

***Exmere***

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**Exmere**  
*Silica Engineering*

# Exmere

Silica Engineering

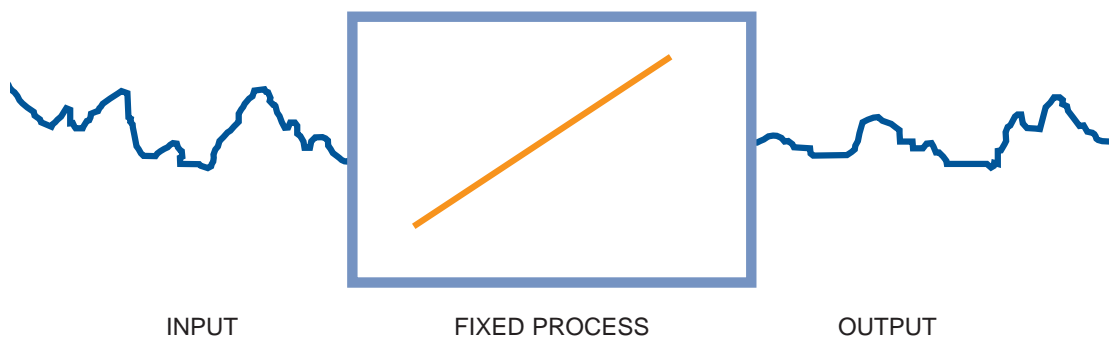
## *Product Profiles*

## Start with the Fundamentals: Silica Manufacture

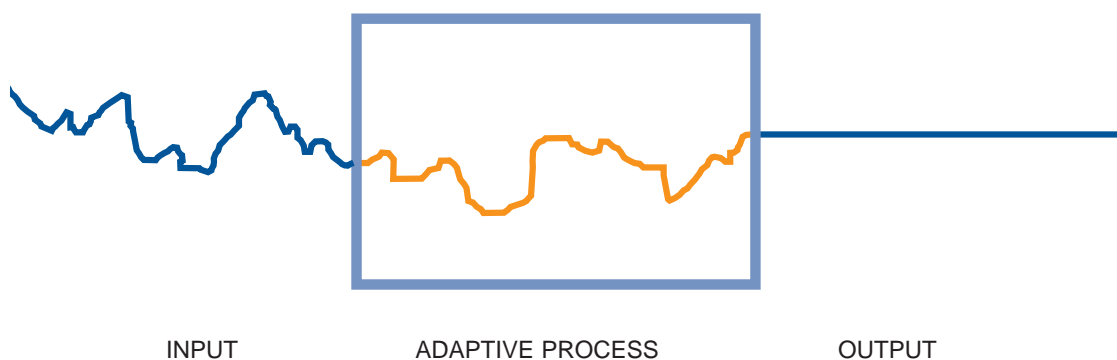
### *Independent Control of Pore Diameter, Pore Volume and Surface Area*

Our novel aqueous manufacturing route allows unsurpassed control of the fundamental structural parameters of silica. Pore diameters from 80 to 1000Å are combined with pore volumes of 0.5 to 1.5 cc/g to allow the engineering of particles for defined purposes with excellent reproducibility (RSD less than 3%).

Conventional processes apply a fixed manufacturing protocol to a variable raw material leading to the variability being passed on to the end product.



The Exsil process is adaptable to the input variability of the raw materials and allows the output to be consistent.



The resultant silicas when bonded using robust proprietary methods form the basis of highly reproducible chromatographic phases.

*Since 1985, only one batch of Exsil silica has failed final QC and the level of in the field quality problems associated with bonded products is less than 0.25%.*

## and Finish with a Flourish

***Specifically designed silicas + consistent bonding***

***Reliable products + Novel media***

The ability to design silicas with specific physical properties and to bond these using proven, reliable methodology has allowed Exmere to offer a wide range of value phases which provide alternatives to current phases which may have become unreliable or have been subject to either restricted availability or significant price increases.

The market position of these phases owes much to the independent chromatography supplier which has invested heavily in sustained promotion of the brand name(s). The Exsil range of phases allows the independent supplier to continue to support their customer base in the face of restrictive availability or excessive pricing of the branded products.

Although the ability to match conventional media is important, new and novel products are essential for growth and in this area Exmere has made significant advances with the following first to market products:

- 3µm Wide Pore Silica, Reversed phase and Ion exchanger.
- ODS-B, Octyl -B. Most base deactivated phase for use without buffers.
- 1.5µm totally porous production technology .

Many novel phases are under development and further first to market products can be expected.

# Exsil Product Range

## **Exsil 80**

*Alternative to Spherisorb range of phases.*

**Pore Size:** 90(+/-3)Å, **Pore Volume:** 0.51 ml/g, **Surface Area:** 226m<sup>2</sup>/g

**Particle sizes:** 1.5, 3, 5 and 10µm

**Phases:** Silica, ODS, ODS-1, C8, C6, C1 (TMS), Phenyl, Amino, Nitrile, SAX.

## **Exsil 100**

*Slightly lower retention than Exsil 80 using different silica base. Extended range of bonded phases including 1.5µm.*

**Pore Size:** 100 (+/-3)Å, **Pore Volume:** 0.52ml/g, **Surface Area:** 208m<sup>2</sup>/g

**Particle sizes:** 1.5, 3, 5, 10, 12 and 15µm

**Phases:** Silica, ODS, ODS-1, ODS-B, ODS-AB, C8, C8B, C8AB, C6, C1 (TMS), Phenyl, Amino, Nitrile, SAX and SCX.

## **Clasico**

*Closest alternative to Spherisorb.*

**Particle sizes:** 3, 5, and 10µm

**Phases:** Silica, ODS-2, ODS-1, C8, and Phenyl.

## **Exsil PLUS**

*Acid/base and chelate deactivated. Uncapped for different selectivity to standard BDS media.*

**Pore size:** 100 (+/-3)Å, **Pore Volume:** 0.52ml/g, **Surface Area:** 208m<sup>2</sup>/g

**Particle sizes:** 3 and 5µm

**Phases:** Silica, ODS and C8.

## **Avanti**

*Alternative to Hypersil range of phases.*

**Extended range including 3µm and 1.5µm**

**Pore Size:** 130 (+/-5)Å, **Pore Volume:** 0.63ml/g, **Surface Area:** 194m<sup>2</sup>/g

**Particle sizes:** 1.5, 3 and 5µm

**Phases:** Silica, ODS, C8, Ph(1), CN(1) and NH<sub>2</sub>(2).

## **Avanti BDS**

*Alternative to Hypersil BDS range of phases.*

**Extended range including 3 $\mu$ m**

**Pore Size:** 145 (+/-5) $\text{\AA}$ , **Pore Volume:** 0.68ml/g, **Surface Area:** 186m<sup>2</sup>/g

**Particle sizes:** 5 $\mu$ m

**Phases:** Silica, C8, CN, C18 and Quattro.

## **Exsil 300**

*Alternative to Vydac TP phases. First 300 A media available in 3 $\mu$ m particle size.*

**Pore Size:** 300(+/-10) $\text{\AA}$ , **Pore Volume:** 0.78ml/g, **Surface Area:** 100m<sup>2</sup>/g

**Particle sizes:** 3, 5 and 10 $\mu$ m

**Phases:** Silica, ODS, C8, C4, PAH and HAAX.

## **Exsil 500**

*High pore volume for use in GPC.*

**Pore Size:** 500 (+/-15) $\text{\AA}$ , **Pore Volume:** 1ml/g, **Surface Area:** 80m<sup>2</sup>/g

**Particle sizes:** 5 and 10 $\mu$ m

**Phases:** Silica.

## **Exsil 1000**

*High pore volume for use in GPC.*

**Pore Size:** 1000 (+/-20) $\text{\AA}$ , **Pore Volume:** >1ml/g

**Particle sizes:** 5 and 10 $\mu$ m

**Phases:** Silica, Amino and ODS

## **Custom Silicas**

Our custom synthesis facility is available to meet specific requirements.

## **Custom Bonding**

Bonding of customer supplied silicas.

130 Å,

0.63 cc/g,

194 m<sup>2</sup>/g 107m<sup>2</sup>/ml

## Type A Silica and Bonded Phases

- *Alternative to Hypersil range of phases.*
- *Type A phase for simple compounds.*
- *Wide range of phases.*
- *Available in 1.5, 3 and 5µm particle sizes.*

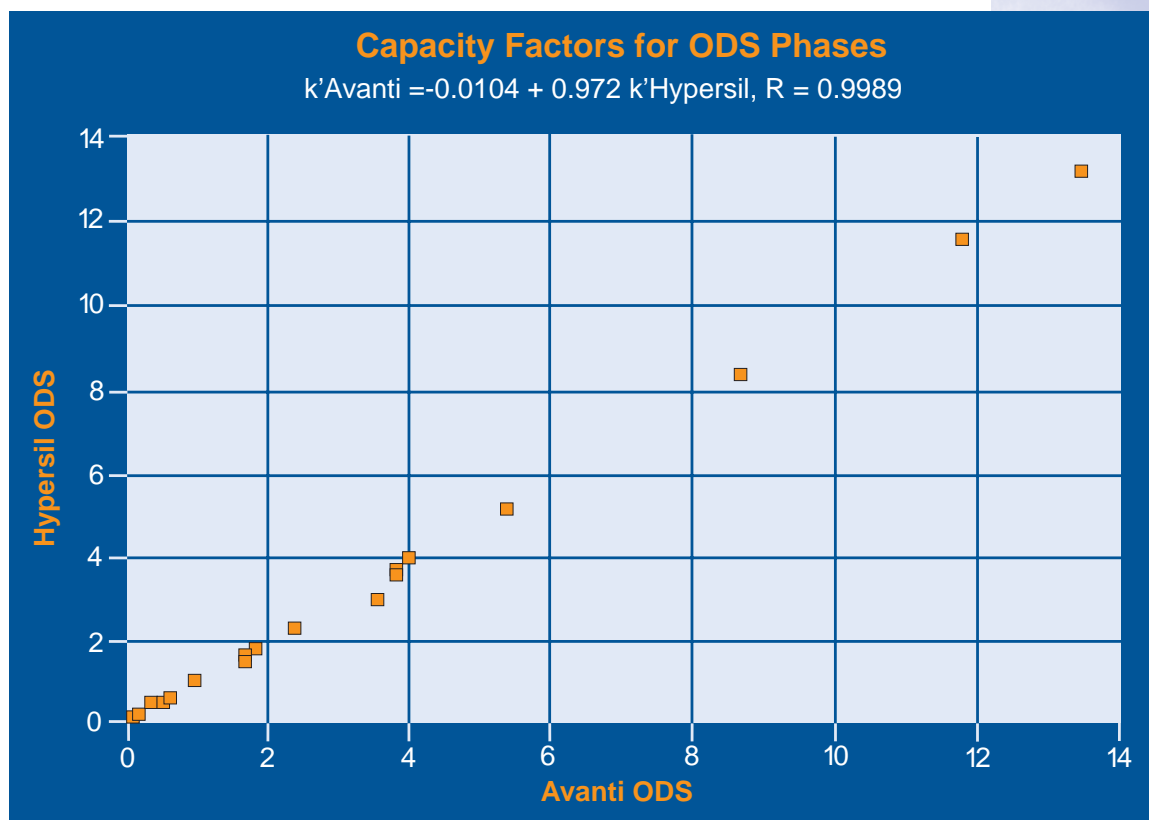
The Avanti range was developed to meet the need for a range of phases based on a Type A silica which are less retentive than the standard 80 and 100 ranges and provide a closer match to current established commercial 120 - 150Å media.

A wide range of bonded phases are available which in many cases utilise different bonding protocols to the standards Exsil 80/100 range to provide enhanced differentiation in selectivity.

The standard 3 and 5µm particle sizes are supplemented with a 1.5µm ODS phase for rapid analysis systems.

- ODS - Monomeric endcapped.
- C8 (2) - Monomeric endcapped.
- Ph (1) - Monomeric, uncapped.
- CN (1) - Monomeric, uncapped.
- NH<sub>2</sub> (2) - Monomeric, uncapped, not acetone treated.

CAT NO.	Description	
402001	Exsil Avanti Silica 1.5 Micron	
402002	Exsil Avanti Silica 3 Micron	
402003	Exsil Avanti Silica 5 Micron	
402007	Exsil Avanti C8 (2) 1.5 Micron	
402010	Exsil Avanti C8 (2) 3 Micron	
402011	Exsil Avanti C8 (2) 5 Micron	
402012	Exsil Avanti ODS 1.5 Micron	
402009	Exsil Avanti ODS 3 Micron	
402019	Exsil Avanti ODS 5 Micron	
402013	Exsil Avanti NH2 (2) 3 Micron	
402014	Exsil Avanti NH2 (2) 5 Micron	
402015	Exsil Avanti CN (1) 3 Micron	
402016	Exsil Avanti CN (1) 5 Micron	
402017	Exsil Avanti Phenyl 3 Micron	
402018	Exsil Avanti Phenyl 5 Micron	





# Avanti BDS

145 Å,

0.68 cc/g,

186 m<sup>2</sup>/g 104m<sup>2</sup>/ml

## Type B Silica and Reversed Phases

- *Alternative to Hypersil BDS range of phases.*
- *Acid, Base and Chelate Deactivated.*
- *Type B phase for difficult compounds.*
- *Wide range of phases.*
- *Available in 1.5, 3 and 5 µm particle sizes.*

The Avanti BDS range was developed to meet the need for a range of base deactivated reversed phases based on a Type B silica which are less retentive than the standard 80 and 100 ranges and provide a closer match to current established commercial BDS 120 - 150Å media.

C18, C8 and CN phases are available in industry standard 3 and 5 µm particle sizes and are fully end capped.

### **Avanti BDS Quattro.**

A polar embedded phase that gives excellent peak shape and low retention for difficult bases at pH 7. Acids, bases and chelates are readily eluted as sharp peaks at pH 2 using TFA.

### **Acids and Bases on Avanti BDS Quattro**

**Phase:** Avanti BDS Quattro 3µm

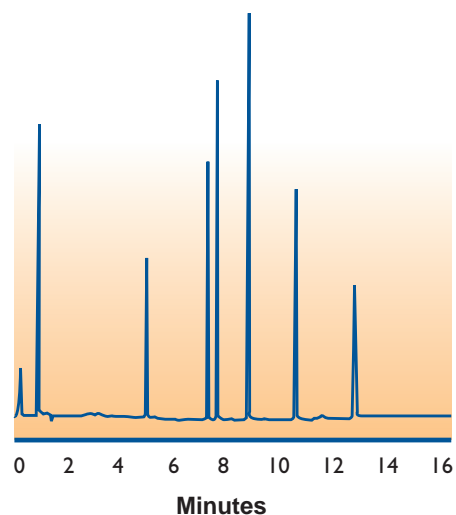
**Column:** 100 x 4.6 mm

**Eluent :** 5 to 100 % MeCN, 0.1% TFA  
in 15 minutes.

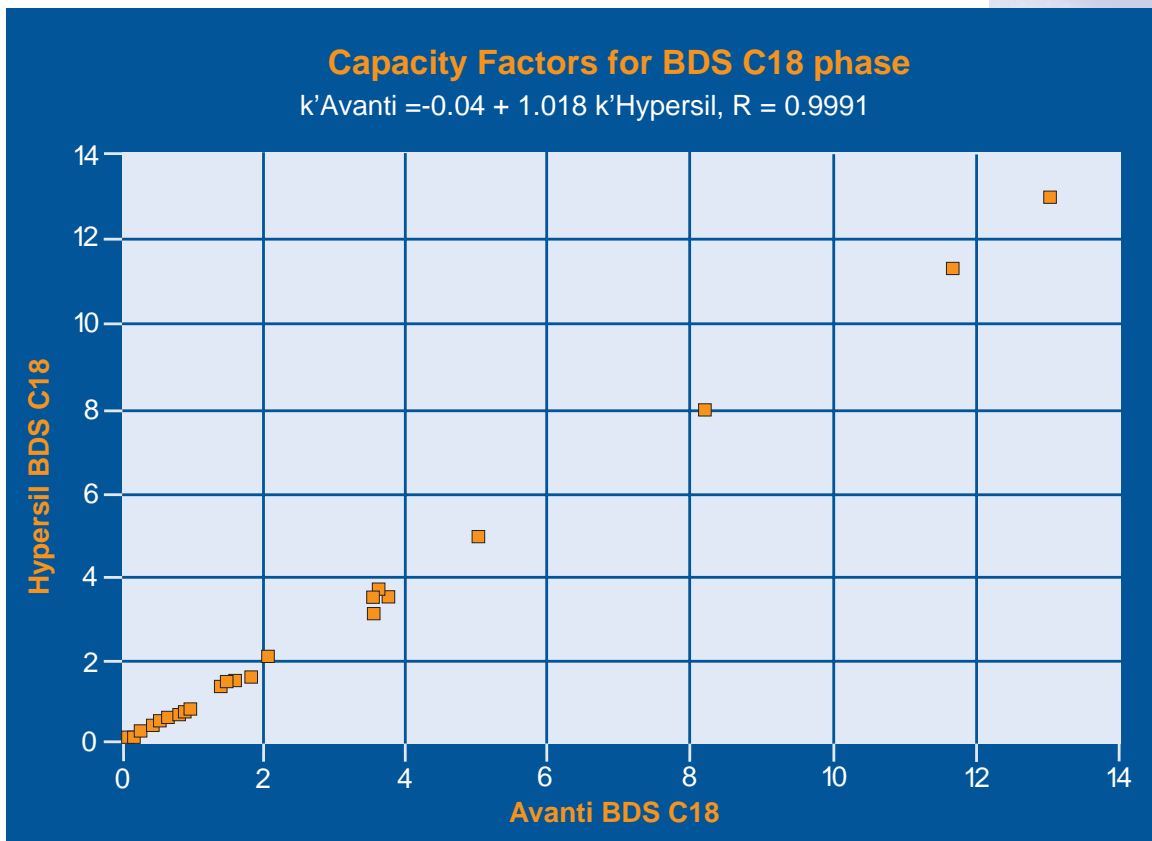
**Flowrate:** 1 ml/min

**Sample (in elution order):**

Nicotine, Quinine, Doxepin, Amitriptyline,  
t-Cinnamic acid, 4-Butylbenzoic acid and  
4-Octylbenzoic acid.



CAT NO.	Description	
402039	EXSIL AVANTI C18 BDS 3 Micron	
402049	EXSIL AVANTI C18 BDS 5 Micron	
402040	EXSIL AVANTI C8 BDS 3 Micron	
402041	EXSIL AVANTI C8 BDS 5 Micron	
402042	EXSIL AVANTI CN BDS 3 Micron	
402043	EXSIL AVANTI CN BDS 5 Micron	
402044	EXSIL AVANTI PHENYL BDS 3 Micron	
402045	EXSIL AVANTI PHENYL BDS 5 Micron	
402046	EXSIL AVANTI BDS QUATTRO 3 Micron	
402047	EXSIL AVANTI BDS QUATTRO 5 Micron	



## Type A Silica and Bonded Phases

- *Alternative to Spherisorb*
- *Available in 3,5 and 10  $\mu\text{m}$  particle sizes.*

Although the Exsil 80 and Exsil 100 ranges provide a reliable alternative to Spherisorb, some of the phases have been found to no longer be sufficiently close for some applications. This has led us to develop the Clasico range that draws upon our experience with the 80/100 range to design the closest alternative to Spherisorb for a limited range of phases.

These are currently ODS-2 , ODS-1, C8 and CN.

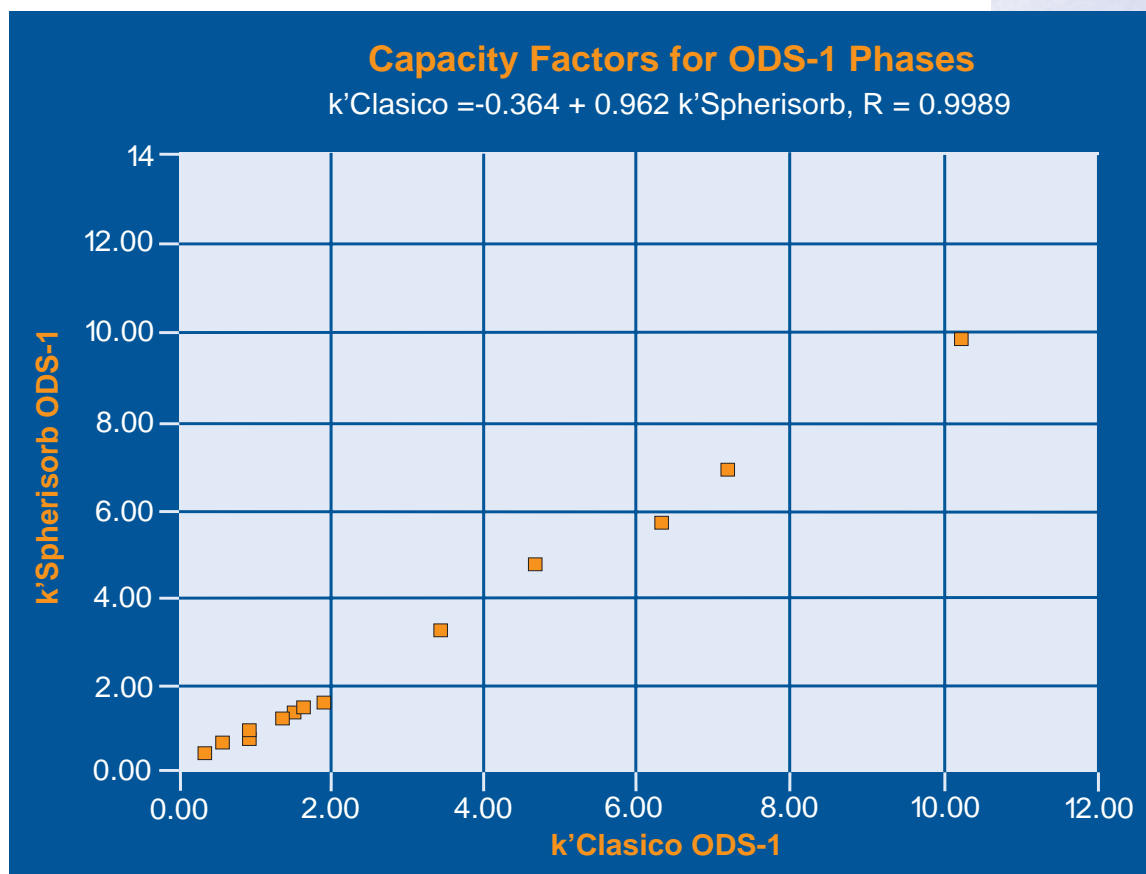
Other phases are in development and we can supply these for specific problems where the Exsil 80/100 equivalent is not fully compatible.

The tables below indicate the most appropriate alternative to each Spherisorb phase.

<b>Spherisorb</b>	<b>Clasico</b>
ODS-2	ODS-2
ODS-1	ODS-1
C8	C8
Nitrile	Nitrile

<b>Spherisorb</b>	<b>Exsil 80 or 100</b>
C1	C1
C6	C6
ODS-1 Classic	ODS-1
Amino	Amino
Phenyl	Phenyl
SAX	SAX
SCX	SCX

CAT NO.	Description	
21227U	EXSIL CLASICO ODS-1 3 Micron	
21228U	EXSIL CLASICO ODS-1 5 Micron	
21229U	EXSIL CLASICO ODS-2 3 Micron	
21230U	EXSIL CLASICO ODS-2 5 Micron	
21231U	EXSIL CLASICO C8 3 Micron	
21232U	EXSIL CLASICO C8 5 Micron	
21208U	EXSIL CLASICO CN 3 Micron	
21233U	EXSIL CLASICO CN 5 Micron	
21224U	EXSIL CLASICO ODS-1 10 Micron	
21225U	EXSIL CLASICO ODS-2 10 Micron	
21226U	EXSIL CLASICO C8 10 Micron	
21206U	EXSIL CLASICO CN 10 Micron	



# Exsil 80

90 Å,

0.51 cc/g,

226 m<sup>2</sup>/g 150 m<sup>2</sup>/ml

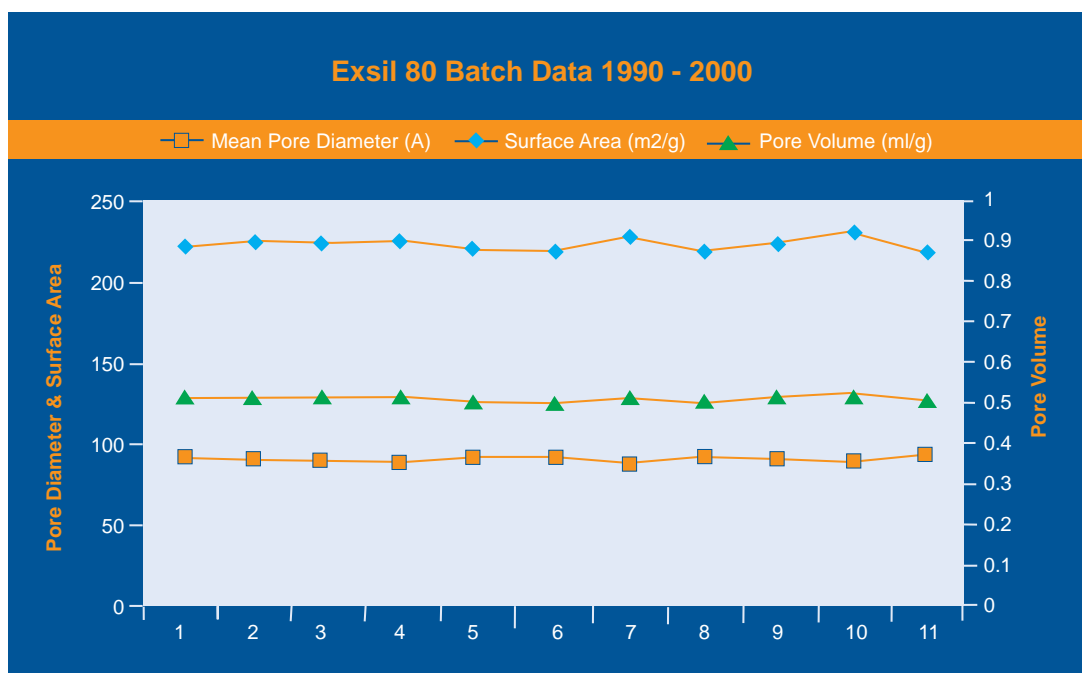
Type A Silica and Bonded Phases

- *Alternative to Spherisorb*
- *Available in 1.5, 3, 5 and 10 µm particle sizes.*

The Exsil 80 range has a higher surface area and greater retention than the original Exsil 100 which in some instances provides a better alternative to Spherisorb.

*New for the year 2000 is the addition of a 1.5µm ODS phase to allow faster separations of current applications. When used with appropriate hardware, efficiencies of over 200,000 plates/m are achievable in 3 to 5 cm columns.*

The range of phases continues to provide a comprehensive selection for all standard applications.



CAT NO.	Description	
O80303	EXSIL ODS 80Å 1.5 Micron	
O80300	EXSIL SILICA 80Å 3 Micron	
O80301	EXSIL AMINO 80Å 3 Micron	
O80302	EXSIL NITRILE 80Å 3 Micron	
O80308	EXSIL OCTYL 80Å 3 Micron	
O80311	EXSIL TMS (C1) 80Å 3 Micron	
O80318	EXSIL ODS 80Å 3 Micron	
O80325	EXSIL HEXYL 80Å 3 Micron	
O80392	EXSIL NITRILE HL 80Å 3 Micron	
O80398	EXSIL ODS-1 80Å 3 Micron	
O80399	EXSIL PHENYL 80Å 3 Micron	
O80500	EXSIL SILICA 80Å 5 Micron	
O80501	EXSIL AMINO 80Å 5 Micron	
O80502	EXSIL NITRILE 80Å 5 Micron	
O80503	EXSILNITRILE ENDCAPPED 80Å 5Micron	
O80506	EXSIL HEXYL 80Å 5 Micron	
O80508	EXSIL OCTYL 80Å 5 Micron	
O80511	EXSIL TMS (C1) 80Å 5 Micron	
O80518	EXSIL ODS 80Å 5 Micron	
O80521	EXSIL SAX 80Å 5 Micron	
O80522	EXSIL SCX 80Å 5 Micron	
O80592	EXSIL NITRILE HL 80Å 5 Micron	
O80598	EXSIL ODS-1 80Å 5 Micron	
O80599	EXSIL PHENYL 80Å 5 Micron	
O81000	EXSIL SILICA 80Å 10 Micron	
O81002	EXSIL NITRILE 80Å 10 Micron	
O81008	EXSIL OCTYL 80Å 10 Micron	
O81018	EXSIL ODS 80Å 10 Micron	
O81021	EXSIL SAX 80Å 10 Micron	
O81098	EXSIL ODS-1 80Å 10 Micron	
O81099	EXSIL PHENYL 80Å 10 Micron	
O80101	EXSIL AMINO 80Å 10 Micron	

# Exsil 100

100 Å,

0.52 cc/g,

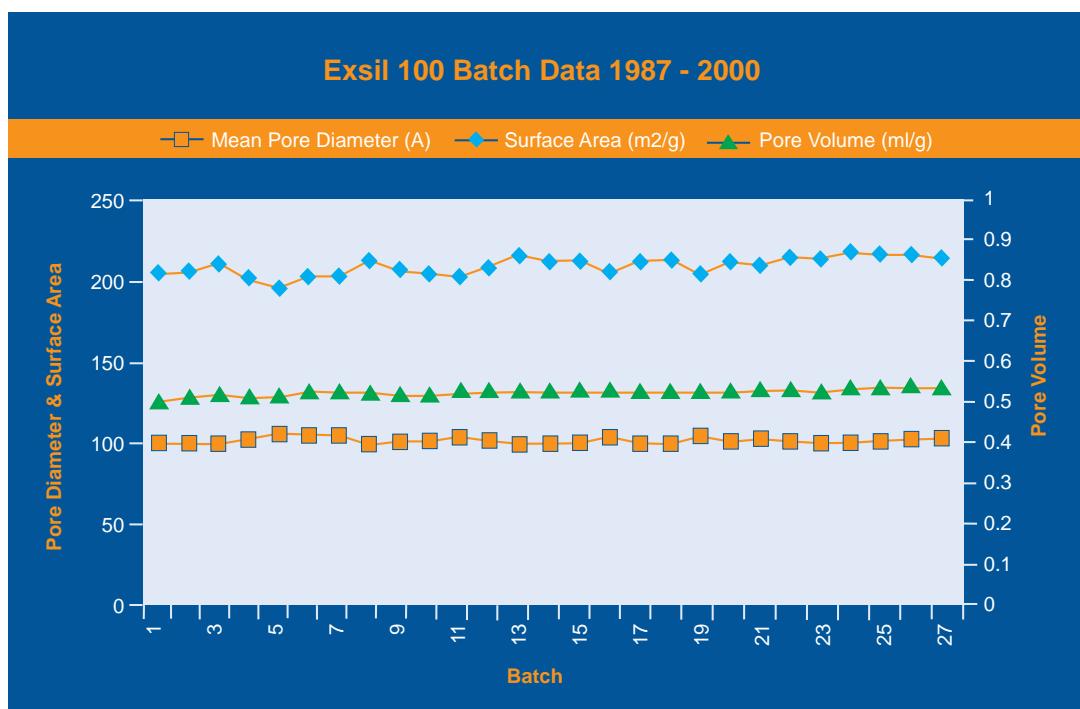
208 m<sup>2</sup>/g 137 m<sup>2</sup>/ml

## Type A Silica and Bonded Phases

- *Alternative to Spherisorb*
- *Available in 1.5, 3, 5 and 10 µm particle sizes.*
- *Widest range of bonded phases.*

The original Exsil 100 range was developed to provide an alternative to Spherisorb type products. The extensive range of bonded phases includes novel phases such as the ODS-B and Octyl-B which are so deactivated that they can chromatograph strong bases in buffer free eluents.

The range of phases continues to provide a comprehensive selection for all standard applications.



<b>CAT NO.</b>	<b>Description</b>	
100304	EXSIL SILICA 100Å 1.5 Micron	
100307	EXSIL AMINO 100Å 1.5 Micron	
100118	EXSIL RP-18AB 100Å 1.5 Micron	
100117	EXSIL RP-18 100Å 1.5 Micron	
100300	EXSIL SILICA 100Å 3 Micron	
100301	EXSIL AMINO 100Å 3 Micron	
100302	EXSIL NITRILE 100Å 3 Micron	
100308	EXSIL OCTYL 100Å 3 Micron	
100311	EXSIL TMS C1 100Å 3 Micron	
100318	EXSIL ODS 100Å 3 Micron	
100338	EXSIL OCTYL-B 100Å 3 Micron	
100339	EXSIL OCTYL-AB 100Å 3 Micron	
100348	EXSIL ODS-B 100Å 3 Micron	
100349	EXSIL ODS-AB 100Å 3 Micron	
100398	EXSIL ODS-1 100Å 3 Micron	
100399	EXSIL PHENYL-HL 100Å 3 Micron	
100500	EXSIL SILICA 100Å 5 Micron	
100501	EXSIL AMINO 100Å 5 Micron	
100502	EXSIL NITRILE 100Å 5 Micron	
100503	EXSIL NITRILE HL 100Å 5 Micron	
100507	EXSIL HEXYL 100Å 5 Micron	
100508	EXSIL OCTYL 100Å 5 Micron	
100511	EXSIL TMS (C1) 100Å 5 Micron	
100518	EXSIL ODS 100Å 5 Micron	
100521	EXSIL SAX 100Å 5 Micron	
100522	EXSIL SCX 100Å 5 Micron	
100526	EXSIL ODS-1 100Å 5 Micron	
100538	EXSIL OCTYL-B 100Å 5 Micron	
100539	EXSIL OCTYL-AB 100Å 5 Micron	
100542	EXSIL DIOL 100Å 5 Micron	
100548	EXSIL ODS-B 100Å 5 Micron	
100549	EXSIL ODS-AB 100Å 5 Micron	
100599	EXSIL PHENYL-HL 100Å 5 Micron	
101001	EXSIL AMINO 100Å 10 Micron	
101002	EXSIL NITRILE 100Å 10 Micron	
101004	EXSIL SILICA 100Å 10 Micron	
101008	EXSIL OCTYL 100Å 10 Micron	
101011	EXSIL TMS (C1) 100Å 10 Micron	
101018	EXSIL ODS 100Å 10 Micron	
101021	EXSIL SAX 100Å 10 Micron	
101022	EXSIL SCX 100Å 10 Micron	
101038	EXSIL OCTYL-B 100Å 10 Micron	
101039	EXSIL OCTYL-AB 100Å 10 Micron	
101048	EXSIL ODS-B 100Å 10 Micron	
101049	EXSIL ODS-AB 100Å 10 Micron	
101098	EXSIL ODS-1 100Å 10 Micron	
101099	EXSIL PHENYL-HL 100Å 10 Micron	



# Exsil PLUS

100 Å and 300 Å,

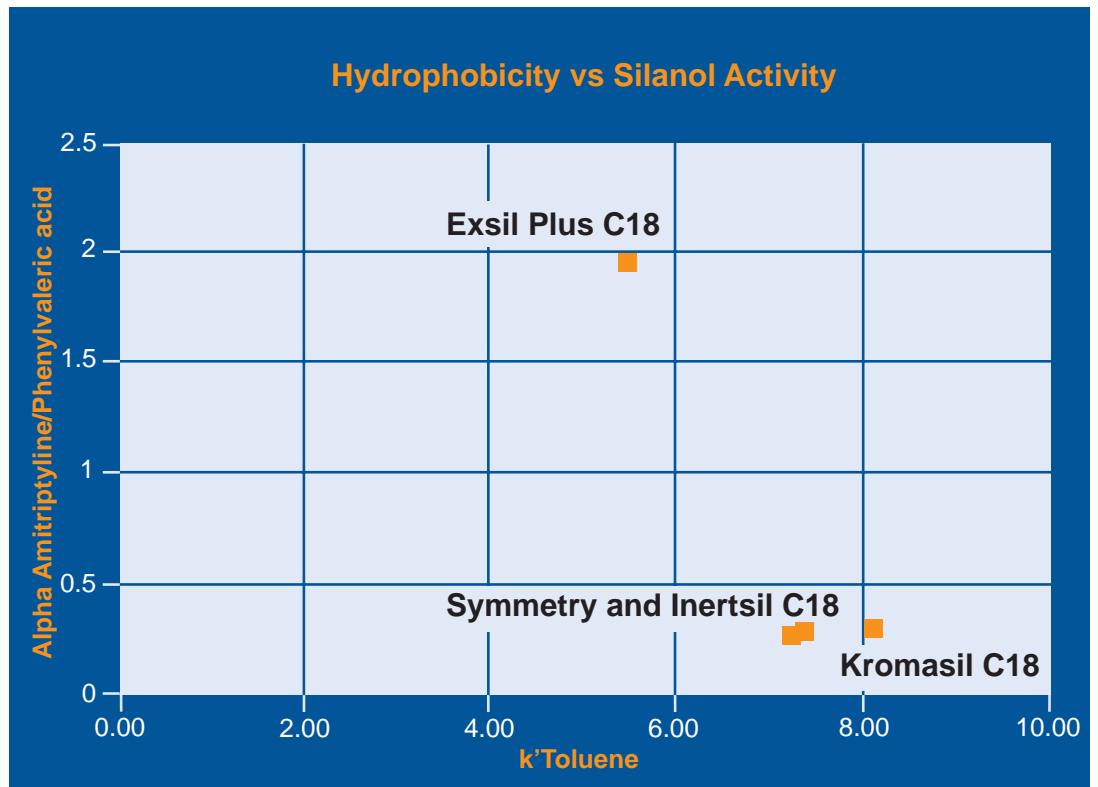
0.52 cc/g and 0.78cc/g

208 m<sup>2</sup>/g 137 m<sup>2</sup>/ml and 100 m<sup>2</sup>/g 50m<sup>2</sup>/ml

Type B Silica and Bonded Phases

- Type B versions of Exsil 100 and 300.
- Deactivated for Bases and Chelates.
- Available in 3, 5 and 10 µm particle sizes.
- Silica and ODS.

Type B versions of current Exsil products which provide superior results for difficult bases and chelates. The ODS phase provides an alternative selectivity to current Type B phases due to increased silanol activity.



CAT NO.	Description	
200509	EXSIL - PLUS 100Å 1.5 Micron	
200501	EXSIL - PLUS SILICA 100Å 3 Micron	
200502	EXSIL - PLUS SILICA 100Å 5 Micron	
200503	EXSIL - PLUS SILICA 100Å 10 Micron	
200510	EXSIL - PLUS ODS 100Å 5 Micron	
200506	EXSIL - PLUS SILICA 300Å 3 Micron	
200507	EXSIL - PLUS SILICA 300Å 5 Micron	
200508	EXSIL - PLUS SILICA 300Å 10 Micron	

#### Acids and Bases on Exsil 100 ODS and Exsil Plus ODS

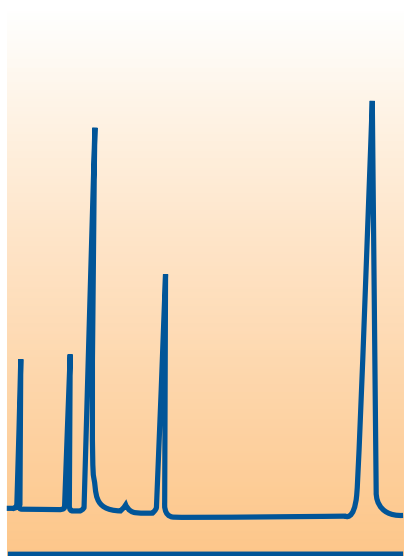
**Column:** 150 x 4.6 mm

**Eluent :** 50 % MeCN/50%, 0.05M KH<sub>2</sub>PO<sub>4</sub>, pH3

**Flowrate:** 2 ml/min

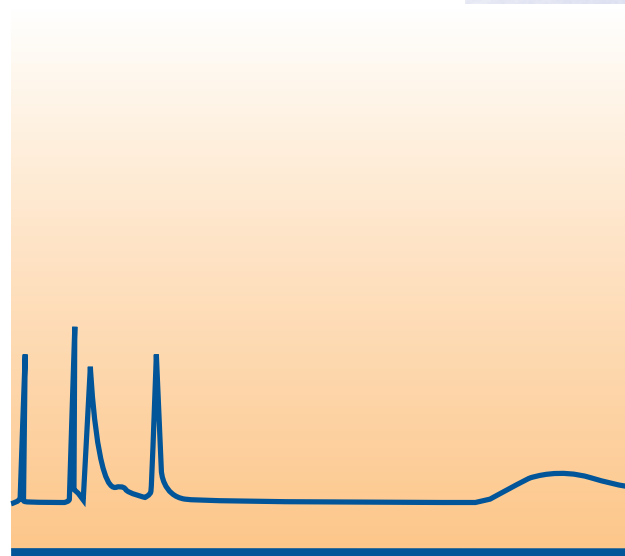
**Sample:** Uracil, Pyridine, Dimethylaniline, Butylbenzoic acid.

#### Exsil Plus 100/5 ODS



0 1 2 3 4 5  
Minutes

#### Exsil 100/5 ODS



0 1 2 3 4 5 6 7 8  
Minutes

# Exsil 300

300 Å,

0.78 cc/g,

100 m<sup>2</sup>/g 50 m<sup>2</sup>/ml

**Silica and Bonded Phases**

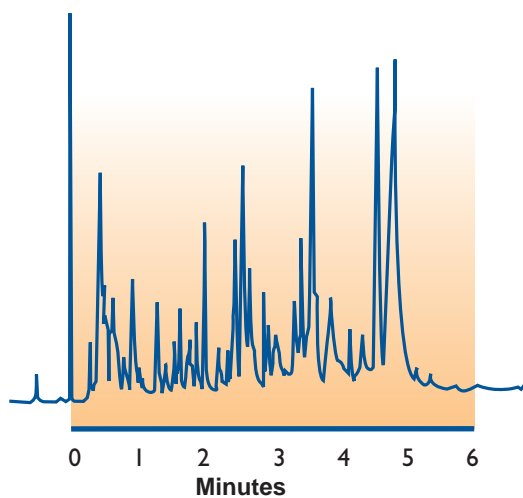
- *Alternative to Vydac TP.*
- *Available in, 3, 5, 7 and 10 µm particle sizes.*
- *Wide range of bonded phases.*
- *The only 300 Å media available in 3µm.*

A robust, spherical, alternative to Vydac TP phases for the separation of biological macromolecules.

A complete range of reversed phase media ( ODS, Octyl and Butyl ) are complimented by the unique High Affinity Anion Exchanger ( HAAX ) for protein separation and the polymeric PAH phase for polyaromatic hydrocarbon analysis.

The availability of 3µm phases brings fast analysis to the biochemist.

Fast Tryptic Digest Analysis on 50 x 4.6 mm 300/3 C8



CAT NO.	Description
300300	EXSIL SILICA 300Å 3 Micron
300304	EXSIL BUTYL 300Å 3 Micron
300308	EXSIL OCTYL 300Å 3 Micron
300318	EXSIL ODS 300Å 3 Micron
300319	EXSIL PAH 300Å 3 Micron
300360	EXSIL HAAX 300Å 3 Micron
300500	EXSIL SILICA 300Å 5 Micron
300504	EXSIL BUTYL 300Å 5 Micron
300508	EXSIL OCTYL 300Å 5 Micron
300518	EXSIL ODS 300Å 5 Micron
300519	EXSIL PAH 300Å 5 Micron
300716	EXSIL SILICA 300Å 7 Micron
300719	EXSIL PAH 300Å 7 Micron
300760	EXSIL HAAX 300Å 7 Micron
301000	EXSIL SILICA 300Å 10 Micron
301004	EXSIL BUTYL 300Å 10 Micron
301008	EXSIL OCTYL 300Å 10 Micron
301018	EXSIL ODS 300Å 10 Micron

