

Short User Manual for ChiralAMCE Columns

Please visit English website <http://chiraltek-column.com/Downloads.php> or Chinese website <http://cbook.antpedia.com/6755> for downloading the full product manual and application notes for the ChiralAMCE columns.

All ChiralAMCE 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 IPA/MeOH (50:50, v/v) before delivery. Please carefully read this user manual before using the column.

1. Unique Characteristics for ChiralAMCE columns

ChiralAMCE columns are the first type of chemically-modified amylose-appended cellulose-bonded silica particles-packed chiral columns (shown in Figure (A)). The ChiralAMCE particles were prepared through a specially-designed procedure by bonding the different functional groups-substituted amylose-appended cellulose (AMCE) onto surface of high-quality porous silica (2 μm or 3 μm for analytical columns). The column contains a unique complex chiral selector with two recognition moieties: amylose and cellulose. A single ChiralAMCE column can be used as two chiral columns: an amylose column and a cellulose-based column.

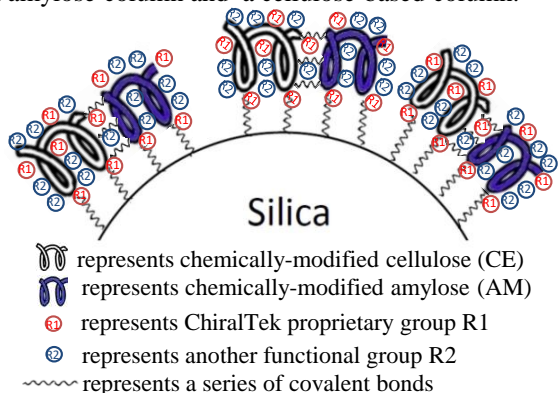
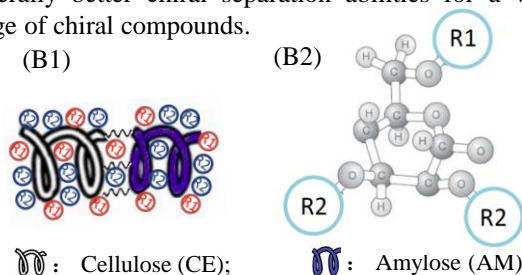


Figure (A). Schematic diagram of the ChiralAMCE phase

Other manufacturers' columns contain a single type of chiral selector (amylose or cellulose). The ChiralAMCE column contains both amylose and cellulose and the amylose and cellulose can form extra new chiral recognition structure. Figure (B) shows schematic structure of the amylose-appended cellulose selector and general glucose unit in ChiralAMCE column. Due to the cooperative functioning of the amylose and cellulose, the ChiralAMCE columns can provide different and generally better chiral separation abilities for a wider range of chiral compounds.



⌘: Cellulose (CE); ⌘: Amylose (AM)
R1= ChiralTek proprietary group

ChiralAMCE-1: R2= Phenylcarbamate;

ChiralAMCE-2: R2= 3,5-Dimethylphenylcarbamate;

ChiralAMCE-3: R2= 3-Chloro-4-methyl-phenylcarbamate.

Figure (B). Schematic diagram of the AMCE complex chiral selector (B1) and general glucose unit (B2) of the ChiralAMCE phases

2. Application and Requirements

The ChiralAMCE columns can be used under multiple modes of mobile phase conditions. For use under reversed-phase conditions, the columns need to be firstly flushed with methanol following by mobile phase until reaching a constant column pressure. Similarly, for use under normal phase conditions, the columns need to be flushed with isopropanol following by mobile phase until achieving a stable baseline signal. A common C18 guard column can be used for reversed-phase conditions and a Diol guard column can be used for normal phase conditions. If non-standard mobile phases are to be used, please contact ChiralTek for technical support.

Since packing particles and inner diameter (2 mm) of the ChiralAMCE analytical columns are quite small, a low flow rate (e.g., 0.1-0.3 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.

Flow direction:	Arrow direction on the label
Pressure:	< 860 bar (~12500 psi)
Temperature:	0 – 40 °C
Guard column:	Standard C18 or Diol column
LC mode:	HPLC or UPLC

3. Care and Maintenance of the ChiralAMCE Columns

[1] It is strongly recommended to use standard C18 or Diol guard columns to protect the ChiralAMCE columns;
[2] It'd better to resolve samples in mobile phases and filter through 0.5μm membrane before injection;
[3]The solvent in the ChiralAMCE columns should be replaced with Methanol (reversed phase conditions) or IPA (normal phase conditions) if the columns need to be stored for over a week's time.

[4] The ChiralAMCE columns can be easily cleaned by flushing with 100% methanol (reversed phase conditions) or 100% IPA (normal phase conditions) at a proper flow rate for 3 hours.

[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 ChiralAMCE columns can be used under normal phase, reversed phase, and polar organic mobile phase conditions. It is strongly recommended to use 100% IPA as intermediate solvent when switching between different mobile phase conditions. Due to the high viscosity of the IPA, a low flow rate of about 0.1 mL/min should be applied in traditional HPLC in order to avoid extreme high pressure. However, there is no special flow rate limitation for UPLC.
- [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] Since the strong alkalic compounds (e.g., NaOH etc.) can cause damages to the ChiralAMCE column bed, they cannot be used as mobile phase additives or sample solution additives.

5. List of the ChiralAMCE Columns with Different Specifications

Product List of ChiralAMCE Columns from ChiralTek			
Part Number	Type	Dimension	Description
872-AMCE1-01	ChiralAMCE-1	2 μ m, 50 \times 2mm	AMCE-1 bonded analytical column
872-AMCE1-02	ChiralAMCE-1	2 μ m, 100 \times 2mm	AMCE-1 bonded analytical column
872-AMCE1-03	ChiralAMCE-1	2 μ m, 150 \times 2mm	AMCE-1 bonded analytical column
872-AMCE1-04	ChiralAMCE-1	2 μ m, 200 \times 2mm	AMCE-1 bonded analytical column
872-AMCE1-05	ChiralAMCE-1	2 μ m, 250 \times 2mm	AMCE-1 bonded analytical column
873-AMCE1-01	ChiralAMCE-1	3 μ m, 50 \times 2mm	AMCE-1 bonded analytical column
873-AMCE1-02	ChiralAMCE-1	3 μ m, 100 \times 2mm	AMCE-1 bonded analytical column
873-AMCE1-03	ChiralAMCE-1	3 μ m, 150 \times 2mm	AMCE-1 bonded analytical column
873-AMCE1-04	ChiralAMCE-1	3 μ m, 200 \times 2mm	AMCE-1 bonded analytical column
873-AMCE1-05	ChiralAMCE-1	3 μ m, 250 \times 2mm	AMCE-1 bonded analytical column
873-AMCE2-01	ChiralAMCE-2	3 μ m, 50 \times 2mm	AMCE-2 bonded analytical column
873-AMCE2-02	ChiralAMCE-2	3 μ m, 100 \times 2mm	AMCE-2 bonded analytical column
873-AMCE2-03	ChiralAMCE-2	3 μ m, 150 \times 2mm	AMCE-2 bonded analytical column
873-AMCE2-04	ChiralAMCE-2	3 μ m, 200 \times 2mm	AMCE-2 bonded analytical column
873-AMCE2-05	ChiralAMCE-2	3 μ m, 250 \times 2mm	AMCE-2 bonded analytical column
873-AMCE3-01	ChiralAMCE-3	3 μ m, 50 \times 2mm	AMCE-3 bonded analytical column
873-AMCE3-02	ChiralAMCE-3	3 μ m, 100 \times 2mm	AMCE-3 bonded analytical column
873-AMCE3-03	ChiralAMCE-3	3 μ m, 150 \times 2mm	AMCE-3 bonded analytical column
873-AMCE3-04	ChiralAMCE-3	3 μ m, 200 \times 2mm	AMCE-3 bonded analytical column
873-AMCE3-05	ChiralAMCE-3	3 μ m, 250 \times 2mm	AMCE-3 bonded analytical column
833-SK1-03	ChiralKit-1	3 μ m, 150 \times 2mm	Screening Kit-1 (3 analytical columns)
833-SK2-03	ChiralKit-2	3 μ m, 150 \times 2mm	Screening Kit-2 (6 analytical columns)
705-AMCE2-13	ChiralAMCE-2	5 μ m, 150 \times 10mm	AMCE-2 bonded semi-preparative column
710-AMCE2-25	ChiralAMCE-2	10 μ m, 250 \times 20mm	AMCE-2 bonded preparative column

ChiralAMCE 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> or Chinese website <http://cbook.antpedia.com/6755> for downloading the latest version of full product manual and application notes for ChiralAMCE 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.