

Instructions for Use

# CIMac CDI 0.1 mL Analytical Column (Carbonyldiimidazole) (1.3 $\mu\text{m}$ channels)

CIM Convective Interaction Media<sup>®</sup>  
110.8000-1.3



**SARTORIUS**

# Contents

<b>1</b>	<b>About These Instructions for Use</b> .....	<b>3</b>
	1.1. Accompanying Documents.....	3
<b>2</b>	<b>Safety</b> .....	<b>3</b>
	2.1. Intended use.....	3
	2.2. Safety Note.....	3
<b>3</b>	<b>Technical Data</b> .....	<b>4</b>
<b>4</b>	<b>Installation</b> .....	<b>4</b>
<b>5</b>	<b>Getting Started</b> .....	<b>5</b>
	5.1. General Recommendations.....	5
	5.2. Immobilisation Procedure.....	6
<b>6</b>	<b>Operating the Column</b> .....	<b>6</b>
	6.1. Connecting the Column.....	6
<b>7</b>	<b>Cleaning   Maintenance</b> .....	<b>6</b>
<b>8</b>	<b>Troubleshooting</b> .....	<b>6</b>
<b>9</b>	<b>Decommissioning   Transportation</b> .....	<b>7</b>
<b>10</b>	<b>Ordering Information</b> .....	<b>7</b>

# 1. About These Instructions for Use

These instructions are part of the device. They apply to the device product number indicated on the cover page.

## 1.1. Accompanying Documents

In addition to these instructions, the following supporting documents may be consulted.

---

Guideline: Optimisation of LC system for analytical work



## 2. Safety

---

### **⚠ WARNING**

Denotes a hazard that may result in death or severe injury if it is not avoided.

---

### **⚠ CAUTION**

Denotes a hazard that may result in moderate or minor injury if it is not avoided.

---

### **NOTICE**

Denotes a hazard that may result in property damage if it is not avoided.

---

## 2.1. Intended use

CIMac Analytical Monoliths are high performance chromatography devices for rapid high-resolution fractionation of complex biological samples. The stationary phase is polymerised as a monolith with homogeneous channel size and surface chemistry. Each unit is mounted in a precision engineered stainless steel housing to allow easy connection to any HPLC system.

Carboxyimidazole (CDI) monolithic chromatographic columns are used for covalent immobilisation of ligands (e.g. proteins, peptides and other amine- or thiol-containing molecules). The covalent nature of the bond between the ligand and matrix reduces leaching and improves stability and reusability. Immobilised supports enable a variety of customised analytical affinity chromatography options with interactions specific to the target molecule. The following information is provided to ensure proper product care and optimal product performance.

## 2.2. Safety Note

The following guidelines apply to an activated column. Once immobilised, specific protocols should be prepared to care for the column. Improper use may result in malfunction, personal injury, or damage of the product or material. Follow safety instructions, wear gloves, safety glasses, and a lab coat during operation.

## 3. Technical Data

<b>Column chemistry</b>	CDI (activated; carboxy imidazole)
<b>Colour code</b>	White
<b>Channel radius</b>	675 nm (600 nm – 750 nm)
<b>Support matrix</b>	Poly(glycidyl methacrylate -co- ethylene dimethacrylate)
<b>Monolith dimensions</b>	Diameter: 5.2 mm; length: 4.95 mm; bed volume (CV): 0.1 mL
<b>Connector</b>	10-32 UNF coned port, 1/16" OD tubing connection
<b>Ligand density</b>	0.15–0.3 mmol/mL wet support
<b>Dynamic binding capacity</b>	N.D.
<b>Operating flow rates</b>	0.2 – 3 mL/min (1 – 15 cm/min; 2 – 30 CV/min)
<b>Maximum pressure</b>	15 MPa, 150 bar, 2175 psi
<b>Operating temperature</b>	4 °C (39 °F) to 35 °C (95 °F)
<b>Chemical stability</b>	Aprotic organic solvents, such as acetone, acetonitrile etc.
<b>Recommended pH</b>	Working range 4-11
<b>Storage conditions</b>	2 °C (36 °F) to 8 °C (46 °F); 96 % Ethanol
<b>Shelf life</b>	0.25 years

## 4. Installation

Carefully inspect the product for any damage that may have occurred during shipping. Immediately report any such damage to your vendor and the courier. The product is shipped in the designated storage solution at ambient temperature and should be stored upon arrival as stated in the table Technical Data.

Due to low hydrolytic stability of immobilised ligand, the ligand density could decrease by 25% of the initial density after 3 months. Thus CIM® monoliths activated with carbonyl imidazole ligand (CDI monoliths) are only produced on request and after issued order confirmation.

It is therefore advisable for the customer to couple the molecule of interest on the CDI monoliths as soon as possible after receiving the product. Once the ligand of interest is immobilised on the monolithic support, the CDI stability is not a concerning issue anymore.

**NOTICE**

Do not store the product below 0 °C (32 °F).

---

## 5. Getting Started

Use the product per these guidelines. Improper use may result in malfunction, personal injury, or damage of the product or material. Follow general safety instructions for laboratory work.

---

**⚠ CAUTION**

Set the pressure relief valve of the system (pump) to the value indicated in the table Technical Data.

---

**NOTICE**

The column should be equilibrated to working temperature for optimal results. Allow sufficient time for the column to reach working temperature.

---

Setting up the HPLC system is a crucial factor in achieving optimal performance from CIMac™ Analytical Columns. The following suggestions should be considered:

*Capillaries:* The inner diameter of the capillaries strongly affects the peak shape. Using capillaries with smaller diameter will result in sharper peaks.

*Backpressure:* Check the back pressure of the system at a flow rate up to 2 mL/min higher than your working flow rate. Ensure that the back pressure of the system without the column stays at least 10 bar (1 MPa) below the maximum allowed pressure on the column (see Technical Data). Adjust the pressure relief valve accordingly.

*Detector:* For optimal detector sensitivity set the detector response time to the lowest possible value – for most UV detectors this value is 0.1 s.

*Acquisition rate:* The acquisition rate depends on the analysis time. A typical analysis time in the case of CIMac™ Analytical Columns is less than 15 min. Data acquisition rate of 5 to 10 Hz is recommended.

*Flow rate:* Typical analysis flow rates are 0.2–2 mL/min. For flow rate properties of the column see Technical Data.

### 5.1. General Recommendations

The following are general guidelines to consider when working with chromatography. The guidelines may not apply to specific column chemistry or sample properties.

- Treat loading material appropriately (e.g. pre-treat, filter, concentrate / dilute, etc.). For more details, please refer to the Guideline 'Pre-treatment of complex biological samples before column purification and regeneration procedures for columns with increased back pressure' ([biaseparations.com/en/library/guidelines](https://biaseparations.com/en/library/guidelines)).
- Always use freshly prepared mobile phases, filtered through 0.2 µm filter, compatible with mobile phases.
- Air bubbles will not disturb the stationary phase and can be washed out of the column. However, drying the monolith risks damaging the stationary phase.
- Surfactants can improve recoveries in virus purification. Non-ionic surfactants will not interact with ion exchange

chromatography media. Non-UV-absorbing (at working wavelengths) surfactants will improve the baseline signal.

- Ensure all components of the system used are compatible with the working solutions (e.g. sodium hydroxide, organic solvents, high salt concentrations, etc).

---

#### NOTICE

Always ensure mobile phases are compatible before mixing them or applying consecutively on the column. Examples of in-compatible buffers are: magnesium ion-containing buffers and sodium hydroxide (forms precipitate), acetonitrile and sodium hydroxide (forms ammonia and acetate), ammonium acetate and sodium hydroxide (potential formation of explosive atmosphere), ethanol and sodium hydroxide (forms ethoxides). Wash the column with water or another compatible solution when using two incompatible solutions consecutively.

---

## 5.2. Immobilisation Procedure

Follow the instruction manual for immobilisation which accompanied the product.

# 6. Operating the Column

## 6.1. Connecting the Column

Connect the column to the system in the following order:

1. Carefully remove the blind fitting on one side and connect the inlet tubing to the column.
2. Carefully remove the blind fitting on the opposite side and connect the outlet tubing to the column.

The column can be disconnected from the system by reversing the above steps.

**Note:** The flow path inside the housing is symmetrical, and analysis can be performed in both directions.

**Note:** It is recommended to apply flow in reverse direction during column cleaning to displace any debris or particles accumulated on the frit of the column.

# 7. Cleaning | Maintenance

Cleaning and maintenance of the column may improve its lifetime and increase reproducibility. Sample properties should be taken into account for column cleaning.

# 8. Troubleshooting

Problems arising during the analysis are usually related to the column, sample, mobile phase, or the instrumentation. It is advisable to use an elimination approach to exclude possible causes. Please refer to our troubleshooting guide ([biaseparations.com/en/library/guidelines](https://www.biaseparations.com/en/library/guidelines)).

## 9. Decommissioning | Transportation

If there is reason to return the product, complete a Return Form ([biaseparations.com/en/terms-conditions](https://biaseparations.com/en/terms-conditions)) and contact [help.bia@sartorius.com](mailto:help.bia@sartorius.com).

Contaminated samples used during the process that could cause biological or chemical hazards are potentially hazardous substances. If the product has come into contact with hazardous substances, steps must be taken to ensure proper decontamination and declaration.

### Procedure

Decontaminate the product. The operator of the product is responsible for adhering to local government regulations on the proper decontamination and declaration for transport and disposal.

## 10. Ordering Information

Transferring the workflow to a different scale or format (analytical, screening) is simple with CIM<sup>®</sup>. Contact your local support to find the appropriate products.

### Purification Scale Products

Catalog number	Product name
311.8000-2	CIMmultus® CDI 1 mL Monolithic Column (Carbonyldiimidazole) (2 µm channels)
411.8000-2	CIMmultus® CDI 8 mL Monolithic Column (Carbonyldiimidazole) (2 µm channels)
BIA-614.8000-2	CIMmultus® CDI 40 mL Monolithic Column (Carbonyldiimidazole) (2 µm channels)
611.8000-2	CIMmultus® CDI 80 mL Monolithic Column (Carbonyldiimidazole) (2 µm channels)
BIA-814.8000-2	CIMmultus® CDI 400 mL Monolithic Column (Carbonyldiimidazole) (2 µm channels)
811.8000-2	CIMmultus® CDI 800 mL Monolithic Column (Carbonyldiimidazole) (2 µm channels)
BIA-1014.8000-2	CIMmultus® CDI 4000 mL Monolithic Column (Carbonyldiimidazole) (2 µm channels)
1011.8000-2	CIMmultus® CDI 8000 mL Monolithic Column (Carbonyldiimidazole) (2 µm channels)

Sartorius BIA Separations d.o.o.  
Mirce 21  
SI-5270 Ajdovščina  
Phone +386 59 699 500  
[www.biaseparations.com](http://www.biaseparations.com)

The information and figures contained in these instructions correspond to the version date specified below.

Sartorius reserves the right to make changes to the technology, features, specifications and design of the equipment without notice.

Masculine or feminine forms are used to facilitate legibility in these instructions and always simultaneously denote the other gender as well.

Copyright notice:

This Instructions for Use, including all of its components, is protected by copyright. Any use beyond the limits of the copyright law is not permitted without our approval. This applies in particular to reprinting, translation and editing irrespective of the type of media used.

Last updated

06 | 2025

© 2025

PSIM-110.8000-1.3-2506-bDw