

# Column Care and Use Instructions

## YMC CHIRAL NEA

### YMC CHIRAL CD BR Series

### YMC CHIRAL PREP CD Series

#### 1. Introduction

Thank you for purchasing a YMC high-performance liquid chromatography (HPLC) column "YMC CHIRAL". YMC CHIRAL series are optical isomer separation columns. They are applicable for analysis of wide range of compounds by selecting the column for any purpose.

YMC CHIRAL series, which are manufactured under highly controlled conditions, must pass a series of stringent tests before being accepted for shipment. (Please refer to the column inspection report). To ensure optimal performance and durability of the column, please read these instructions carefully before using this column.

#### 2. Specifications

Packing material		Functional group	Separation mode	Usable pH range	Usable temperature range	
					Regular use (recommended)	Upper limit
NEA Series	NEA (R)	(R)- (naphthyl)ethylamine	*1	2.0 – 6.5	25 – 35 °C	50 °C
	NEA (S)	(S)- (naphthyl)ethylamine				
CD BR Series	α-CD BR	α-bromo-cyclodextrin	reversed phase	3.5 – 6.5	25 – 35 °C	50 °C
	β-CD BR	β-bromo-cyclodextrin				
	γ-CD BR	γ-bromo-cyclodextrin				
PREP CD series	ST	β-cyclodextrin	both phase (reversed phase is recommended)	2.0 – 7.0	20 – 40 °C	50 °C
	PM		both phase*2			

\*1 Regarding initial of product number, [NR, NS] is for reversed phase column, [CR, CS] is for normal phase column.

\*2 Although both reversed phase and normal phase are available, we recommend using the same column exclusively for separation mode for column lifetime.

#### 3. Column connections

The "WT" or "QT" at the end of the product code indicates the style of column endfittings.

WT = Waters style / QT = Parker style

#### 4. Shipping solvent

Indicated in the COLUMN INSPECTION REPORT. Replace with this solvent for storage.

#### 5. Mobile phase

【Reversed phase】

- In general, acetonitrile, methanol and ethanol are recommended for regular use.
- The mixture at an arbitrary ratio of organic solvent and aqueous solution of salt or water or buffer can be used. Recommended salt concentrations of the mobile phase are as follows, NEA less than 1.0 M, CD BR less than 0.2 M, PREP CD less than 0.5 M.

**【Normal phase】**

- In general, *n*-hexane, dichloromethane, chloroform, and ethanol are recommended for regular use.
- Addition of dichloromethane, chloroform, and alcohol like ethanol to *n*-hexane is basic. Acetonitrile, methanol, tetrahydrofuran (THF), dioxane etc. are also usable.
- In case that elution of basic compounds is difficult, acid like acetic acid and trifluoroacetic acid can be added to enhance solubility of the compounds. Triethylamine etc. are also available for additives.

**【For all products】**

- The correct direction of the solvent flow is indicated by an arrow on the column identification label.
- Aqueous or non-aqueous solvent can be used as a mobile phase. Repetitive replacement among solvents with large difference in polarities might degrade the column performance.
- When the displacement from aqueous to non-aqueous solvent or vice versa, flush the column with more than 10 column volume of compatible solvent like 2-propanol and THF.
- Recommendations of pH and temperature for column use are shown in the specifications table in section 2. Column lifetime is strongly dependent on pH, temperature, and mobile phase composition. In general, high temperature and concentration of buffer or additive, low organic solvent concentration will shorten column lifetime.

**6. Column cleaning (general method)****【Reversed phase】**

- Flush the column with solution containing a higher ratio of organic solvent for washing out the compounds that have a great capacity for retention in the column after using mobile phases not containing buffer salts/additives. Usable concentration of organic solvent is up to 100%.
- When using mobile phase containing buffer salts/additives, first replace with a water/organic solution containing no buffer salts/additives (A ratio of water to organic solvent should be set at the same proportions as a mobile phase). Then flush the column in accordance with the method described above. Mobile phase containing about 50 mM or less in buffer salts/additives can be replaced directly with 60% acetonitrile aqueous solution.
- Analyte and salts are likely to remain in CD BR or PREP CD columns, compared with ODS column. Wash the column sufficiently (flushing more than 10 column volume) after usage.

**【Normal phase】**

- Flush the column with 2-propanol etc.
- Replace with the mixture of *n*-hexane and alcohol etc. for storage.

**7. Other environments**

- The operating pressure should be kept under 20 MPa (2900 psi), for more than 10 mm I.D. column under 10 MPa (1450 psi).
- To prevent exposure of the column to excessive pressure, the sample solution should be filtered through a 0.2  $\mu$ m membrane or smaller to remove particulates. We recommend using a pre-column filter to prevent the column frit from being clogged with samples.
- Avoid using a column repeatedly near the pressure limit or abrupt change in pressure to prevent shortening of the column life.
- Adjust the flow rate appropriately because the pressure changes depending on the column length, temperature, types of organic solvent etc.