ChiralTek
*Solutions for Chiral Separations & Sample Preparations*

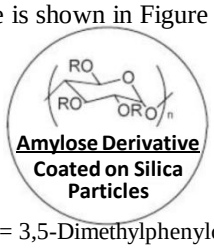
# Short User Manual for ChiralCTAM Columns

Please visit English website http://chiraltek-column.com/Downloads.php for downloading the full product manual and application notes for the ChiralCTAM columns.

All ChiralCTAM columns have been passed the quality control tests. Please kindly refer to the "Certificate of Quality Control Analysis" for information about the testing results. The column was stored in Hexane/IPA (90:10, *v/v*) before delivery. Please carefully read this user manual before using the ChiralCTAM column.

## 1. Unique Characteristics for Amylose-coated ChiralCTAM columns

ChiralCTAM columns are a new type of completely-substituted amylose-coated silica particles-packed chiral columns. The ChiralCTAM particles were prepared through a specially-designed procedure by coating the amylose derivatives onto the surface of the chemically-modified macroporous silica gel (2μm, 3μm, 5μm or 10μm). The schematic chemical structure of the ChiralCTAM phase is shown in Figure (A).




ChiralCTAM-2：R= 3,5-Dimethylphenylcarbamate;
ChiralCTAM-3：R=3-Chloro-4-methyl-phenylcarbamate;
ChiralCTAM-5：R= 3-Chloro-5-methyl-phenylcarbamate;
ChiralCTAM-6：R= (S)- α-Methylbenzylcarbamate;
ChiralCTAM-10：R= 5-Chloro-2-methyl-phenylcarbamate.

Figure (A). Schematic diagram of the ChiralCTAM phase

High-quality sphere macroporous silica particles with pore size 500Å, 1000Å and above are used to manufacture the ChiralCTAM phases. Therefore, high column efficiency can be easily achieved on the ChiralCTAM columns.

As ChiralCTAM particles are amylose derivative-coated chiral phases, they are designed only for normal phase conditions in HPLC, UPLC, and SFC. Typical mobile phases are mixtures of Hexane/IPA, or Hexane/EtOH, or Heptane/Butanol, or $CO_2$/EtOH, or $CO_2$/IPA, etc. with/or without organic acidic or basic additives. The ChiralCTAM columns cannot be used under reversed-phase or other non-typical mobile phase conditions .

Please use amylose-immobilized ChiralAM columns if other non-typical mobile phases or reversed-phase mobile phases are required for the chromatographic separations.

## 2. Application and Requirements

The ChiralCTAM columns can be used only under normal mobile phase conditions with some organic acidic or basic additives. A proper chiral guard column or a common Diol guard column can be used for ChiralCTAM column under normal phase conditions.

The ChiralCTAM column is stored in Hexane/IPA (90:10, *v/v*) upon delivery. It is strongly recommended to flush the column with compatible mobile phase to achieve a stable baseline under normal phase condition before final application in UPLC, HPLC, or SFC.

Non-typical solvents, e.g., Acetone, Chloroform, Dichloromethane, DMF, DMSO, 1,4-Dioxane, Ethyl acetate, THF, Toluene, etc., cannot be used to resolve samples and cannot be used as mobile phase additives.

The column pressure for ChiralCTAM columns with 5μm particles is quite low in HPLC and SFC. However, when using ChiralCTAM columns with 2μm and 3μm particles, low flow rate (e.g., 0.1-0.5 mL/min) should be applied when used in traditional HPLC with highly viscous mobile phases in order to avoid high back pressure. However, there is no special flow rate limitation for use in UPLC or SFC.

| | |
|---|---|
| Flow direction: | Arrow direction on the label |
| Pressure: | < 860 bar (~12500 psi , 2 μm, 3μm) |
| | < 460 bar (~7000 psi , 5 μm, HPLC) |
| Temperature: | 0 – 40 °C |
| Guard column: | Chiral CTAM or Diol column |
| Mode: | HPLC, SFC, or UPLC |

## 3. Care and Maintenance of the ChiralCTAM Columns

[1] It is strongly recommended to use guard columns to protect the ChiralCTAM columns;
[2] It'd be better to resolve samples in mobile phases and filter through 0.5μm membrane before injection;
[3] The non-typical solvents, e.g., Acetone, Chloroform, Dichloromethane, DMF, DMSO, 1,4-Dioxane, Ethyl acetate, THF, Toluene, etc., cannot be used to resolve samples or to use as mobile phase additives in HPLC.
[4] A small amount (e.g., 1% to 2%) of Chloroform or Dichloromethane may be added into $CO_2$/EtOH or $CO_2$/IPA under certain SFC conditions.
[5] When worked in high pressure conditions, it's strongly recommended to gradually decrease flow rate to ensure column pressure lower than 100 bar (~1450 psi) before switching off the chromatograph pump.

## 4. Notice and Other Considerations

[1] The ChiralCTAM columns can only be used under normal mobile phase conditions with or without some organic acidic or basic additives. They cannot be used under reversed-phase or other non-typical mobile phase conditions.
[2]Diethylamine, butylamine, or amino ethyl alcohol (0.1%) can be used as mobile phase additives for basic compounds.
[3] Formic acid, acetic acid, or trifluoroacetic acid (0.1%) can be used as mobile phase additives for acidic compounds.
[4] Non-typical solvents, e.g., Acetone, Chloroform, Dichloromethane, DMF, DMSO, 1,4-Dioxane, Ethyl acetate, THF, Toluene, etc., cannot be used to resolve samples and cannot be used as mobile phase additives in HPLC and UPLC.
[5] If other non-typical mobile phases or reversed-phase mobile phases are required for the chromatographic separations, another type of amylose-immobilized ChiralAM columns should be used to replace the amylose-coated ChiralCTAM columns.

## 5. List of the ChiralCTAM Columns with Different Specifications

**Product List of amylose-coated ChiralCTAM Columns from ChiralTek**

| *Part Number* | *Type* | *Dimension* | *Description* |
|---|---|---|---|
| 9022-CTAM2-01 | ChiralCTAM-2 | 2μm, 1000Å, 50 × 2.1mm | 2μm amylose tris(3,5-dimethylphenyl-carbamate)-coated analytical column |
| 9032-CTAM3-02 | ChiralCTAM-3 | 2μm, 1000Å, 100 × 2.1mm | 3μm amylose tris(3-chloro-4-methyl-phenylcarbamate)-coated analytical column |
| 9053-CTAM5-03 | ChiralCTAM-5 | 3μm, 1000Å, 150 × 2.1mm | 3μm amylose tris(3-chloro-5-methyl-phenylcarbamate)-coated analytical column |
| 9023-CTAM2-04 | ChiralCTAM-2 | 3μm, 1000Å, 200 × 2.1mm | 3μm amylose tris(3,5-dimethylphenyl-carbamate)-coated analytical column |
| 9023-CTAM2-05 | ChiralCTAM-2 | 3μm, 1000Å, 250 × 2.1mm | 3μm amylose tris(3,5-dimethylphenyl-carbamate)-coated analytical column |
| 9023-CTAM2-62 | ChiralCTAM-2 | 3μm, 1000Å, 100 × 4.6mm | 3μm amylose tris(3,5-dimethylphenyl-carbamate)-coated analytical column |
| 95023-CTAM2-61 | ChiralCTAM-2 | 3μm, 500Å, 50 × 4.6mm | 3μm amylose tris(3,5-dimethylphenyl-carbamate)-coated analytical column |
| 95023-CTAM2-62 | ChiralCTAM-2 | 3μm, 500Å, 100 × 4.6mm | 3μm amylose tris(3,5-dimethylphenyl-carbamate)-coated analytical column |
| 9033-CTAM3-62 | ChiralCTAM-3 | 3μm, 1000Å, 100 × 4.6mm | 3μm amylose tris(3-chloro-4-methyl-phenylcarbamate)-coated analytical column |
| 9025-CTAM2-05 | ChiralCTAM-2 | 5μm, 1000Å, 250 × 4.6mm | 5μm amylose tris(3,5-dimethylphenyl-carbamate)-coated analytical column |
| 9035-CTAM3-05 | ChiralCTAM-3 | 5μm, 1000Å, 250 × 4.6mm | 5μm amylose tris(3-chloro-4-methyl-phenylcarbamate)-coated analytical column |
| 9065-CTAM6-05 | ChiralCTAM-6 | 5μm, 1000Å, 250 × 4.6mm | 5μm amylose tris((s)- α-methylbenzylcarbamate)-coated analytical column |
| 9025-CTAM10-14 | ChiralCTAM-10 | 5μm, 1000Å, 200 × 10.0mm | 5μm amylose tris(5-chloro-2-methyl-phenylcarbamate)-coated semi-preparative column |
| 9025-CTAM2-25 | ChiralCTAM-2 | 5μm, 1000Å, 250 × 20.0mm | 5μm amylose tris(3,5-dimethylphenyl-carbamate)-coated preparative column |
| 9025-CTAM2-35 | ChiralCTAM-2 | 5μm, 1000Å, 250 × 30.0mm | 5μm amylose tris(3,5-dimethylphenyl-carbamate)-coated preparative column |
| 803-SK1-61 | ChiralKit-1 | 3μm, 1000Å, 50 × 4.6mm | Screening Kit-1（4 analytical columns） |

ChiralCTAM columns with other dimensions are also available. This manual may not be updated on time, please visit English website http://chiraltek-column.com/Downloads.php for downloading the latest version of full product manual and application notes for ChiralCTAM columns. Please call an international phone number (+65)-93656129 to directly contact ChiralTek technical support team in Singapore. You also can call a special local phone number (+86)-95040358310 in the mainland of China to directly contact ChiralTek support team in Singapore.