

Introduction

Capital HPLC was founded in Edinburgh in 1984 by former academic research scientists from the world renowned Wolfson Chromatography Unit at the University of Edinburgh. Shortly after its conception the company became established as a quality supplier of packed HPLC columns and accessories, with a reputation for quality and service which is second to none.

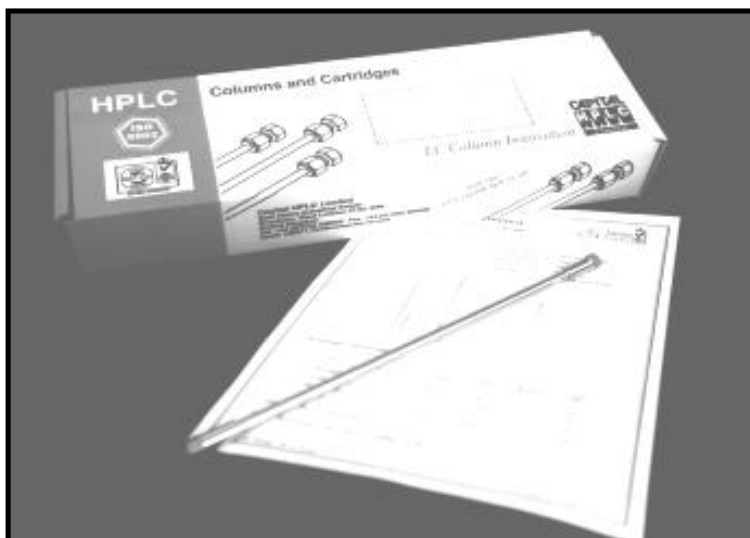
The company's position in the market was strengthened further in the late eighties by its introduction of the world's first fingertight ferruleless cartridge system (UCC) which has been highly commended by chromatographers world-wide. This cartridge system which incorporates a unique colour coding scheme has been successful beyond all expectations.

Company Philosophy

Capital HPLC's philosophy has always been one of both quality and choice. Quality is considered to be of paramount importance, with each column going through a most stringent quality control procedure before dispatch. Capital HPLC also believe in the importance of providing their customers with the widest possible range of packing materials (from Adsorbosphere through to Zorbax), all of which can be supplied in cartridge and column formats from preparative down to narrow bore.

Research Activities

Capital HPLC has never abandoned its academic origins and strives to remain at the forefront of developments in separation science. The company therefore has a strong and dynamic research group which is particularly active in capillary LC, electrochromatography and the development of new chiral stationary phases. Over the last five years the company has won several British government innovation awards for their R & D efforts.



HPLC Columns

Capital HPLC offer one of the widest selection of HPLC columns currently available on the market. We provide high quality HPLC columns in conventional formats, the convenient Capital UCC cartridge format and Capital's new stylish format.

This new catalogue also includes a full range of chiral HPLC columns for enantiomeric separations.

CE and CEC Products and Accessories

Capital HPLC, through our new division, Electrokinetic Technologies can offer a wide range of unique products for capillary electrophoresis and capillary electrochromatography. The products on offer include specially coated capillaries, packed columns for CEC, CE reagents including numerous cyclodextrins and many other accessories.

LC and GC Accessories

Capital HPLC now offer a comprehensive range of accessories for LC equipment such as injection valves, deuterium lamps etc.. We also have a new range of GC products.

Packing / Repacking Service

We also offer a column packing and repacking service. The column packing service involves the customer sending the bulk packing material for us to pack into a column of their choice. Indeed, the column may also be supplied by the customer. Prices for this service will be given on application.

A repacking service is available to customers who send their old used columns to us. We will restore the column to its original working capacity for a 15% discount (10% for cartridges) against our list price.

Capital on the Internet

Although this catalogue is fully up to date at the time of going to press, we are constantly updating our products and introducing new products generated by our research efforts. An easy way to keep up with new developments is to consult our internet site, which is immediately updated whenever new products are introduced.

It is possible to obtain the latest product information, check our current prices, directly contact by e-mail our technical support team and even place orders directly on line.

Our website is located at:

<http://www.capital-hplc.co.uk>



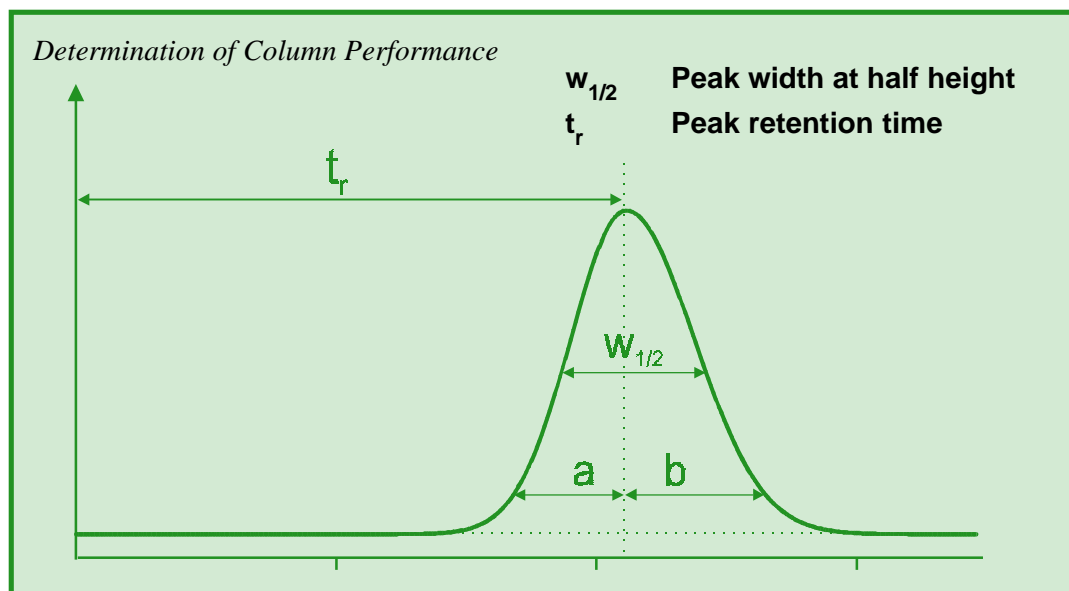
Quality Assurance

Any column supplied by Capital HPLC must pass a rigorous quality control procedure. All columns are individually packed and tested for plate number, back pressure and peak asymmetry in our ISO9002 compliant laboratory, and only when these meet and exceed our target specifications can the column be released for shipment.

Column test data are evaluated by computerised workstations which determine peak widths and peak asymmetry to a high degree of precision. Each column is supplied with a test certificate, including a copy of the test chromatogram, and a sample test mixture, so that the user can check his or her installation procedure.

Performance Calculations

The performance characteristics are calculated for every column to a high degree of precision using a regularly calibrated computer datastation with fast data acquisition. The critical measurements are made in accordance with the method outlined below. Following computer analysis, if the column meets the required specifications, the test chromatogram must still pass visual examination from an experienced operator before the column can be released for dispatch.



The main criteria for the evaluation of column performance are the number of theoretical plates (N), the test pressure drop (ΔP) and the peak asymmetry measured at 10% of the peak height.

The number of theoretical plates can be calculated using the expression,

$$N = 8 \log_e(2) \left(\frac{t_r}{w_{1/2}} \right)^2 \quad \text{NB. } 8 \log_e(2) \text{ is } \sim 5.54.$$

where t_r and $w_{1/2}$ are both in time units or both in units of distance.

The peak asymmetry (PS) (or simply peak symmetry) is calculated from,

$$PS = b / a$$

where a and b correspond to the intervals shown in the above diagram. For a perfectly symmetrical Gaussian peak, the peak symmetry (PS) has a value of one, whereas for tailing peaks it will be greater than one.

Example Capital QC Certificate

The diagram below shows an example of the type of QC certificate supplied with every column packed by Capital HPLC. The actual chromatogram from the particular column being tested is displayed in full, together with complete details of the test protocol and the determined column performance data.

Capital HPLC Limited
Capital Quality Control Certificate

ISO 9002 APPROVED

Test Protocol
 Customer: Highland Pharma UK
 Date: 19 Feb 1998
 Column Dimensions: 15cm x 4.6mm i.d.
 Packing Material: ODS2-Inertpak
 Flow Rate: 1 ml/min
 Injection Volume: 1µl

Column Number: ODS2-IK5-25200
 Particle Diameter: 5µm
 Material Batch No.: SQ5-1308-6/683
 Detection: UV 254nm
 Mobile Phase: 70:30 Methanol:Water

Actual Test Chromatogram

Performance Characteristics

Pk. No.	Analyte	Time (mins)	Plate Number	Plates (metre)	Reduced Height	P.Sym. (10%)
1	Benzamide	1.96	2571	17140	11.67	1.88
2	Acetophenone	2.74	4337	28913	6.92	1.6
3	Benzophenone	5.43	6317	42113	4.75	1.34
4	Biphenyl	13.75	9693	64620	3.1	1.21

Column Test Pressure Drop: 1700 psi
 Test and Performance Criteria Passed

Signature of Inspector

Archive No. For Added Traceability

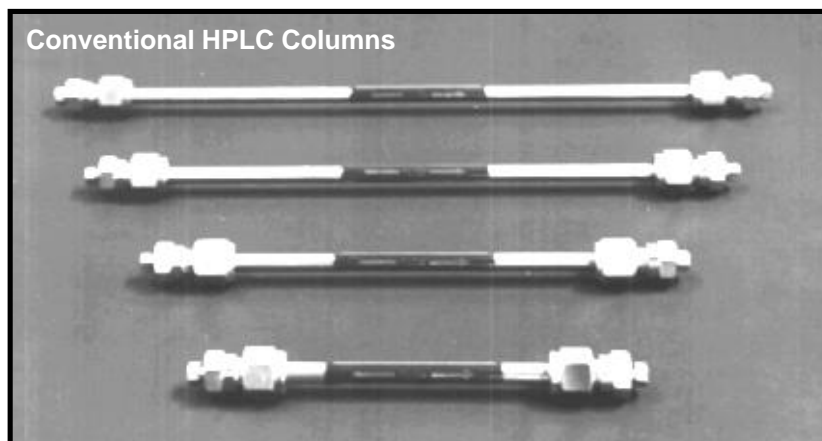
Production Lab. Manager - Mr. W. Dunstan
 COL Archive No. - E9481904

For some of our speciality materials, a separate QC certificate for the packing material itself is also included with each column.

Capital Column Formats

Conventional HPLC Columns

Unless specified otherwise, Capital HPLC supply high quality HPLC columns fitted with Parker female geometry fittings. Other types of end fitting are available on request. The standard internal diameter of the column is 4.6mm although other sizes can be supplied on request. The tubing itself consists of 316 stainless steel and is internally polished to a high degree. For chromatographers seeking stainless steel-free columns i.e. for protein analysis, we can provide titanium, or PEEK, HPLC columns. Please contact our sales office for further information.

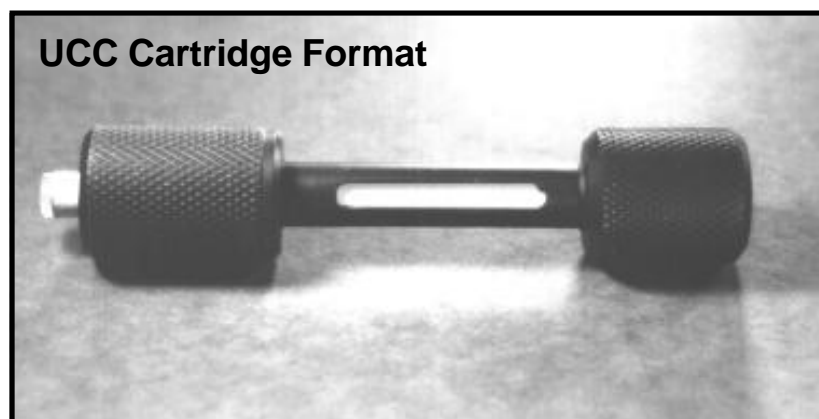


Capital HPLC Universal Cartridge Columns (UCC)

Introduced in 1987, the UCC system is a high quality cartridge system which has been painstakingly optimized for flexibility and ease of handling. Unlike many of the over complicated cartridge systems available on the HPLC market our design has been kept simple so that we can offer a high quality product at a lower cost than a conventional column. The cartridge insert is simply a 1/4" stainless steel tube with KEL-F plugs at either end. The complete system is also entirely fingertight and does not require the use of wrenches or spanners for routine maintenance or changing cartridges etc..

Unlike most systems, the cartridge holders and inserts are compatible with standard 'off-the-shelf' HPLC end-fittings and therefore do not require complex and expensive end assemblies. There is also a range of easy to use accessories to enhance the basic UCC system. These include a simple guard column adapter and a convenient column coupler.

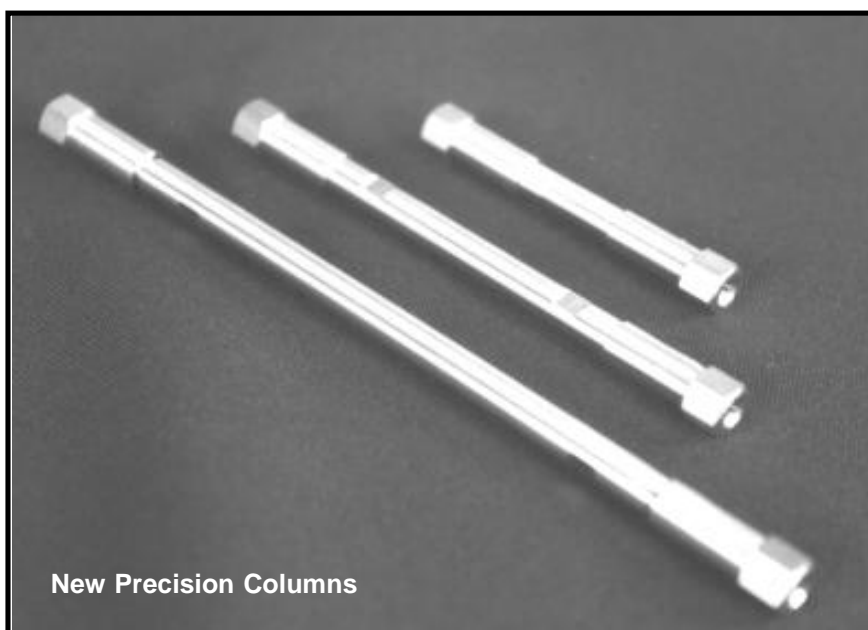
The basic cartridge holder is not only compatible with 4.6mm i.d. columns, but also with narrow bore columns of 3.2 and 2.1mm internal diameter. Larger sized holders are also available for preparative and semi preparative cartridges.



New Precision Format

Capital HPLC's new speciality materials, Optimal and Inertpak are supplied in our stylish New Precision column format which combines high performance with ease of use. New Precision columns are machined to a very high degree of tolerance and are available in all analytical dimensions.

New Precision 1mm i.d. narrow bore columns deliver the same performance in terms of plate number and peak symmetry as our standard 4.6mm columns. However the chromatographer can enjoy all the benefits of narrow bore (1mm i.d.) columns in a robust and easy to use column format. The majority of 1mm bore column manufacturers supply 1mm columns in an 1/8" o.d. column format which leads to a rather fragile product which is easily bent and destroyed. However, New Precision 1mm i.d. columns have an external diameter of 1/4" (6.35mm) which means that they are robust enough to be handled just like conventional sized analytical columns.



Guard Columns

Capital HPLC guard columns (2cm in length) can be used with any of the above column formats. NB. For conventional and New Precision type columns a guard column holder (together with end fittings) is required (Cat. No. HT7151 page 69). For our UCC cartridge column system, it is necessary to use a guard column adapter (Cat. No. HT7152 page 69).

Guard columns are available individually or alternatively in economy packs of three.

In addition to our standard 2cm guard columns, a 1cm PEEK guard column and holder is also available packed with the material required.

