA SUPPORT

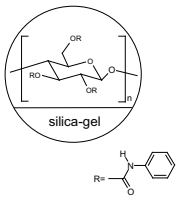
18022	CHIRALCEL® OK	50	4,6	10	Guard
18025	CHIRALCEL® OK	250	4,6	10	Analytical



COATED CHIRALCEL®
OB, OB-H, OC & OC-H



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALCEL® OB-H HPLC ANALYTICAL COLUMNS 5 µm					
CELLULOSE TRIBENZOATE ON A 5 µm & 10 µm SILICA SUPPORT					
12311	CHIRALCEL® OB-H	10	4	5	Guard Cartridges (x3)
12324	CHIRALCEL® OB-H	150	4,6	5	Analytical
12325	CHIRALCEL® OB-H	250	4,6	5	Analytical
• CHIRALCEL® OB HPLC ANALYTICAL COLUMNS 10 µm					
12022	CHIRALCEL® OB	50	4,6	10	Guard
12025	CHIRALCEL® OB	250	4,6	10	Analytical



• CHIRALCEL® OC-H HPLC ANALYTICAL COLUMN 5 µm					
CELLULOSE TRIS (PHENYLCARBAMATE) ON A 5 µm & 10 µm SILICA SUPPORT					
13325	CHIRALCEL® OC-H	250	4,6	5	Analytical
• CHIRALCEL® OC HPLC ANALYTICAL COLUMNS 10 µm					
13022	CHIRALCEL® OC	50	4,6	10	Guard
13025	CHIRALCEL® OC	250	4,6	10	Analytical

NEW COATED CHIRAL COLUMNS

New HPLC and SFC phases that allow effective method development for compounds not fully resolved on other Daicel columns

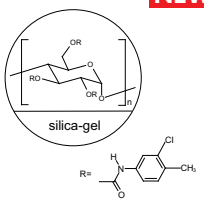
CHIRALPAK® AY-H, AZ-H & CHIRALCEL® OZ-H HPLC & SFC columns are phases that have been produced for several years by **DAICEL**. As the selectors are significantly different from existing **DAICEL** phases they allow new separations to be developed. These phases are now available as packed **HPLC and SFC** analytical and semi preparative columns. They are effective in developing new compound specific separations. They are an excellent complement in terms of recognition behaviour to the primary screen systems/sets of **CHIRALPAK® IA, IB & IC** or the alternative **CHIRALPAK® AD, AS & CHIRALCEL® OD, OJ.**

These columns are coated onto the silica support and hence can only be used with mobile phases of alkane/alcohol, acetonitrile/alcohol or mixed alcohol systems.

- New recognition profiles that allow new separations
- Complementary to existing **DAICEL** screening methodologies
- Excellent columns efficiency
- Easy use of the column

NEW COATED CHIRALPAK® AZ & AZ-H

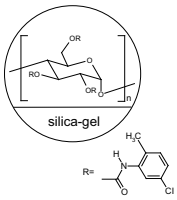
AMYLOSE TRIS (3-CHLORO-4-METHYLPHENYLCARBAMATE) ON 3 µm & 5 µm SILICA-GEL.



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALPAK® AZ-3 HPLC ANALYTICAL COLUMNS 3 µm					
61511	CHIRALPAK® AZ-3	10	4	3	Guard Cartridges (x3)
61522	CHIRALPAK® AZ-3	50	4,6	3	Analytical
61523	CHIRALPAK® AZ-3	100	4,6	3	Analytical
61524	CHIRALPAK® AZ-3	150	4,6	3	Analytical
61525	CHIRALPAK® AZ-3	250	4,6	3	Analytical
• CHIRALPAK® AZ-H HPLC ANALYTICAL COLUMNS 5 µm					
61311	CHIRALPAK® AZ-H	10	4	5	Guard Cartridges (x3)
61321	CHIRALPAK® AZ-H	50	4,6	5	Analytical
61323	CHIRALPAK® AZ-H	100	4,6	5	Analytical
61324	CHIRALPAK® AZ-H	150	4,6	5	Analytical
61325	CHIRALPAK® AZ-H	250	4,6	5	Analytical
• CHIRALPAK® AZ-H HPLC ANALYTICAL SPECIAL COLUMN 5 µm					
61394	CHIRALPAK® AZ-H	150	2,1	5	Analytical
• CHIRALPAK® AZ-H HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
61335	CHIRALPAK® AZ-H	250	10	5	Semi-Prep
61337	CHIRALPAK® AZ-H	20	10	5	Guard Semi-Prep
61345	CHIRALPAK® AZ-H	250	20	5	Semi-Prep
• CHIRALPAK® AZ-H HPLC PREPARATIVE COLUMNS 5 µm					
61375	CHIRALPAK® AZ-H	250	30	5	Prep
61355	CHIRALPAK® AZ-H	250	50	5	Prep
• CHIRALPAK® AZ-H SFC COLUMNS 5 µm					
61423	CHIRALPAK® AZ-H SFC	100	4,6	5	Analytical
61435	CHIRALPAK® AZ-H SFC	250	10	5	Semi-Prep
61445	CHIRALPAK® AZ-H SFC	250	20	5	Semi-Prep
61475	CHIRALPAK® AZ-H SFC	250	30	5	Prep
61455	CHIRALPAK® AZ-H SFC	250	50	5	Prep

NEW COATED CHIRALPAK® AY & AY-H

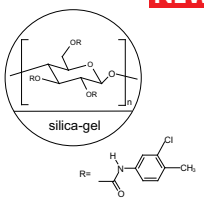
AMYLOSE TRIS (5-CHLORO-2-METHYLPHENYLCARBAMATE) ON 3 µm & 5 µm SILICA-GEL



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALPAK® AY-3 HPLC ANALYTICAL COLUMNS 3 µm					
47511	CHIRALPAK® AY-3	10	4	3	Guard Cartridges (x3)
47522	CHIRALPAK® AY-3	50	4,6	3	Analytical
47523	CHIRALPAK® AY-3	100	4,6	3	Analytical
47524	CHIRALPAK® AY-3	150	4,6	3	Analytical
47525	CHIRALPAK® AY-3	250	4,6	3	Analytical
• CHIRALPAK® AY-H HPLC ANALYTICAL COLUMNS 5 µm					
47311	CHIRALPAK® AY-H	10	4	5	Guard Cartridges (x3)
47321	CHIRALPAK® AY-H	50	4,6	5	Analytical
47323	CHIRALPAK® AY-H	100	4,6	5	Analytical
47324	CHIRALPAK® AY-H	150	4,6	5	Analytical
47325	CHIRALPAK® AY-H	250	4,6	5	Analyrical
• CHIRALPAK® AY-H HPLC ANALYTICAL SPECIAL COLUMN 5 µm					
47394	CHIRALPAK® AY-H	150	2,1	5	Analytical
• CHIRALPAK® AY-H HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
47335	CHIRALPAK® AY-H	250	10	5	Semi-Prep
47337	CHIRALPAK® AY-H	20	10	5	Guard Semi-Prep
47345	CHIRALPAK® AY-H	250	20	5	Semi-Prep
• CHIRALPAK® AY-H HPLC PREPARATIVE COLUMNS 5 µm					
47375	CHIRALPAK® AY-H	250	30	5	Prep
47355	CHIRALPAK® AY-H	250	50	5	Prep
• CHIRALPAK® AY-H SFC COLUMNS 5 µm					
47423	CHIRALPAK® AY-H SFC	100	4,6	5	Analytical
47435	CHIRALPAK® AY-H SFC	250	10	5	Semi-Prep
47445	CHIRALPAK® AY-H SFC	250	20	5	Semi-Prep
47475	CHIRALPAK® AY-H SFC	250	30	5	Prep
47455	CHIRALPAK® AY-H SFC	250	50	5	Prep

NEW COATED CHIRALCEL® OZ & OZ-H

CELLULOSE TRIS (3-CHLORO-4-METHYLPHENYLCARBAMATE) ON 3 µm & 5 µm SILICA-GEL.



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALCEL® OZ-3 HPLC ANALYTICAL COLUMNS 3 µm					
42511	CHIRALCEL® OZ-3	10	4	3	Guard Cartridges (x3)
42522	CHIRALCEL® OZ-3	50	4,6	3	Analytical
42523	CHIRALCEL® OZ-3	100	4,6	3	Analytical
42524	CHIRALCEL® OZ-3	150	4,6	3	Analytical
42525	CHIRALCEL® OZ-3	250	4,6	3	Analytical
• CHIRALCEL® OZ-H HPLC ANALYTICAL COLUMNS 5 µm					
42311	CHIRALCEL® OZ-H	10	4	5	Guard Cartridges (x3)
42321	CHIRALCEL® OZ-H	50	4,6	5	Analytical
42323	CHIRALCEL® OZ-H	100	4,6	5	Analytical
42324	CHIRALCEL® OZ-H	150	4,6	5	Analytical
42325	CHIRALCEL® OZ-H	250	4,6	5	Analyrical
• CHIRALCEL® OZ-H HPLC ANALYTICAL SPECIAL COLUMN 5 µm					
42394	CHIRALCEL® OZ-H	150	2,1	5	Analytical
• CHIRALCEL® OZ-H HPLC SEMI-PREPARATIVE COLUMNS 5 µm					
42335	CHIRALCEL® OZ-H	250	10	5	Semi-Prep
42337	CHIRALCEL® OZ-H	20	10	5	Guard Semi-Prep
42345	CHIRALCEL® OZ-H	250	20	5	Semi-Prep
• CHIRALCEL® OZ-H HPLC PREPARATIVE COLUMNS 5 µm					
42375	CHIRALCEL® OZ-H	250	30	5	Prep
42355	CHIRALCEL® OZ-H	250	50	5	Prep
• CHIRALCEL® OZ-H SFC COLUMNS 5 µm					
42423	CHIRALCEL® OZ-H SFC	100	4,6	5	Analytical
42435	CHIRALCEL® OZ-H SFC	250	10	5	Semi-Prep
42445	CHIRALCEL® OZ-H SFC	250	20	5	Semi-Prep
42475	CHIRALCEL® OZ-H SFC	250	30	5	Prep
42455	CHIRALCEL® OZ-H SFC	250	50	5	Prep

CHIRALPAK® -3R & [-RH] & CHIRALCEL® -R & [-RH]

DAICEL REVERSE PHASE HPLC COLUMNS CHIRALPAK® -3R & [-RH] & CHIRALCEL® -R & [-RH]

For aqueous-organic mobile phase separation or when pH flexibility is required

NEW **CHIRALPAK® AD-3R, AS-3R, AZ-3R, AY-3R & CHIRALCEL® OD-3R, OJ-3R, OZ-3R** are columns packed with Chiral Stationary Phase coated on our new 3 µm silica support for:

- Fast analysis,
- Higher resolution,
- Direct use in most HPLC systems,
- Direct method transfer between 5 µm and 3 µm,
- As always, **DAICEL** high quality.

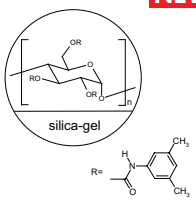
CHIRALPAK® -3R & [-RH] & CHIRALCEL® -R & [-RH] have been developed by **DAICEL** as the reverse phase versions of **CHIRALPAK® AD-H, AS-H, AY-H, AZ-H & CHIRALCEL® OD-H, OJ-H, OZ-H** (Columns which have the widest applicability in normal phase mode). They have the same coated chiral selector as found in the normal phase stationary phases, but are coated to a hydrophobic high quality silica support.

These reverse-phase columns were developed specifically for aqueous-organic mobile phases. They are suited for applications where the sample is present in aqueous media (e.g. biological samples) or for samples that require flexibility in term of pH range (extreme pH values must be avoided as they can damage the silica gel used in these columns).
These columns are also frequently used in LC/MS applications.

Analytical columns for reverse phase HPLC **CHIRALPAK® -3R & [-RH] & CHIRALCEL® -R & [-RH]** chromatography columns are available in a variety of diameters and lengths to meet your application needs.

Immobilised chiral phases (**CHIRALPAK® IA, CHIRALPAK® IB & CHIRALPAK® IC**) show that they are extremely suitable for analytical method development under reverse phase conditions (see column details p. 8). Many RP and LCMS conditions have been defined using these columns.

REVERSE PHASE CHIRALPAK® AD-3R, AD[-RH], AS-3R, AS[-RH], AY-3R & AZ-3R



NEW • CHIRALPAK® AD-3R HPLC ANALYTICAL COLUMNS 3 µm

REVERSE PHASE TYPE OF CHIRALPAK® AD-3

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
19811	CHIRALPAK® AD-3R	10	4	3	Guard Cartridges (x3)
19822	CHIRALPAK® AD-3R	50	4,6	3	Analytical
19823	CHIRALPAK® AD-3R	100	4,6	3	Analytical
19824	CHIRALPAK® AD-3R	150	4,6	3	Analytical
19894	CHIRALPAK® AD-3R	150	2,1	3	Analytical

• CHIRALPAK® AD[-RH] HPLC ANALYTICAL COLUMNS 5 µm

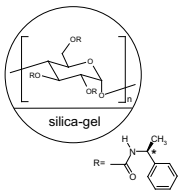
REVERSE PHASE TYPE OF CHIRALPAK® AD-H

19711	CHIRALPAK® AD[-RH]	10	4	5	Guard Cartridges (x3)
19724	CHIRALPAK® AD[-RH]	150	4,6	5	Analytical

• CHIRALPAK® AD[-RH] HPLC ANALYTICAL SPECIAL COLUMN 5 µm

REVERSE PHASE TYPE OF CHIRALPAK® AD-H

19794	CHIRALPAK® AD[-RH]	150	2,1	5	Analytical



NEW • CHIRALPAK® AS-3R HPLC ANALYTICAL COLUMNS 3 µm

REVERSE PHASE TYPE OF CHIRALPAK® AS-3

20811	CHIRALPAK® AS-3R	10	4	3	Guard Cartridges (x3)
20822	CHIRALPAK® AS-3R	50	4,6	3	Analytical
20823	CHIRALPAK® AS-3R	100	4,6	3	Analytical
20824	CHIRALPAK® AS-3R	150	4,6	3	Analytical

• CHIRALPAK® AS[-RH] HPLC ANALYTICAL COLUMNS 5 µm

REVERSE PHASE TYPE OF CHIRALPAK® AS-H

20711	CHIRALPAK® AS[-RH]	10	4	5	Guard Cartridges (x3)
20724	CHIRALPAK® AS[-RH]	150	4,6	5	Analytical

• CHIRALPAK® AS[-RH] HPLC ANALYTICAL SPECIAL COLUMN 5 µm

REVERSE PHASE TYPE OF CHIRALPAK® AS-H

20794	CHIRALPAK® AS[-RH]	150	2,1	5	Analytical

NEW • CHIRALPAK® AY-3R HPLC ANALYTICAL COLUMNS 3 µm

REVERSE PHASE TYPE OF CHIRALPAK® AY-3

47811	CHIRALPAK® AY-3R	10	4	3	Guard Cartridges (x3)
47822	CHIRALPAK® AY-3R	50	4,6	3	Analytical
47823	CHIRALPAK® AY-3R	100	4,6	3	Analytical
47825	CHIRALPAK® AY-3R	150	4,6	3	Analytical

NEW • CHIRALPAK® AZ-3R HPLC ANALYTICAL COLUMNS 3 µm

REVERSE PHASE TYPE OF CHIRALPAK® AZ-3

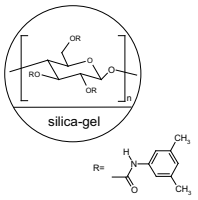
61811	CHIRALPAK® AZ-3R	10	4	3	Guard Cartridges (x3)
61822	CHIRALPAK® AZ-3R	50	4,6	3	Analytical
61823	CHIRALPAK® AZ-3R	100	4,6	3	Analytical
61824	CHIRALPAK® AZ-3R	150	4,6	3	Analytical

REVERSE PHASE CHIRALCEL® OD-R, OD[-RH], OJ-3R, OJ[-RH] & OZ-3R

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type

NEW • CHIRALCEL® OD-3R HPLC ANALYTICAL COLUMNS 3 µm

REVERSE PHASE TYPE OF CHIRALCEL® OD-3



14811	CHIRALCEL® OD-3R	10	4	3	Guard Cartridges (x3)
14822	CHIRALCEL® OD-3R	50	4,6	3	Analytical
14823	CHIRALCEL® OD-3R	100	4,6	3	Analytical
14824	CHIRALCEL® OD-3R	150	4,6	3	Analytical
14894	CHIRALCEL® OD-3R	150	2,1	3	Analytical

• CHIRALCEL® OD[-RH] HPLC ANALYTICAL COLUMNS 5 µm

REVERSE PHASE TYPE OF CHIRALCEL® OD-H/OD

14711	CHIRALCEL® OD[-RH]	10	4	5	Guard Cartridges (x3)
14724	CHIRALCEL® OD[-RH]	150	4,6	5	Analytical

• CHIRALCEL® OD[-RH] HPLC ANALYTICAL SPECIAL COLUMN 5 µm

REVERSE PHASE TYPE OF CHIRALCEL® OD-H/OD

14794	CHIRALCEL® OD[-RH]	150	2,1	5	Analytical

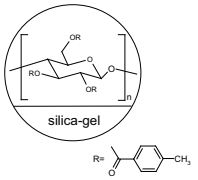
• CHIRALCEL® OD-R HPLC ANALYTICAL COLUMNS 10 µm

REVERSE PHASE TYPE OF CHIRALCEL® OD-H/OD

14611	CHIRALCEL® OD-R	10	4	10	Guard Cartridges (x3)
14625	CHIRALCEL® OD-R	250	4,6	10	Analytical

NEW • CHIRALCEL® OJ-3R HPLC ANALYTICAL COLUMNS 3 µm

REVERSE PHASE TYPE OF CHIRALCEL® OJ-3



17811	CHIRALCEL® OJ-3R	10	4	3	Guard Cartridges (x3)
17822	CHIRALCEL® OJ-3R	50	4,6	3	Analytical
17823	CHIRALCEL® OJ-3R	100	4,6	3	Analytical
17824	CHIRALCEL® OJ-3R	150	4,6	3	Analytical

• CHIRALCEL® OJ[-RH] HPLC ANALYTICAL COLUMNS 5 µm

REVERSE PHASE TYPE OF CHIRALCEL® OJ-H

17711	CHIRALCEL® OJ[-RH]	10	4	5	Guard Cartridges (x3)
17724	CHIRALCEL® OJ[-RH]	150	4,6	5	Analytical

• CHIRALCEL® OJ[-RH] HPLC ANALYTICAL SPECIAL COLUMN 5 µm

REVERSE PHASE TYPE OF CHIRALCEL® OJ-H

17794	CHIRALCEL® OJ[-RH]	150	2,1	5	Analytical

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
NEW • CHIRALCEL® OZ-3R HPLC ANALYTICAL COLUMNS 3 µm					
REVERSE PHASE TYPE OF CHIRALCEL® OZ-3					
42811	CHIRALCEL® OZ-3R	10	4	3	Guard Cartridges (x3)
42822	CHIRALCEL® OZ-3R	50	4,6	3	Analytical
42823	CHIRALCEL® OZ-3R	100	4,6	3	Analytical
42824	CHIRALCEL® OZ-3R	150	4,6	3	Analytical

ACCESSORIES FOR DAICEL COLUMNS

Reference	Product Name	Column Length (mm)	Product Type
00011	GUARD CARTRIDGE HOLDER*		HOLDER FOR GUARD CARTRIDGE
00024	COLUMN JACKET 1,5 cm	150	HARDWARE
00025	COLUMN JACKET 25 cm	250	HARDWARE
CG000D1	GUARD COLUMN COUPLER		COUPLER

SPECIAL APPLICATIONS HPLC COLUMNS

Enantioselective HPLC columns for specific applications

DAICEL has introduced specific Chiral Stationary Phases to increase the potential for enantiomer separation in special applications :

- **CHIRALPAK® QD-AX & CHIRALPAK® QN-AX HPLC columns**
  Anion-exchange HPLC columns for separation of chiral acids

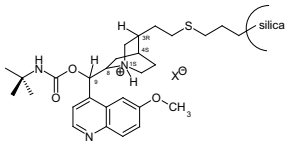
- **CROWNPAK® CR(+) & CROWNPAK® CR(-) HPLC columns**
  Crown ether HPLC columns for separation in acidic mobile phases

- **CHIRALPAK® WH & CHIRALPAK® MA(+) HPLC columns**
  Ligand-exchange HPLC columns designed for amino-acids separation

ANION EXCHANGE CHIRAL STATIONARY PHASES

CHIRALPAK® QN-AX & CHIRALPAK® QD-AX are enantioselective weak anion-exchange (AX) HPLC columns. They were developed by Prof. W. Lindner's group in Vienna and are designed specifically for enantioselective HPLC of chiral acids and possess exceptional enantiomer separation capabilities for acidic chiral compounds containing carboxylic, phosphonic, phosphinic, phosphoric or sulfonic groups.
In some cases, weakly acidic compounds such as phenols can also be separated.

CHIRALPAK® QD-AX & QN-AX



CHIRALPAK® QD-AX : (8R, 9S)
CHIRALPAK® QN-AX : (8S, 9R)

• CHIRALPAK® QD-AX

O-9 (TERT-BUTYLCARBAMOYL) QUINIDINE IMMOBILISED ON A 5 µm SILICA SUPPORT

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
31311	CHIRALPAK® QD-AX	10	4	5	Guard Cartridges (x3)
31324	CHIRALPAK® QD-AX	150	4,6	5	Analytical
31394	CHIRALPAK® QD-AX	150	2,1	5	Analytical
31344	CHIRALPAK® QD-AX	150	20	5	Semi-prep
31444	CHIRALPAK® QD-AX SFC	150	20	5	Semi-prep

• CHIRALPAK® QN-AX

O-9 (TERT-BUTYLCARBAMOYL) QUININE IMMOBILISED ON A 5 µm SILICA SUPPORT

32311	CHIRALPAK® QN-AX	10	4	5	Guard Cartridges (x3)
32324	CHIRALPAK® QN-AX	150	4,6	5	Analytical
32394	CHIRALPAK® QN-AX	150	2,1	5	Analytical
32344	CHIRALPAK® QN-AX	150	20	5	Semi-prep
32444	CHIRALPAK® QN-AX-SFC	150	20	5	Semi-prep

These two phases are based on two complementary stereoisomeric quinine (QN) and quinidine (QD) derivatives. Due to their pseudo enantiomeric character they usually reveal reversed elution order for opposite enantiomers.

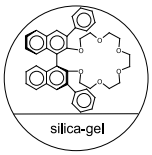
They can be used in reversed phase (RP) mode or in polar organic mode (non-aqueous, polar organic solvents containing organic acids and bases as buffer constituents). In addition the separation of chiral basic and neutral compounds may also be possible, but usually normal phase (NP) conditions. In this mobile phase mode, **CHIRALPAK® QD-AX & CHIRALPAK® QN-AX** behave like a standard Pirkle type Chiral Stationary Phase.

They are compatible with all common HPLC solvents (e.g. methanol, acetonitrile, tetrahydrofuran, 1,4-dioxane or chloroform) as well as in a wide pH range spanning from pH 2 to 8. Typical buffers used in hydro-organic mode are acetate, formate, citrate and phosphate.

CROWNPAK® CR(+) & CR(-)

Crown Ether Chiral Stationary Phases

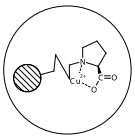
Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• **CROWNPAK® CR (+) / (-)**					
27711	CROWNPAK® CR	10	4	5	Guard
27714	CROWNPAK® CR(+)	150	4	5	Analytical
28714	CROWNPAK® CR(-)	150	4	5	Analytical

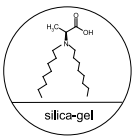


These columns contain a chiral crown ether as a chiral selector, which is coated onto a 5 µm support. Acidic mobile phases such as Perchloric acid pH 1 to 2, are used to operate these columns under standard conditions. Note that to shorten the retention time of hydrophobic samples, the addition of Methanol (15% maximum v/v) has been shown to be effective.
These columns are the reference columns for achieving amino acid separations, with the advantage the elution order of the enantiomers can be reversed when necessary (CR(-) column gives the reversed elution order compared to CR(+) column).

CHIRALPAK® WH & MA(+)

Ligand Exchange Chiral Stationary Phases





Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® WH					
25622	CHIRALPAK® WH	50	4,6	10	Guard
25625	CHIRALPAK® WH	250	4,6	10	Analytical
• CHIRALPAK® MA(+)					
21822	CHIRALPAK® MA(+)	50	4,6	3	Analytical

The Chiral Stationary Phases in these columns are made of amino acids and its derivatives coated bonded to silica supports (with a particle size of 10 µm for WH and 3 µm for MA(+)). Since these columns are ligand-exchange type columns, the standard mobile phase to use is an aqueous solution of CuSO4 (0.1 to 2mM). These columns can tolerate organic modifiers such as Methanol and Acetonitrile according specifications in the instruction manual.

PREPARATIVE COLUMNS & BULK CHIRAL STATIONARY PHASES (CSPs)

DAICEL 20 µm CHIRALPAK® & CHIRALCEL® CHIRAL STATIONARY PHASES FOR LARGE SCALE ENANTIOMER SEPARATION

DAICEL preparative 20 µm Chiral Bulk Stationary Phases are known for their broad selectivity, durability and high loading capacities. With an excellent batch-to-batch reproducibility, they are particularly adapted to production purposes.

All the following Chiral bulk CSPs are directly available from **CHIRAL TECHNOLOGIES EUROPE** :

NEW Immobilised stationary phases compatible with all organic solvent

- **CHIRALPAK® IA** - immobilised amylose support
- **CHIRALPAK® IC** - immobilised cellulose support
- **CHIRALCEL® OD-I** - immobilised cellulose support

Standard coated stationary phases

- **CHIRALPAK® AD** - coated amylose support
- **CHIRALPAK® AS-V** - coated amylose support
- **CHIRALCEL® OD** - coated cellulose support
- **CHIRALCEL® OJ** - coated cellulose support
- **CHIRALPAK® AZ** - coated amylose support
- **CHIRALPAK® AY** - coated amylose support
- **CHIRALCEL® OZ** - coated cellulose support
- **And other cellulose based CSPs for specific applications**

Customer support is an integral part of **CHIRAL TECHNOLOGIES** mission. We provide our preparative scale customers with a free of charge service to identify the optimum stationary phase and mobile phase for the separation of their specific compounds.

In addition, to support your preparative method development, we can, upon request, pack analytical columns of various lengths using the matching 20 µm CSPs. These columns are used specifically for developing and optimising methods for preparative processes before scaling up to full-size production. They accurately reflect performance of large preparative columns and the loading data yield accurate projections of the preparative separations.

An analytical column packed with the matching 20 µm phase is also available (upon request) to facilitate direct method transfer from analytical to the preparative column.

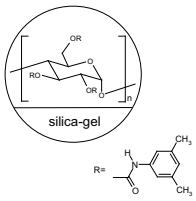
CHIRALPAK® & CHIRALCEL®

DAICEL CHIRALPAK® IA & CHIRALPAK® IC BULK STATIONARY PHASES

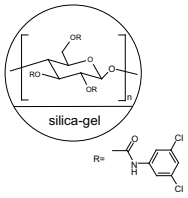
Immobilised 20 µm amylose tris IA (3,5 dimethylphenylcarbamate stationary phase) & IC (3,5 dichlorophenylcarbamate stationary phase) compatible with all miscible organic solvent and for large scale HPLC and SFC applications

CHIRALPAK® IA & CHIRALPAK® IC bulk stationary phase consists of a 20 µm silica support onto which the polymeric chiral selector has been immobilised. Immobilisation of polysaccharide derivatives on a matrix is an excellent approach to implement universal solvent compatibility. This broadens the range of solvents to be used as mobile phases, thereby introducing new selectivity profiles and beneficial CSP characteristics.

IMMOBILISED CHIRALPAK® IA & IC



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® IA PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
AMYLOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) ON A 20 µm SILICA-GEL					
80225	CHIRALPAK® IA	250	4,6	20	Analytical
• CHIRALPAK® IA HPLC PREPARATIVE COLUMNS 20 µm					
80256	CHIRALPAK® IA	500	50	20	Prep
80266	CHIRALPAK® IA	500	100	20	Prep
• CHIRALPAK® IA BULK STATIONARY PHASES 20 µm					
80020	CHIRALPAK® IA	\	\	20	CSP (1 kg)
80021	CHIRALPAK® IA	\	\	20	CSP (100 g)

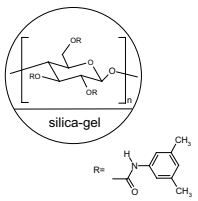


• CHIRALPAK® IC PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
CELLULOSE TRIS (3,5-DICHLOROPHENYLCARBAMATE) ON A 20 µm SILICA-GEL					
83225	CHIRALPAK® IC	250	4,6	20	Analytical
• CHIRALPAK® IC HPLC PREPARATIVE COLUMNS 20 µm					
83256	CHIRALPAK® IC	500	50	20	Prep
83266	CHIRALPAK® IC	500	100	20	Prep
• CHIRALPAK® IC BULK STATIONARY PHASES 20 µm					
83020	CHIRALPAK® IC	\	\	20	CSP (1 kg)
83021	CHIRALPAK® IC	\	\	20	CSP (100 g)

IMMOBILISED CHIRALCEL® OD-I

CELLULOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) ON A 20 µm SILICA SUPPORT

CHIRALCEL® OD-I bulk stationary phase consists of a 20 µm silica support onto which the polymeric chiral selector : cellulose tris (3,5-dimethylphenylcarbamate) has been immobilised. Immobilisation of polysaccharide derivatives on a matrix is an excellent approach to implement universal solvent compatibility. This broadens the range of solvents to be used as mobile phases, thereby introducing new selectivity profiles and beneficial CSP characteristics recommendation.

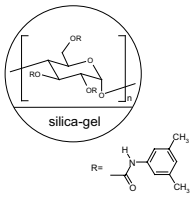


Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALCEL® OD-I PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
82225	CHIRALCEL® OD-I	250	4,6	20	Analytical
• CHIRALCEL® OD-I HPLC PREPARATIVE COLUMNS 20 µm					
82256	CHIRALCEL® OD-I	500	50	20	Prep
82266	CHIRALCEL® OD-I	500	100	20	Prep
• CHIRALCEL® OD-I BULK STATIONARY PHASES 20 µm					
82020	CHIRALCEL® OD-I	\	\	20	CSP (1 kg)
82021	CHIRALCEL® OD-I	\	\	20	CSP (100 g)

COATED CHIRALPAK® AD

AMYLOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) ON A 20 µm SILICA SUPPORT

CHIRALPAK® AD bulk stationary phase consists of a 20 µm silica support onto which the polymeric chiral selector : amylose tris (3,5-dimethylphenylcarbamate) has been physically coated. Due to the coated nature of these chiral supports, solvents should be carefully selected.

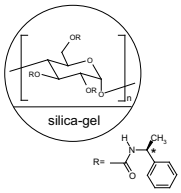


Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® AD PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
19225	CHIRALPAK® AD	250	4,6	20	Analytical
• CHIRALPAK® AD HPLC PREPARATIVE COLUMNS 20 µm					
19256	CHIRALPAK® AD	500	50	20	Prep
19266	CHIRALPAK® AD	500	100	20	Prep
• CHIRALPAK® AD BULK STATIONARY PHASES 20 µm					
19020	CHIRALPAK® AD	\	\	20	CSP (1 kg)
19021	CHIRALPAK® AD	\	\	20	CSP (100 g)

COATED CHIRALPAK® AS-V

AMYLOSE TRIS ((S)-α-METHYLBENZYLCARBAMATE) ON A 20 µm SILICA SUPPORT

CHIRALPAK® AS-V bulk stationary phase consists of a 20 µm silica support onto which the polymeric chiral selector : amylose tris ((S)-a-methylbenzylcarbamate) has been physically coated. Due to the coated nature of these chiral supports, solvents should be carefully selected.

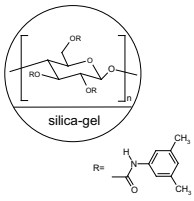


Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® AS-V PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
20225	CHIRALPAK® AS-V	250	4,6	20	Analytical
• CHIRALPAK®AS-V HPLC PREPARATIVE COLUMNS 20 µm					
20256	CHIRALPAK® AS-V	500	50	20	Prep
20266	CHIRALPAK® AS-V	500	100	20	Prep
• CHIRALPAK® AS-V BULK STATIONARY PHASES 20 µm					
20020	CHIRALPAK® AS-V	\	\	20	CSP (1 kg)
20021	CHIRALPAK® AS-V	\	\	20	CSP (100 g)

COATED CHIRALCEL® OD

CELLULOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) ON A 20 µm SILICA SUPPORT

CHIRALCEL® OD bulk stationary phase consists of a 20 µm silica support onto which the polymeric chiral selector : cellulose tris (3,5-dimethylphenylcarbamate) has been physically coated. Due to the coated nature of these chiral supports, solvents should be carefully selected.

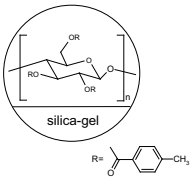


Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALCEL® OD PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
14225	CHIRALCEL® OD	250	4,6	20	Analytical
• CHIRALCEL® OD HPLC PREPARATIVE COLUMNS 20 µm					
14256	CHIRALCEL® OD	500	50	20	Prep
14266	CHIRALCEL® OD	500	100	20	Prep
• CHIRALCEL® OD BULK STATIONARY PHASES 20 µm					
14020	CHIRALCEL® OD	\	\	20	CSP (1 kg)
14021	CHIRALCEL® OD	\	\	20	CSP (100 g)

COATED CHIRALCEL® OJ

CELLULOSE TRIS (4-METHYLBENZOATE) ON A 20 µm SILICA SUPPORT

CHIRALCEL® OJ bulk stationary phase consists of a 20 µm silica support onto which the polymeric chiral selector : cellulose tris (4-methylbenzoate) has been physically coated. Due to the coated nature of these chiral supports, solvents should be carefully selected.

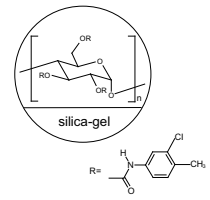


Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALCEL® OJ PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
17225	CHIRALCEL® OJ	250	4,6	20	Analytical
• CHIRALCEL® OJ HPLC PREPARATIVE COLUMNS 20 µm					
17256	CHIRALCEL® OJ	500	50	20	Prep
17266	CHIRALCEL® OJ	500	100	20	Prep
• CHIRALCEL® OJ BULK STATIONARY PHASES 20 µm					
17020	CHIRALCEL® OJ	\	\	20	CSP (1 kg)
17021	CHIRALCEL® OJ	\	\	20	CSP (100 g)

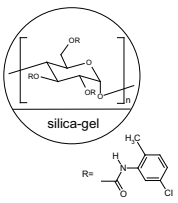
COATED CHIRALPAK® AY, AZ & CHIRALCEL® OZ

Coated 20 µm cellulose derived bulk stationary phases for large scale HPLC & SFC applications

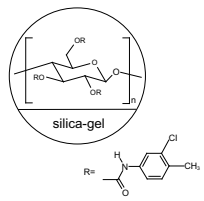
CHIRALPAK® AY (T304), CHIRALPAK® AZ (50801) & CHIRALCEL® OZ (T405) are HPLC bulk stationary phase that consist of a 20 µm silica support onto which a polymeric chiral selector has been physically coated. Due to the coated nature of the chiral supports, solvents should be carefully selected.



Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® AY PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
AMYLOSE TRIS (5-CHLORO-2-METHYLPHENYLCARBAMATE) ON 20 µm SILICA-GEL					
47225	CHIRALPAK® AY	250	4,6	20	Analytical
• CHIRALPAK® AY BULK STATIONARY PHASES 20 µm					
47020	CHIRALPAK® AY	\	\	20	CSP (1 kg)
47021	CHIRALPAK® AY	\	\	20	CSP (100 g)



• CHIRALPAK® AZ PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
AMYLOSE TRIS (3-CHLORO-4-METHYLPHENYLCARBAMATE) ON 20 µm SILICA-GEL.					
61225	CHIRALPAK® AZ	250	4,6	20	Analytical
• CHIRALPAK® AZ BULK STATIONARY PHASES 20 µm					
61020	CHIRALPAK® AZ	\	\	20	CSP (1 kg)
61021	CHIRALPAK® AZ	\	\	20	CSP (100 g)



• CHIRALCEL® OZ PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
CELLULOSE TRIS (3-CHLORO-4-METHYLPHENYLCARBAMATE) ON 20 µm SILICA-GEL.					
42225	CHIRALCEL® OZ	250	4,6	20	Analytical
• CHIRALCEL® OZ BULK STATIONARY PHASES 20 µm					
42020	CHIRALCEL® OZ	\	\	20	CSP (1 kg)
42021	CHIRALCEL® OZ	\	\	20	CSP (100 g)

COATED CHIRALPAK® & CHIRALCEL®

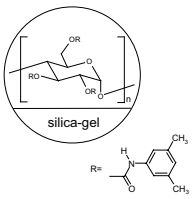
Coated 20 µm cellulose derived bulk stationary phases for large scale HPLC & SFC applications

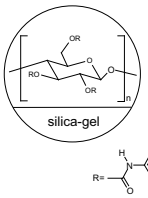
CHIRALPAK® T101, CHIRALCEL® OC, CHIRALCEL® OF, CHIRALCEL® OG & CHIRALCEL® OK are HPLC bulk stationary phase that consist of a 20 µm silica support onto which a polymeric chiral selector has been physically coated. Due to the coated nature of the chiral supports, solvents should be carefully selected.

To support your preparative method development, we can, upon request, pack analytical columns of various lengths using this 20 µm CSP. It is also available for preparative scale separations in pre-packed columns.

In addition, as part of our customer support, we provide those customers buying bulk CSPs, a free of charge service to identify the optimum stationary phase and mobile phase for the separation of their specific compounds.

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHIRALPAK® T101 PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm					
AMYLOSE TRIS (3,5-DIMETHYLPHENYLCARBAMATE) ON A 20 µm SILICA SUPPORT					
40225	CHIRALPAK® T101	250	4,6	20	Analytical
• CHIRALPAK® T101 HPLC PREPARATIVE COLUMNS 20 µm					
40256	CHIRALPAK® T101	500	50	20	Prep
40266	CHIRALPAK® T101	500	100	20	Prep
• CHIRALPAK® T101 BULK STATIONARY PHASES 20 µm					
40020	CHIRALPAK® T101	\	\	20	CSP (1 kg)
40021	CHIRALPAK® T101	\	\	20	CSP (100 g)





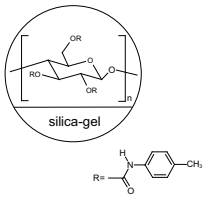
• CHIRALCEL® OC PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm

CELLULOSE (PHENYLCARBAMATE) ON A 20 µm SILICA SUPPORT

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
13225	CHIRALCEL® OC	250	4,6	20	Analytical

• CHIRALCEL® OC BULK STATIONARY PHASES 20 µm

13020	CHIRALCEL® OC	\	\	20	CSP (1 kg)
13021	CHIRALCEL® OC	\	\	20	CSP (100 g)



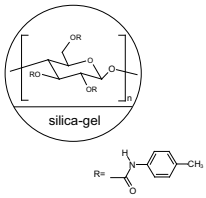
• CHIRALCEL® OF PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm

CELLULOSE TRIS (4-CHLOROPHENYLCARBAMATE) ON A 20 µm SILICA SUPPORT

15225	CHIRALCEL® OF	250	4,6	20	Analytical

• CHIRALCEL® OF BULK STATIONARY PHASES 20 µm

15020	CHIRALCEL® OF	\	\	20	CSP (1 kg)
15021	CHIRALCEL® OF	\	\	20	CSP (100 g)



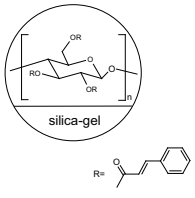
• CHIRALCEL® OG PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm

CELLULOSE TRIS (4-METHYLPHENYLCARBAMATE) ON A 20 µm SILICA SUPPORT

16225	CHIRALCEL® OG	250	4,6	20	Analytical

• CHIRALCEL® OG BULK STATIONARY PHASES 20 µm

16020	CHIRALCEL® OG	\	\	20	CSP (1 kg)
16021	CHIRALCEL® OG	\	\	20	CSP (100 g)



• CHIRALCEL® OK PREPARATIVE METHOD DEVELOPMENT COLUMN 20 µm

CELLULOSE TRICINNATE ON A 20 µm SILICA SUPPORT

18225	CHIRALCEL® OK	250	4,6	20	Analytical

• CHIRALCEL® OK BULK STATIONARY PHASES 20 µm

18020	CHIRALCEL® OK	\	\	20	CSP (1 kg)
18021	CHIRALCEL® OK	\	\	20	CSP (100 g)


AGP 100.4 Batch: 08-36 Column: 113
AGP 100.4 Batch: 08-29
CHIRAL-AGP™ 100x4.0 mm
AGP 100.4 Batch: 08-36

CHROMTECH
CHIRAL HPLC COLUMNS

These protein-based columns are suitable for several types of compounds; basic compounds can be separated on both CHIRAL-AGP and CHIRAL-CBH, acidic and neutral compounds can be separated on both CHIRAL-AGP and CHIRAL-HSA. However, as CHIRAL-AGP is a column with an extremely broad applicability, this column should be chosen first, if the analyte has not been separated on any of the columns. There are, however, some types of compounds where one of the other columns may be the first choice :

CHIRAL-AGP

Extremely broad applicability. We believe that this chiral phase as one of the broadest analytical selectivities of any chiral phase. Separates all kinds of compounds :

- amines (primary, secondary, tertiary and quartenary)
- acids (strong and weak)
- nonprotolytes (amides, esters, alcohols)

CHIRAL-CBH

Narrower applicability than CHIRAL-AGP. Separates compounds containing one or more basic nitrogens together with one or more basic nitrogens together with one or more hydrogen accepting or hydrogen donating groups (alcohol, phenol, carbonyl, amide, ether, sulphoxide, ester, etc.).

CHIRAL-HSA

Narrower applicability than CHIRAL-AGP. Separates preferentially weak and strong acids and non-protolytic compounds.

CHROMTECH CHIRAL-AGP

CHIRAL-AGP is the second generation chiral separation column based on the use of α_1-acid glycoprotein (AGP) as the CSP. Through a patented process α_1-AGP has been immobilized on porous, spherical silica particles (5µm). The surface chemistry of the silica proves a stable chiral separation material with extremely broad applicability.

• ENANTIOSELECTIVITY

Racemic amines, acids and nonprotolytic compounds can be resolved directly, without derivatization. The column enables resolution of a very large number of chiral compounds from different compound classes. This is due to the unique nature of the CSP, and the fact that enantioselectivity can be induced by choosing a proper mobile phase composition.

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHROMTECH CHIRAL-AGP COLUMNS 5 µm					
30713	CHIRAL-AGP	100	4	5	Analytical
30714	CHIRAL-AGP	150	4	5	Analytical
30712	CHIRAL-AGP	50	4	5	Analytical
30783	CHIRAL-AGP	100	3	5	Analytical
30784	CHIRAL-AGP	150	3	5	Analytical
30782	CHIRAL-AGP	50	3	5	Analytical
30793	CHIRAL-AGP	100	2	5	Analytical
30794	CHIRAL-AGP	150	2	5	Analytical
30792	CHIRAL-AGP	50	2	5	Analytical
30733	CHIRAL-AGP	100	10	5	Semi-Prep
30734	CHIRAL-AGP	150	10	5	Semi-Prep
30781	CHIRAL-AGP (2/pkg)	10	3	5	Guard Cartridges (x2)
30791	CHIRAL-AGP (2/pkg)	10	2	5	Guard Cartridges (x2)
30711	CHIRAL-AGP (2/pkg)	10	4	5	Guard Cartridges (x2)

CHROMTECH CHIRAL-CBH

Cellobiohydrolase (CBH) is a stable enzyme which has been immobilized onto 5 µm spherical silica particles creating the Chiral Stationary Phase in the **CHIRAL-CBH** column. This is also a reverse phase column, used for the direct separation of enantiomers. The column is preferentially used for the separation of the enantiomers of basic drugs from many compound classes.

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHROMTECH CHIRAL-CBH COLUMNS 5 µm					
33713	CHIRAL-CBH	100	4	5	Analytical
33714	CHIRAL-CBH	150	4	5	Analytical
33712	CHIRAL-CBH	50	4	5	Analytical
33783	CHIRAL-CBH	100	3	5	Analytical
33784	CHIRAL-CBH	150	3	5	Analytical
33782	CHIRAL-CBH	50	3	5	Analytical
33793	CHIRAL-CBH	100	2	5	Analytical
33794	CHIRAL-CBH	150	2	5	Analytical
33792	CHIRAL-CBH	50	2	5	Analytical
33733	CHIRAL-CBH	100	10	5	Semi-Prep
33734	CHIRAL-CBH	150	10	5	Semi-Prep
33781	CHIRAL-CBH (2/pkg)	10	3	5	Guard Cartridges (x2)
33791	CHIRAL-CBH (2/pkg)	10	2	5	Guard Cartridges (x2)
33711	CHIRAL-CBH (2/pkg)	10	4	5	Guard Cartridges (x2)

CHROMTECH CHIRAL-HSA

The chiral selector in this stationary phase is human serum albumin (HSA). The protein has been immobilized onto spherical 5µm particles. Enantiomers of preferentially acidic compounds can be resolved directly, without derivatization. The column is operated in the reverse phase mode.
With the **CHIRAL-HSA** column, both racemic acids and amino acids can be resolved directly, without derivatization.

Reference	Product Name	Column Length (mm)	Internal Diameter (mm)	Particle Size (µm)	Product Type
• CHROMTECH CHIRAL-HSA COLUMNS 5 µm					
34713	CHIRAL-HSA	100	4	5	Analytical
34714	CHIRAL-HSA	150	4	5	Analytical
34712	CHIRAL-HSA	50	4	5	Analytical
34783	CHIRAL-HSA	100	3	5	Analytical
34784	CHIRAL-HSA	150	3	5	Analytical
34782	CHIRAL-HSA	50	3	5	Analytical
34793	CHIRAL-HSA	100	2	5	Analytical
34794	CHIRAL-HSA	150	2	5	Analytical
34792	CHIRAL-HSA	50	2	5	Analytical
34733	CHIRAL-HSA	100	10	5	Semi-Prep
34734	CHIRAL-HSA	150	10	5	Semi-Prep
34781	CHIRAL-HSA (2/pkg)	10	3	5	Guard Cartridges (x2)
34791	CHIRAL-HSA (2/pkg)	10	2	5	Guard Cartridges (x2)
34711	CHIRAL-HSA (2/pkg)	10	4	5	Guard Cartridges (x2)

ACCESSORIES FOR CHROMTECH COLUMNS

Reference	Product Name	Particle Size (µ)	Product Type
00081	GUARD CARTRIDGE HOLDER	\	Holder for guard cartridge
CG000D1	GUARD COLUMN COUPLER (4 mm) I.D.	\	Coupler
CG000D2	GUARD COLUMN COUPLER MICRO (3 mm, 2 mm) I.D.	\	Coupler

METHOD DEVELOPMENT SERVICE

We can provide custom method development for your enantiomer separation.

CHIRAL TECHNOLOGIES EUROPE can develop a specific chiral method for the separation of your racemic mixture suited to your analytical, semi-preparative or preparative application.

Our team of chromatographers can quickly screen (3 to 4 weeks) all available **DAICEL** chiral HPLC columns with all possible mobile phase combinations: normal phase, polar phase and reverse phase, depending on your requirement. We respond with the best method to meet the specific project demand.

For semi-preparative HPLC custom method development focuses on semi-preparative stationary phases to find the best column possible. Data obtained accurately reflects projections of the preparative separations (milligrams to tens of grams) on 1 cm, 2 cm, and 5 cm I.D. columns.

Custom method development can also focus on loading and solubility studies or on particular technical requirements: SFC and Simulated Moving Bed (SMB) systems.

Our team of chemist and engineers can also provide custom separation services so that you benefit from the combined strengths of chiral chromatography and **DAICEL** polysaccharide-derived supports.

CUSTOM SEPARATION SERVICE

For rapid access to pure enantiomers, we can perform your separation for quantities from ca. 100 mg to multi-tons in a cost efficient way.

CHIRAL TECHNOLOGIES EUROPE provides a Custom Separation Service for companies involved in the development of chiral pharmaceutical compounds. Our facilities are equipped with preparative HPLC, preparative SFC and preparative SMB systems; we can provide high purity resolutions of single enantiomers for yields ranging from milligram to 100 kg scale.

With **CHIRAL TECHNOLOGIES EUROPE**, as a fully owned subsidiary of **DAICEL**, customers have access to the larger scale assets at **DAICEL** which can be used to separate multi kg to multi tons of racemate.

The combined strengths of experienced chiral chromatographers and **DAICEL** polysaccharide-derived supports are the most rapid, efficient and cost-effective way to obtain pure enantiomers.

Racemic mixture separation is available at :

- **Small-scale – mg to g**
- **Medium-scale – g to 10 kg**
- **Large-scale – over 100 kg**

Experienced in working with the pharmaceutical industry, all our larger separation processes can follow current good manufacturing practises (cGMP).

SMALL-SCALE SEPARATION mg to g

Within 10 days, our mg to g separation service provides high yield of both enantiomers for early clinical and toxicology studies.

The evaluation is free of charge!

The demand for separation of racemic small molecules continues to grow! HPLC and SFC separations is recognised as the fastest method to perform enantioseparation and to provide both enantiomers in ca. 90% yield and to a specification of > 98% enantiomeric excess.

With **CHIRAL TECHNOLOGIES EUROPE**, benefit from the combined strengths of chiral HPLC and **DAICEL** polysaccharide-derived supports. Let our team of expert scientist and engineers screen all available Daicel chiral HPLC and SFC columns with all possible mobile phase and establish the best protocol for separating your racemic mixture.

Once the best protocol is found, take advantage of the preparative HPLC, preparative SFC and SMB systems at our facilities to rapidly provide you with pure enantiomers. This is the most rapid, efficient and cost-effective way to provide the desired enantiomer for further studies.

MEDIUM-SCALE SEPARATION g to kg

We routinely separate g to kg of enantiomers to yield of ca. 90% and a specification of > 98% enantiomeric excess for clinical studies.

The evaluation is free of charge!

The demand for separation of racemic small molecules continues to grow! HPLC separation is recognised as the fastest method to perform enantioseparation and to provide both enantiomers in ca. 90% yield and to a specification of > 98% enantiomeric excess.

By sending a sample to CTE – for no charge you will have access to our team of expert scientist and engineers who will screen all available chiral HPLC columns with all possible mobile phase and established the best protocol for separating your racemic mixture. Once the best method has been found, take advantage of the medium-scale preparative HPLC, preparative SFC and SMB systems at our laboratories to quickly receive g to kg of pure enantiomers of your compound.

With **CHIRAL TECHNOLOGIES EUROPE**, benefit from the combined strengths of chiral HPLC and **DAICEL** polysaccharide-derived supports to access your desired enantiomer in the fastest and most cost effective way.

LARGE-SCALE SEPARATION OVER 100 kg

Get 100 kg to tons of your desired enantiomers API by utilising **DAICEL**'s chiral chromatography facilities.

For companies involved in the commercialisation of enantiomerically pure drugs, **CHIRAL TECHNOLOGIES EUROPE** and **DAICEL** can propose complete outsourcing of the racemic separation step. With us, benefit from the combined strengths of chiral HPLC and **DAICEL** expertise. This is the- most rapid, efficient and cost-effective way to provide your desired enantiomer in a fast , robust and cost effective way.

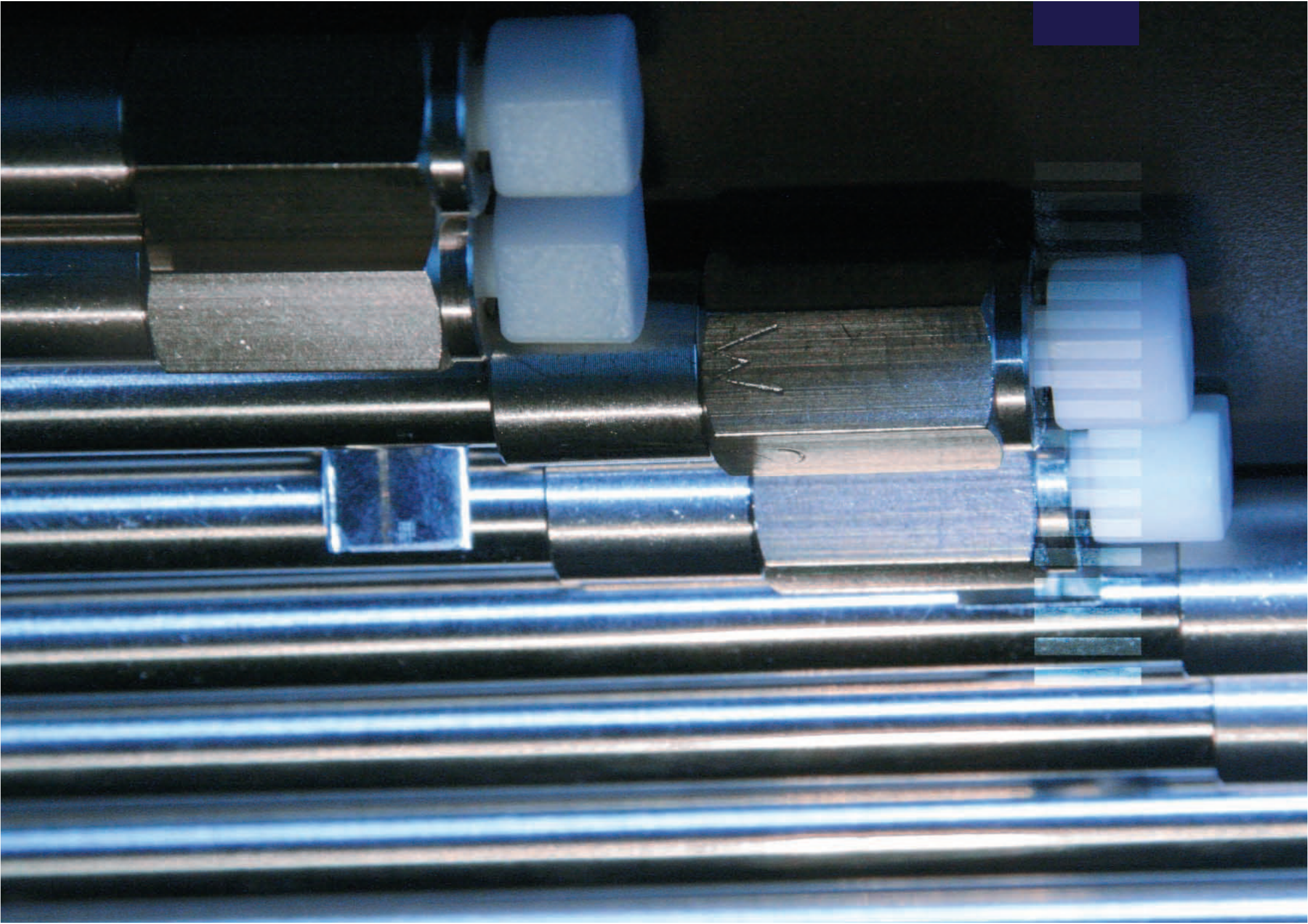
Our facility at Arai (Japan) is equipped for multi-ton scale separation. In addition to enantioseparation, we can perform upstream or downstream chemical synthesis. You will benefit from **DAICEL CHEMICAL INDUSTRY**'s expertise in.

Used to work with the pharmaceutical industry, all our separation processes follow good laboratory practises (GLP) and can be undertaken to current Good Manufacturing Practice (cGMP) if required.

cGMP

We follow good laboratory practises (GLP) and undertake custom separations to current good manufacturing practises (cGMP)

Working predominantly for the pharmaceutical companies, **CHIRAL TECHNOLOGIES EUROPE** and **DAICEL** take extreme care to follow updated good laboratory practises (GLP). This is a guarantee for our customers that they can trust our method development activities. In addition our custom separation services can undertake separations to current Good Manufacturing Practice (cGMP).



TECHNICAL SUPPORT

CHIRAL TECHNOLOGIES EUROPE

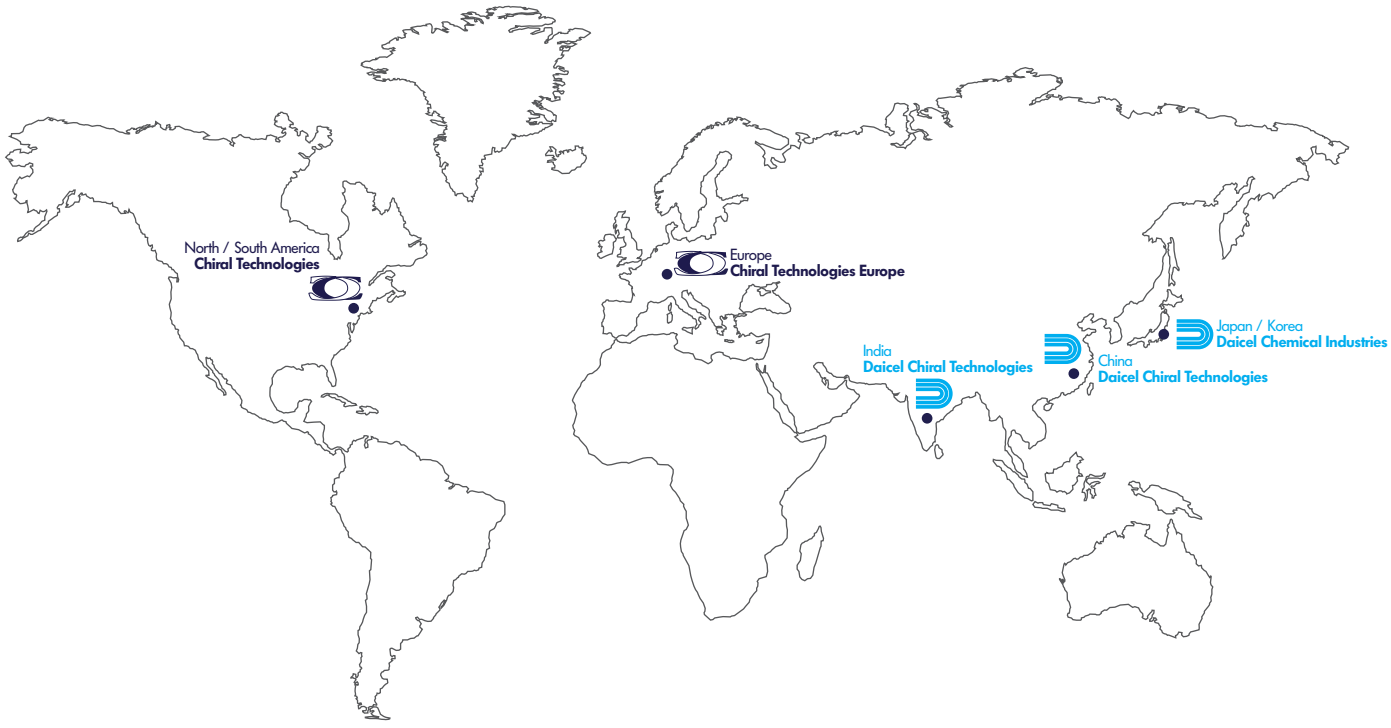
Benefit from **DAICEL** technical support

Our Technical Support Team as well as our chromatography experts, scientist and engineers will assist you with your questions related to the use of our analytical columns, preparative separations columns and issues associated with bulk CSPs for large scale applications.

Our team of chromatographers and engineers can also develop custom method and protocol to separate your specific enantiomer or provide custom separation services so that you benefit from the combined strengths of chiral chromatography and **DAICEL** polysaccharide-derived supports.

Contact us at : support@chiral.fr

Our network :



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DAICEL QUALITY

To be sure of the quality of your racemic separation, rely on DAICEL quality, the most widely used and referenced chiral separation products worldwide.

CHIRAL TECHNOLOGIES EUROPE is a wholly owned subsidiary of **DAICEL**, established to market and sell Daicel chiral separation products and services in Europe. Our products are the most widely used and reference products worldwide for chiral separation thanks to the unequalled quality of **DAICEL** proprietary technologies.

Broad selectivity, durability and high loading capacity ensure that **DAICEL** CSP are the leading chromatography product for enantiomeric analysis and chiral separation. Their outstanding capabilities provide you with a powerful tool.

All our products have excellent standard of quality, reproducibility and an excellent batch to batch reproducibility. They are all individually tested and the results of the tests are provided with the product you receive. For detailed description of the product sold by **CHIRAL TECHNOLOGIES EUROPE**, please refer to our product section.

A team of expert chromatographers can develop methods, provide technical support and develop new applications. Our products and custom separation services are accomplished in facilities that comply with cGMP quality guidelines.

APPLICATION GUIDE

A fully searchable database with over 700 examples to help you find the most appropriate **DAICEL** product and chromatography method

To assist our customers in finding the most appropriate **DAICEL** CSP for an enantiomer separation, **CHIRAL TECHNOLOGIES EUROPE** has developed an application guide. Available on CD-ROM, it contains over 700 examples, the majority of which have therapeutic properties. This guide is organised in a database that allow the user to search by compound name, compound structure, **DAICEL** column name, mobile phase or therapeutic indication.

Regularly updated, this application guide is intended to be intuitive, straightforward and efficient.


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