

Capital Inertpak

The Inertpak family of LC columns from Capital HPLC is based on a new generation high purity silica which exhibits a remarkable degree of chemical inertness and stability. The Inertpak range is therefore particularly effective in the analysis of amines, basic pharmaceuticals and other chemical species where hydrogen bonding may occur. This also makes Inertpak columns generally suitable for the vast range of non-basic applications currently performed on older technology stationary phases.

In the reversed phase analysis of basic/amine compounds, severe peak tailing often occurs, and is mainly due to the presence of surface silanol groups which remain after the derivatisation procedure. End capping with trimethyl silyl groups helps to eliminate surface silanols, but is never completely resolves the problem.

The material used for the Capital HPLC Inertpak column family represents an innovative solution to the problem of residual silanol interactions.

Surface silanols are known to undergo self-ionisation leading to fixed negative charges on the surface of the material. This leads to strong electrostatic interactions with the electron deficient regions of basic molecules resulting in peak tailing.

Figure 1

Free Silanol (Moderately Acidic)

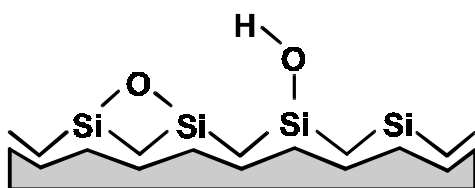
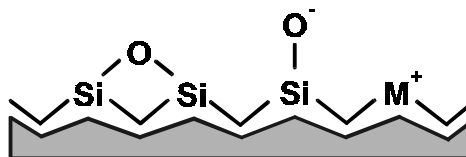


Figure 2

Metal Activated Silanol (Highly Acidic)



The tendency for a silanol group to undergo self ionisation depends on its electronic environment and is exceptionally strong when the adjacent silicon atom is substituted by a metallic impurity. Figures 1 and 2 above illustrate the stabilising effect of metal impurities on ionised silanols.

Existing silica technology produces LC packing materials which contain substantial amounts of metallic impurities, notably sodium and iron which lead to the presence of highly activated silanols which contribute to peak tailing.

The inert silica used in Inertpak columns uses a synthesis route producing a high purity material with a very low metal content. Consequently residual silanols following the end capping process are inactive and therefore do not create the interactions which cause peak tailing.

Specifications

Shape	: Spherical	Mean Pore Diameter	: ODS2 (150Å or 80Å) : Ph,C ₈ ,C ₄ (150Å)
Particle Diameter	: 5 micron	Surface Area	: 320-350m ² /g : 450m ² /g (ODS-80Å)
Carbon Loading	: C ₈ (10.5%) : C ₄ (7.5%) : Ph(10.0%) : ODS2(18%) : ODS-80Å(17.5%)	Assured Efficiency	: 55,000 plates/m (Typically 75,000)

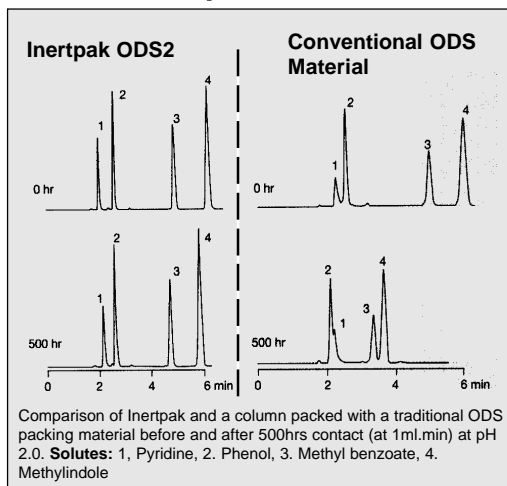
- Chemically Inert
- Excellent for Basic Compounds
- High Efficiency
- Good Peak Shape
- Stable over a Wide pH Range

In addition to the inertness towards basic compounds, Inertpak columns can also be operated over a wider pH range than conventional materials. The above tests illustrate the good stability of Inertpak in contact with aggressive mobile phases at high and low pH values.

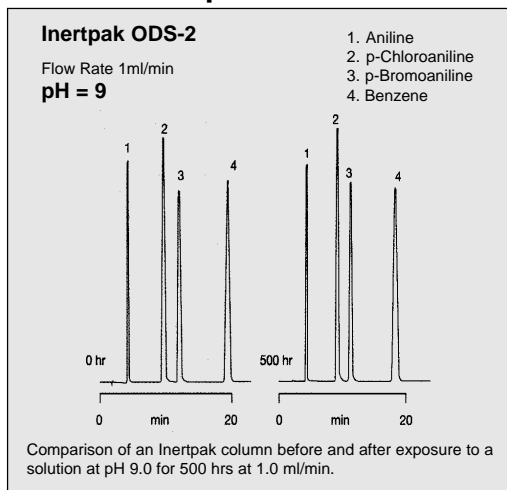
New packing materials create more stringent requirements when it comes to packing procedures. The proprietary packing protocol, designed by our development laboratory, allows us to supply columns in all formats from capillaries to preparative scale columns, exclusive to Capital HPLC. This packing procedure, in concert with Capital HPLC's stringent quality control assures you of reproducible cost effective analysis.

Amitriptyline, the antidepressive drug, is known to be particularly sensitive to the presence of active silanol groups, when analysed by reversed phase LC. The Inertpak Inertness Test shows a comparison of the analysis of this compound on a conventional ODS, a leading brand base deactivated material and Inertpak.

○ 500 hrs at pH 2.0

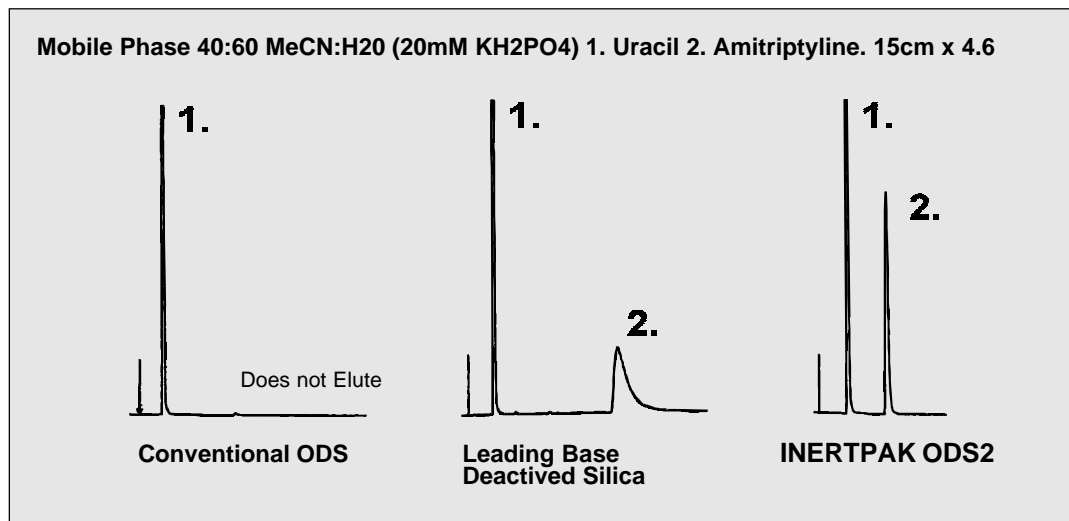


○ 500 hrs at pH 9.0



In the case of the conventional ODS material, the drug is irreversibly adsorbed onto the packing material and does not elute, whereas the base deactivated material elutes the drug with severe peak tailing. With Inertpak a perfectly formed symmetrical peak is observed.

○ INERTNESS TEST



Inertpak Ordering Information

Catalogue numbers refer to 5µm materials 4.6mm column i.d. only. For 2.1mm or 3.2mm diameter columns please add D2 and D3 respectively to the standard 4.6mm i.d. columns. Prices for 2.1mm and 3.2mm i.d. columns are as for 4.6mm i.d.

Conventional Column Format

5µm prices only

Phase	2cm	5cm	10cm	15cm	20cm	25cm
	(guard)					
Silica	5MA102	5MA105	5MA110	5MA115	5MA120	5MA125
C4	5MD102	5MD105	5MD110	5MD115	5MD120	5MD125
C8	5MF102	5MF105	5MF110	5MF115	5MF120	5MF125
ODS-2	5MG102	5MG105	5MG110	5MG115	5MG120	5MG125
Phenyl(Ph)	5MK102	5MK105	5MK110	5MK115	5MK120	5MK125
ODS(80Å)	5ML102	5ML105	5ML110	5ML115	5ML120	5ML125
PRICE/£	<i>see price list - page 3</i>					

Universal Cartridge Columns (UCC)

5µm prices only

Phase	2cm	5cm	10cm	15cm	20cm	25cm
	(guard)					
Silica	5MA102	5MA305	5MA310	5MA315	5MA320	5MA325
C4	5MD102	5MD305	5MD310	5MD315	5MD320	5MD325
C8	5MF102	5MF305	5MF310	5MF315	5MF320	5MF325
ODS-2	5MG102	5MG305	5MG310	5MG315	5MG320	5MG325
Phenyl(Ph)	5MK102	5MK305	5MK310	5MK315	5MK320	5MK325
ODS(80Å)	5ML102	5ML305	5ML310	5ML315	5ML320	5ML325
PRICE/£	<i>see price list - page 3</i>					

Bases of Nucleic acid and Nucleosides

Column : Inertpak ODS2 5µm
150 x 4.6 mm I.D.

Eluent :

0.1M H₃PO₄ + 0.2M NaClO₄ (pH2)

Flow rate : 1.0 ml/min.

Detector : UV 260nm

- | | |
|--------------|---------------|
| 1. Cytosine | 2. Uracil |
| 3. Guanine | 4. Adenine |
| 5. Cytidine | 6. Uridine |
| 7. Thymine | 8. Adenosine |
| 9. Guanosine | 10. Thymidine |

