



ZEOCHEM®

## ZEOprep®

the irregular silica gel with tight specifications  
and high mechanical stability

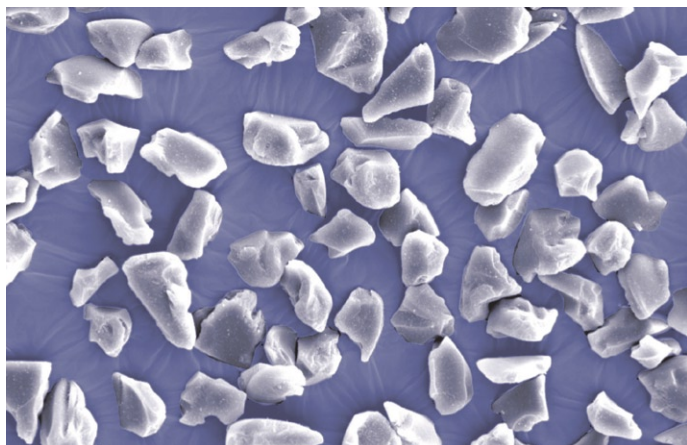




## ZEOprep® – the silica gel of choice for preparative chromatography

### bare silica gel

ZEOprep® is the brand name of a series of irregularly shaped porous silicas, specifically manufactured for use in liquid chromatography.



SEM of irregular ZEOprep® 60

The production process for ZEOprep® products starts on a large scale and applies closely controlled conditions, enabling a very high degree of product quality and reproducibility, both essential requirements for the intended applications.

The available particle size range of ZEOprep® allows the scale-up of separation processes from laboratory to production scale. The special milling technology yields particles having virtually rounded edges, resulting in less abrasion and thus less fines. This keeps the backpressure in your column low and reduces channeling effects.

### Product overview

ZEOprep®	40	60	90	110	300
Pore diameter (nm)	4	6	9	11	30
Spec. surface area (m <sup>2</sup> /g)	600	500	400	360	90
Pore volume (ml/g)	0.6	0.8	0.9	1.0	0.7
Tapped bulk density (g/l)	570	485	415	400	470
Av. water content (%)	2 – 4				
pH	7				
Particle sizes (µm)	15 – 25 / 25 – 40 / 40 – 63 / 60 – 200 / 200 – 500				

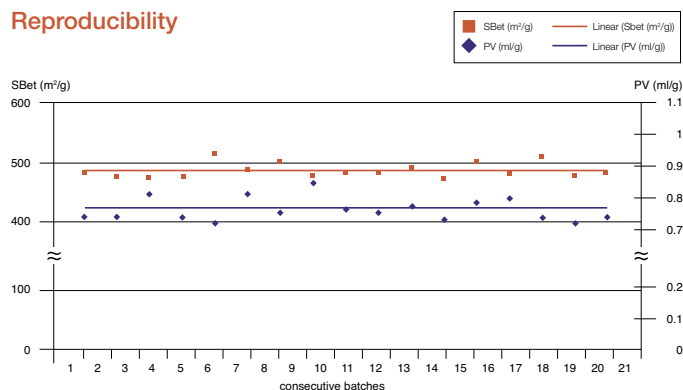
Another advantage of ZEOprep® is the very low fraction of under- and oversize particles: typically > 90 % of the particles are within the given particle size range.

The present product range comprises pore sizes from 40 to 300 Å and particle sizes from 15 to 500 µm. The typical water content is 2 – 4 %.

High reproducibility from batch to batch makes ZEOprep® one of the most reliable materials for process chromatography and flash applications.

An exceptionally narrow pore size distribution is a further benefit. This all together means for you optimal and reproducible separations run after run and batch after batch.

### Reproducibility



Reproducibility of specific surface area (m<sup>2</sup>/g) and of pore volume (ml/g) of ZEOprep® 60

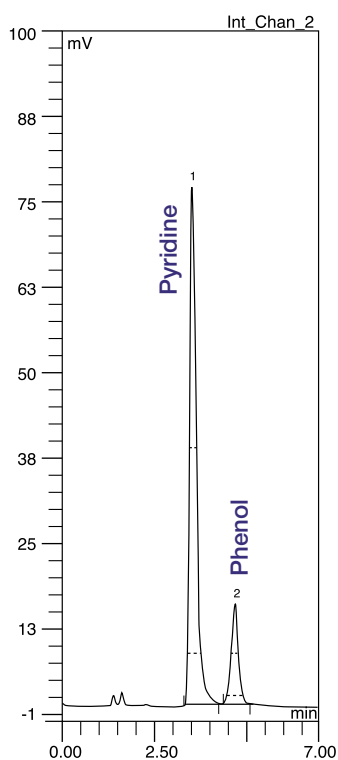
In addition special grades are available, for example:

- Activated (less than 2 % water content)
- Hydrated (4 – 6 % water content)
- Purified (additional acid-washing)
- Deactivated (increased Ca-content)

## bonded material

ZEOCHEM's surface modification technology allows the bonding of all existing silica gel products independently of shape, pore and particle size.

Controlling not only the bonding technique but also the manufacturing of the base silica is the key to success for process scale applications with bonded material.



A long and outstanding experience, combined with large batch capabilities, brings Zeochem in a unique position to fulfil the demands of process applications. Batch-to-batch deviations are thus reduced to a minimum.

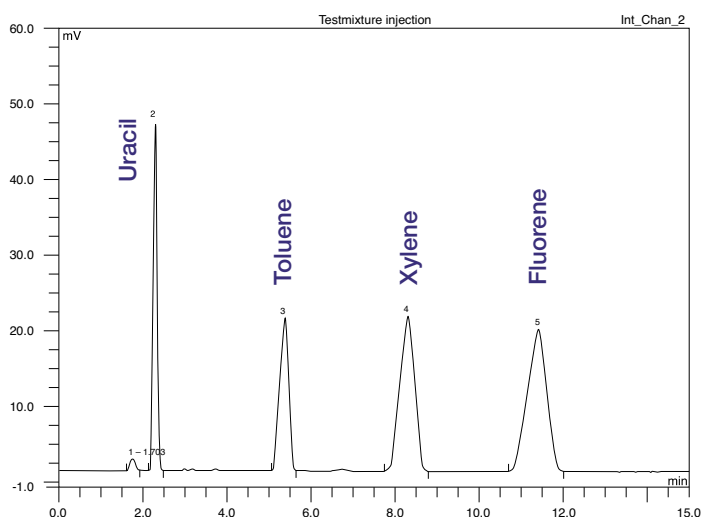
The quality of the bonding is controlled by the carbon load of the bonded product and by the phenol/pyridine test (The retention time of phenol has to be longer than that of pyridine (ratio  $t_{R(\text{phenol})} / t_{R(\text{pyridine})} > 1$ ). In case of a poor bonding quality the basic pyridine can interact with free acidic OH-groups of the silica surface, resulting in longer retention time and significant tailing.

Test-chromatogram **ZEOprep® 90 C18**, 15 – 25  $\mu\text{m}$   
(1ml/min  $\text{CH}_3\text{CN}/\text{H}_2\text{O}$  50/50 250 x 4.6 mm column)

## Advantages

- Large batch sizes (170 kg / batch)
- High carbon load reproducibility
- Endcapped and non-endcapped silicas
- C18, C8, C4,  $\text{NH}_2$ , CN

**ZEOprep®** bonded phases are the bonded silica gel of choice where efficiency, reproducible results and cost effectiveness are a must.



Test-chromatogram **ZEOprep® 90 C18**, 15 – 25  $\mu\text{m}$   
(1ml/min  $\text{CH}_3\text{CN}/\text{H}_2\text{O}$  75/25, 250 x 4.6 mm column)  
 $h = 2.2$

## Product overview

**ZEOprep®** is available with the following bonding (other particle sizes and phases are available upon request):

ZEOprep®	60 C18	60 C8	90 C18	90 $\text{NH}_2$	90 CN	90 C8	300 C4
Surface load functional group ( $\mu\text{mol}/\text{m}^2$ )	2.7	3.7	3.0	3.5	4.9	3.6	4.8
Carbon content (%)	20.1	13.5	18.7	4.5	7.6	11.0	2.0
Tapped bulk density (g/l)	740	690	620	560	570	560	580
Particle sizes ( $\mu\text{m}$ )	15 – 25 40 – 63 60 – 200						
Na/Ca/Fe/Pb (ppm)	50 / 50 / 5 / <1						

**Would you like to receive further information?**

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