

MiniChrom for TOYOPEARL®/TSKgel® Instruction Manual

PRE-PACKED COLUMNS FOR RESIN SCREENING / METHOD DEVELOPMENT

INTRODUCTION

MiniChrom 8-100 columns for TOYOPEARL and TSKgel are small pre-packed columns (8 mm ID x 100 mm) with 5 mL resin volume designed for fast method development or resin screening with TOYOPEARL and TSKgel resins. They guarantee optimal performance and can be connected to common high or medium pressure liquid chromatography systems.

MiniChrom columns are packed with TOYOPEARL or TSKgel chromatography resin. They are reproducibly and individually flow-packed to take account of the varying compressibility of each resin such that the columns provide a more accurate representation of conditions found in full scale columns.

PRODUCT DESCRIPTION

MATERIALS

Components of MiniChrom columns are made from bio-compatible polymers, mainly high-density polyethylene (column tube, Lock nut, filter adapter). Filter plates are made from porous polypropylene/polyethylene material.

Fig. 1 shows the parts of a MiniChrom 8-100 columns (Upper & lower filter plates, together with filter adapters are internal parts).

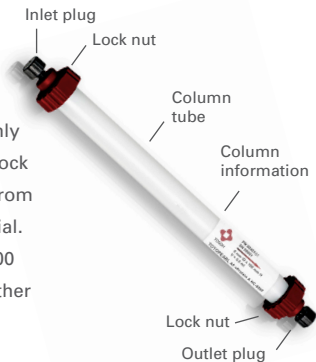


TABLE 1

PROPERTIES OF Minichrom COLUMNS 8-100 FOR TOYOPEARL/TSKgel

Inner dimension	8 mm ID x 100 mm bed height
Cross section	0.5 cm ²
Volume	5 mL
Outer dimensions	10 mm ID x 164 mm L including plugs
Flow rate	1.3 mL/min /150 cm/h
Max. flow rate	5 mL/min (600 cm/h) for TOYOPEARL M-grade; 2.5 mL/min (300 cm/h) for TOYOPEARL S-grade and TOYOPEARL AF-rProtein A HC-650F)
Connectors	Standard HPLC (10-32 for 1/16 inch capillaries)
Max. operating pressure	0.3 MPa for TOYOPEARL, 2 Mpa for TSKgel
Shipment buffer	Unless otherwise stated, 20% ethanol or a mixture of 20% ethanol and 0.150 mol/L sodium chloride (IEC & HIC resins)
Chemical stability ¹	Columns are tolerant to aqueous buffers and salt solutions, 1 M alkaline solutions, 1 M non- oxidizing mineral acids, 8 M urea, 6 M guanidine hydrochloride, non-halogenated organic solvents and detergents. They are not compatible with strong oxidants and halogenated solvents.

¹ The chemical stability refers to the column hardware parts only. The individual packed chromatography media may have different stability. To avoid damage to the chromatography media, please refer to the relevant resin data.

CONNECTABILITY

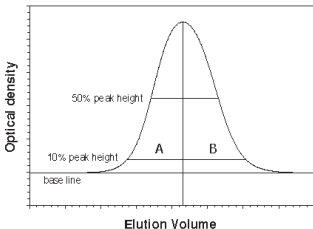
MiniChrom columns are delivered ready to use, packed with TOYOPEARL or TSKgel chromatography media for bioseparation. Columns may be connected directly to most liquid chromatography systems or workstations.

MiniChrom columns may be reused as long as the resin remains in acceptable condition, which will depend largely upon the care taken, the cleaning performed and the tolerance of the resin to user conditions. The columns are not designed to be repacked. The most important properties of MiniChrom 8-100 columns are summarized in Table 1.

PERFORMANCE TESTING

The chromatographic performance of MiniChrom columns should be checked initially and at regular intervals by determination of plate number and asymmetry factor.

The evaluation of the elution profile of an acetone or other suitable sample should be carried out as follows, with parameters as shown in the schematic drawing: The theoretical plate number (N , as number per meter) and the asymmetry factor (A_s) are calculated according to equations (1) and (2):



$$N = 5.54 \times \left(\frac{V_e}{W_{1/2}} \right)^2 \times \frac{100}{BH} \quad (1)$$

$$A_s = \frac{B}{A} \quad (2)$$

With V_e = elution volume, $W_{1/2}$ = width at 50% peak height, BH = bed height in cm, B and A = left and right section of a line, drawn parallel to the base line at 10% peak height drawn vertically from peak maximum to base line.

The functional test for columns packed with chromatography media incompatible with acetone, e.g. Protein A resins, should be performed with an alternative low molecular weight sample.

INSTRUCTIONS FOR USE

Install the column following the recommended flow direction as indicated by the arrow on the tag. For best results and increased column life, samples and buffers should be degassed and filtered through a 0.45 μ m filter.

A sudden pressure change may impair the performance of the column. Therefore, slowly step-up the mobile phase flow rate until it reaches the desired value.

Before the first sample injection equilibrate the column with at least 10 CV (column volumes) of the respective loading buffer. For washing and equilibration a flow rate of 5 mL/min (2.5 mL/min for TOYOPEARL S-grade and TOYOPEARL AF-Protein A HC-650F) can be applied.

Buffer composition and gradient design is dependent on the resin type. Please refer to the TOYOPEARL Instruction Manual and/or the respective Product Datasheet of the resin for more information about recommended eluents, storage and cleaning solutions.

Check out our website www.tosohbioscience.de to download resin datasheets and the latest version of the TOYOPEARL instruction manual.