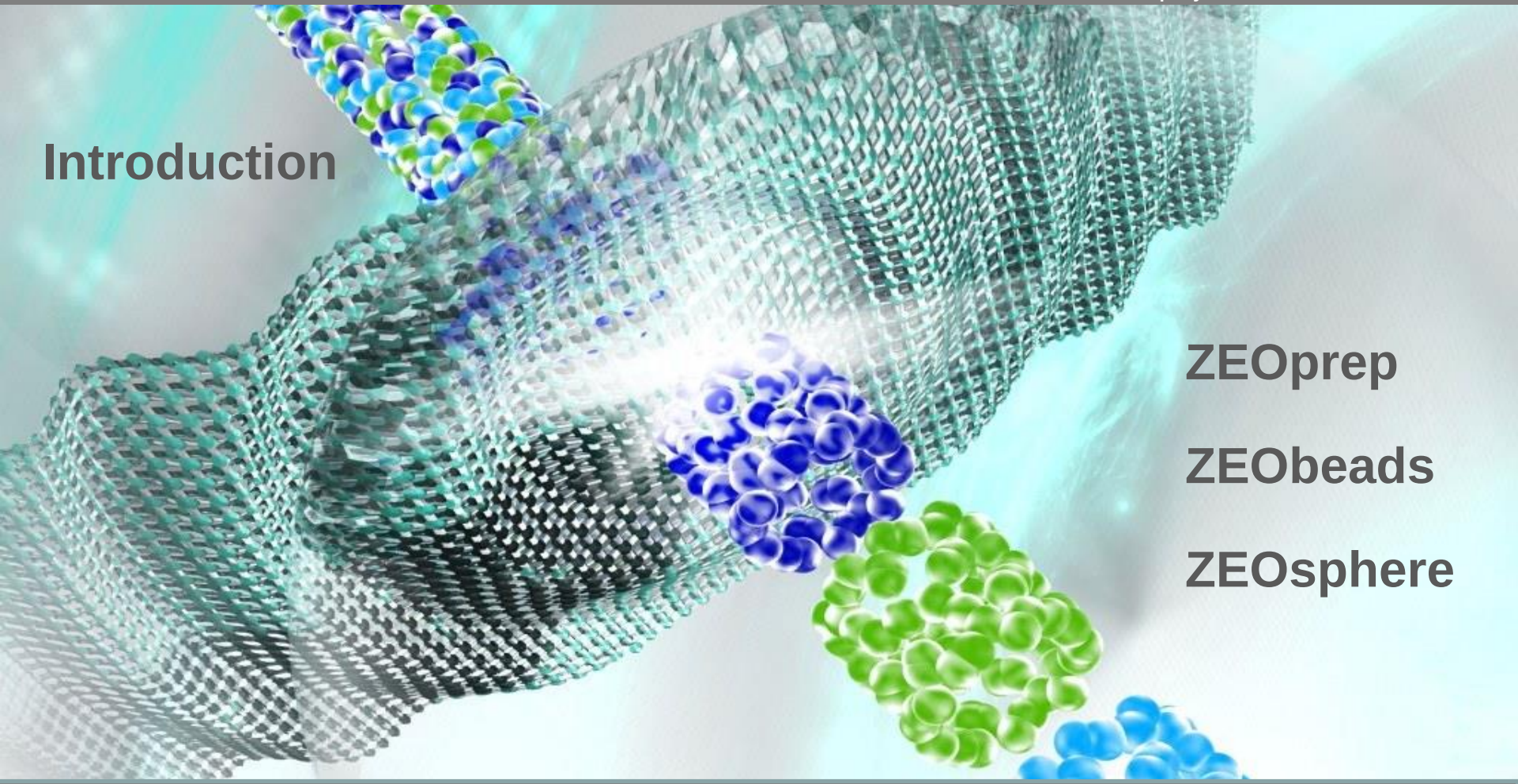
ZEOCHEM®

A Company of CPH HOLDING AG



Chromatography Gels

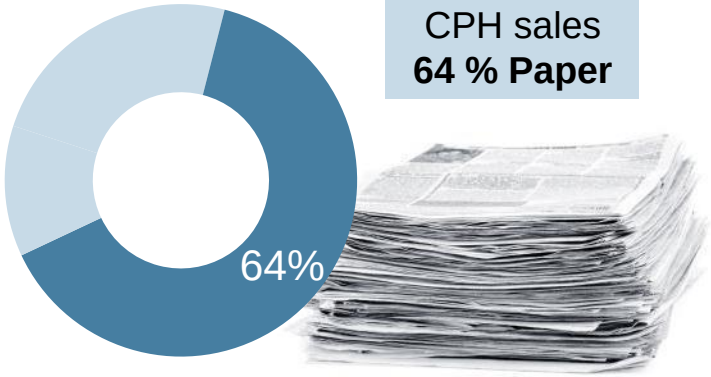
CPH Chemie + Papier Holding AG

Our brands

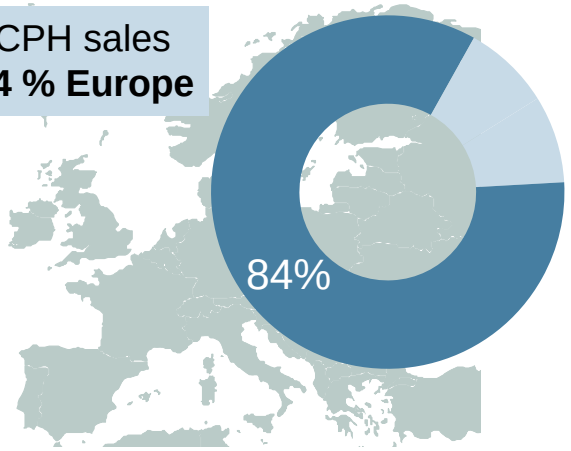
Chemistry	Paper	Packaging
Zeochem CU Deutero + Agro AG Chemie Uetikon AG	Perlen Papier AG	Perlen Packaging

CPH at a glance

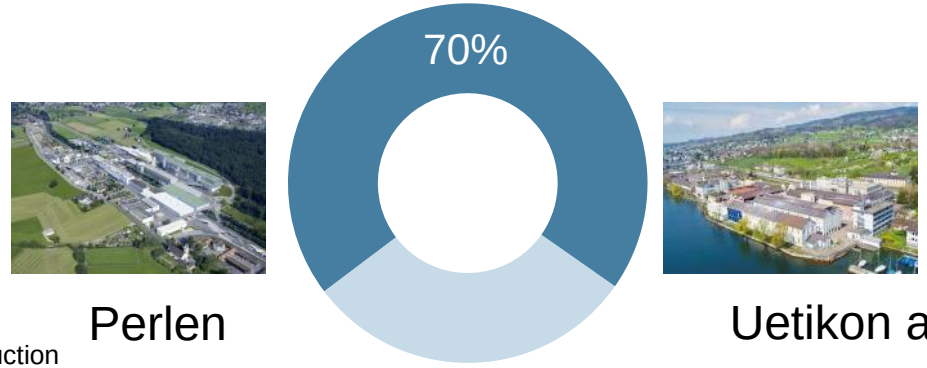
CPH sales
64 % Paper



CPH sales
84 % Europe



CPH value added
70 % Swiss Francs



Perlen

Uetikon a/S

CPH key figures

in CHF million	2013	2014	Change
Net sales	481.3	492.5	+ 2.3%
Chemistry	59.2	60.2	+ 1.7%
Paper	305.7	314.4	+ 2.9%
Packaging	116.4	117.8	+ 1.2%
EBITDA	30.9	50.8	+ 64.5%
EBIT before impairment	-26.6	16.0	
EBIT	-277.9	16.0	
Net result for the year	-271.5	10.5	

Milestones

1818	The Schnorf brothers in Uetikon (CH) begin with the production of sulphuric acid and iron and copper vitriol
1881	The Schnorf Family invests in the paper manufacturer Perlen (founded in 1873)
1940	Industrial production of silica gels starts in Uetikon (CH)
1971	Formation of CPH Chemie + Papier Holding AG
1973	First industrial production of silica gels used for Chromatography Gels
1979	Formation of Zeochem in Louisville, Kenntucky, USA, as joint venture with UCI in order to produce zeolites (wholly owned since 1997)
1996	First industrial production of bonded silica gels in Uetikon (CH)
2014	Perlen Packaging decides to build a new production facility in China
2014	Launch of ZEOsphere® DRP
2015	Launch of ZEObeads

Chemistry division

ZEOCHEM®

CU Deutero + Agro AG

Chemie Uetikon AG

Location Uetikon

Switzerland
Canton of Zurich

Production
- Molecular sieves
- Chromatography gels
- Deuterated solvents
- Fertilizers

108 personnel

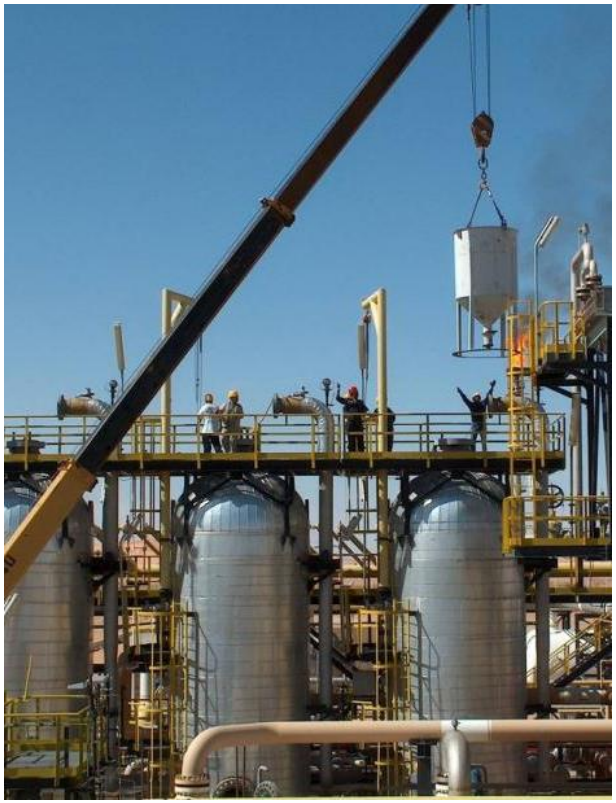
Location Louisville

USA
Kentucky

Production
- Molecular sieves

72 personnel

Purification of natural gas, production of ethanol, industrial gas and medical oxygen



- Molecular Sieves
- Specialty Zeolites

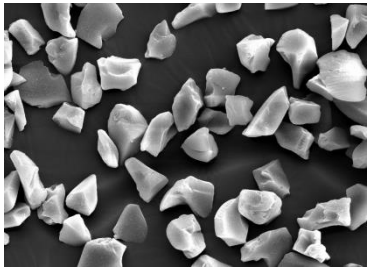
Filling of a purification plant for natural gas

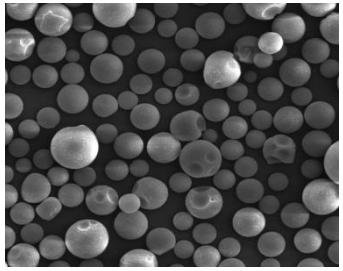
Medical oxygen production

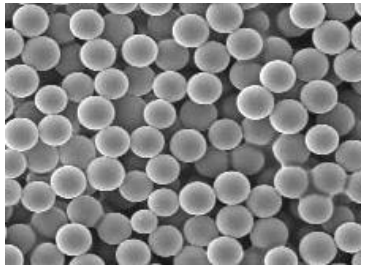
Purification of natural products, food, cosmetics, nutraceuticals and active pharmaceutical ingredients

(www.novasep.com)

Chromatography Gels







Separation Technologies: our work – our life – our passion

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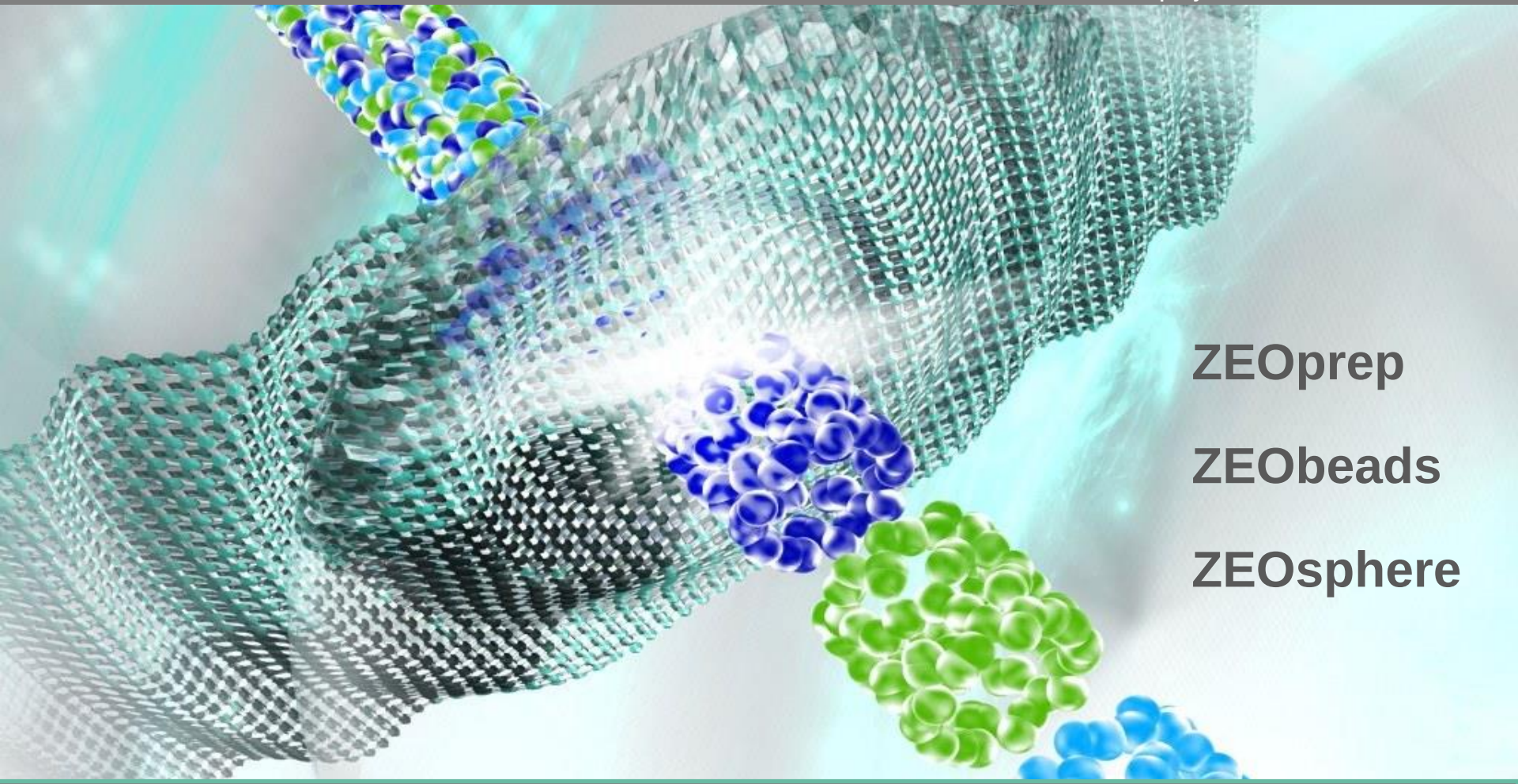
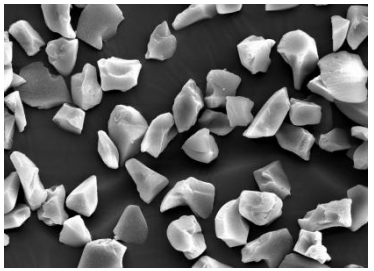


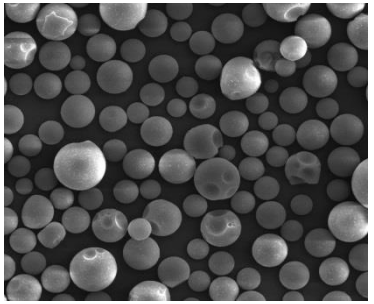
Chromatography Gels

Zeochem's Chromatography Gels

Zeochem's silica gels are amorphous porous silica gels in various forms (irregular, beads, spherical), used as industrial column packing materials for the purification of natural products, food, cosmetics, nutraceuticals and pharma/medical products.



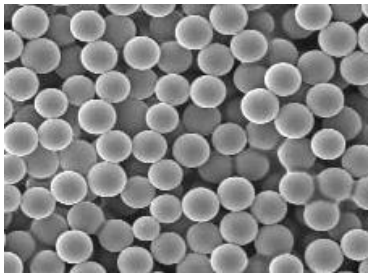
Zeochem's silica gels are preferably applied as chromatography media in industrial chromatography such as preparative liquid chromatography (LC) flash chromatography, analytical and preparative high pressure liquid chromatography (HPLC), supercritical fluid chromatography (SFC) and other chromatographic technologies and/or as scavengers.



ZEOprep: Amorphous porous silica gel in irregular shape

ZEObeads: Amorphous porous silica as micro beads

ZEOsphere: Amorphous porous silica in spherical shape



Additionally Zeochem offers Rubingel, a silica used as high performance desiccant in the food, nutraceutical and pharma industry.

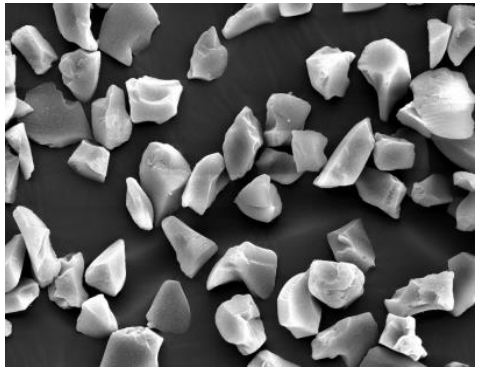
Zeochem's Chromatography Gels

		unbonded	bonded						
			C18	C8	C4	Phenyl	NH2	DIOL	SH	CN
ZEOprep®	irregular shape	■	■	■			■	■	■	■
ZEObeads	microbeads		■	■			■	■		
ZEOsphere®	spherical *)		■	■	■	■	■	■		■

*) also available: ZEOsphere® DRP: Doped reversed phase (DRP) silica gels are reversed phase chromatography gels, merged with different amounts of ion exchanger. Both ionic and hydrophobic functionalities on the same surface increase significantly the performance compared to conventional chromatography phases.

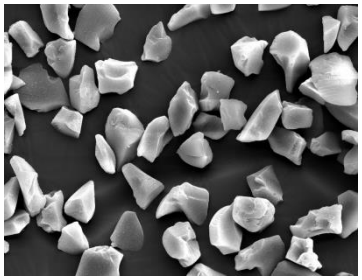
ZEOprep®
Amorphous porous Silica Gel in irregular shape

Manufactured for over 40 years, ZEOprep irregular Silica is one of the most widely used chromatography sorbents worldwide. ZEOprep Silica is produced at Zeochem's ISO-9001 certified facility in Switzerland. Strict QC controls from raw material to finished product ensure high quality and high lot-to-lot reproducibility.



Used as industrial column packing material for general purification of natural products, food, cosmetics as well as in pre-purification of pharmaceutical and nutraceutical ingredients. Bonded phases are preferably used in liquid chromatography, flash chromatography and solid phase extraction.

ZEOprep®
Amorphous porous Silica Gel in irregular shape



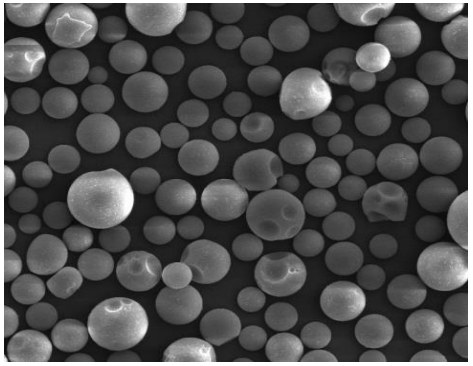
	Pore Size	Particle Size	ZEOprep bonded: Derivatization C18	C8	NH2	DIOL	SH	ZEOprep unbonded: moisture content <1%	2-4%	4-6%
ZEOprep	**60 Å**	15 - 25 µm	▭	▭	▭	▭	▭	▭	■	▭
		25 - 40 µm	■	■	■	■	▭	▭	■	▭
		35 - 70 µm	▭	▭	▭	▭	▭	▭	■	▭
		40 - 63 µm	■	■	■	■	■	▭	■	■
		60-200 µm	▭	▭	▭	▭	▭	▭	■	▭
		200-500 µm	▭	▭	▭	▭	▭	▭	■	▭
ZEOprep	**90 Å**	15 - 25 µm	■	▭	▭	▭	▭	▭	▭	▭
		25 - 40 µm	▭	▭	▭	▭	▭	▭	▭	▭
		35 - 70 µm	▭	▭	▭	▭	▭	▭	▭	▭
		40 - 63 µm	■	▭	▭	▭	▭	▭	▭	▭
		60-200 µm	■	▭	▭	▭	▭	▭	▭	▭
		75-315 µm	▭	▭	▭	▭	▭	▭	▭	▭
		200-500 µm	▭	▭	▭	▭	▭	▭	■	▭

■ Products standard available ▭ Products not standard available

ZEObeads
Amorphous porous Silica Gel as micro beads

NEW

ZEObeads Silica is produced at Zeochem's ISO-9001 certified facility in Switzerland. Strict QC controls from raw material to finished product ensure high quality and high lot-to-lot reproducibility.



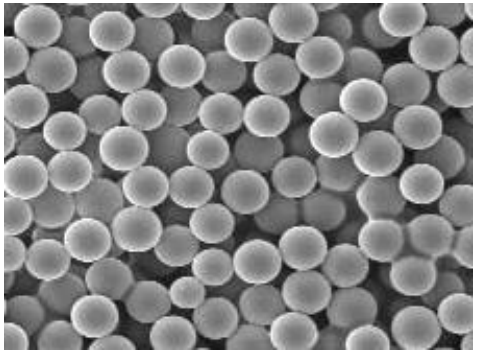
ZEObeads are used as column packing material for flash chromatography, solid phase extraction and as scavenger.

			ZEObeads bonded			
	Pore Size	Particle Size	Derivatization C18	C8	NH2	DIOL
ZEObeads	**50 Å**	20 - 30 µm	▬	▬	▬	▬

▬ Products standard available

ZEOsphere®
Amorphous porous Silica Gel in spherical shape

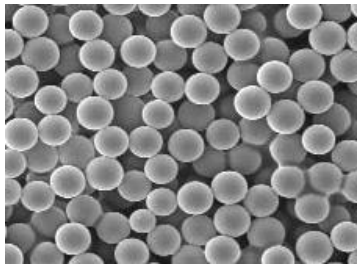
ZEOsphere Silica is produced at Zeochem's ISO-9001 certified facility in Switzerland. Strict QC controls from raw material to finished product ensure high quality and high lot-to-lot reproducibility.



ZEOsphere is used as industrial column packing material for the purification of active pharmaceutical ingredients such as peptides, small proteins, oligonucleotides and its precursors.

ZEOsphere phases are preferably used in high pressure liquid chromatography (HPLC) supercritical fluid chromatography (SFC) and other chromato-graphic based separation technologies.

ZEOsphere®
Amorphous porous Silica Gel in spherical shape



Currently the following products are available:

			ZEOsphere bonded						
	Pore Size	Particle Size	Derivatization C18	C8	C4	NH2	DIOL	CN	Phenyl*
ZEOsphere	100 Å	5 µm	■	■	■	■	■	■	■
		10 µm	■	■	■	■	■	■	■
		15 µm	■	■	■	■	■	■	■
	120 Å	5 µm	■	■	■	■	■	■	■
		10 µm	■	■	■	■	■	■	■
	200 Å	10 µm	■	■	■	■	■	■	■
	300 Å	10 µm	■	■	■	■	■	■	■

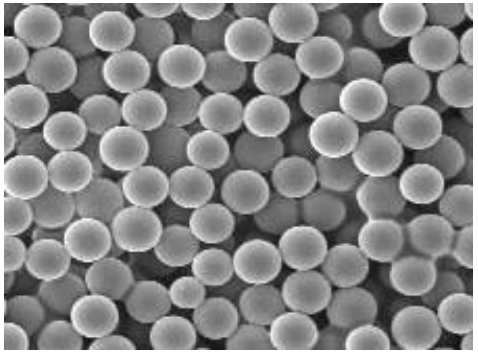
* Phenyl: including Phenyl-Hexyl and Phenyl-Butyl

■ Products standard available ■ Products not standard available

ZEOsphere® DRP
Amorphous porous Silica Gel in spherical shape

NEW

Doped reversed phase (DRP) silica gels are reversed phase chromatography gels, merged with different amounts of strong Anion exchanger (**A**) or strong Cation exchanger (**C**). Both ionic and hydrophobic functionalities on the same surface increase significantly the performance compared to conventional chromatographic phases.



Faster, better and cheaper purification are achieved – with one single phase.

			ZEOsphere DRP bonded									
	Pore Size	Particle Size	Derivatization									
			A2.5	A5	A7.5	A10	A15	A50	C5	C10	C15	C50
ZEOsphere DRP	**120 Å**	10 µm	■	■	■	■	■	■	■	■	■	■

■ Products standard available ■ Products not standard available

Zeochem – Production Sites

Zeochem AG
Uetikon, Switzerland

- Headquarters
- Production Site Molecular Sieves
- Production Site Silica Gels
- Sales & Marketing Silica Gels
- Research & Development Silica Gels

Zeochem L.L.C.
Louisville KY, USA

- Production Site Molecular Sieves
- Sales & Marketing Molecular Sieves
- Research & Development Molecular Sieves