

Separation Technologies: our work – our life – our passion

ZEOCHEM[®]

A Company of CPH HOLDING AG

Introduction

ZEOprep

ZEObeads

ZEOsphere

Chromatography Gels

CPH Chemie + Papier Holding AG



Our brands

Chemistry

Paper

Packaging

Zeochem

CU Deutero + Agro AG
Chemie Uetikon AG

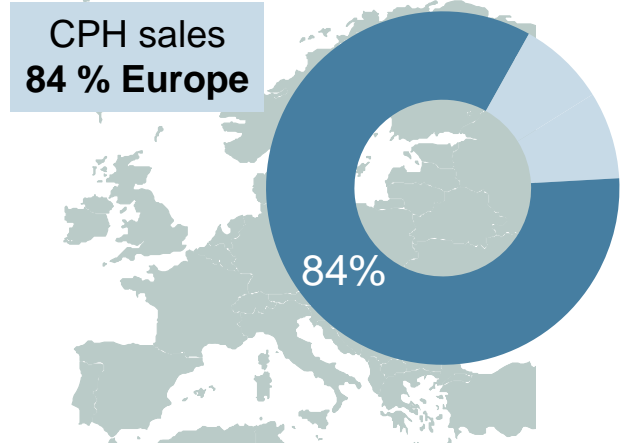
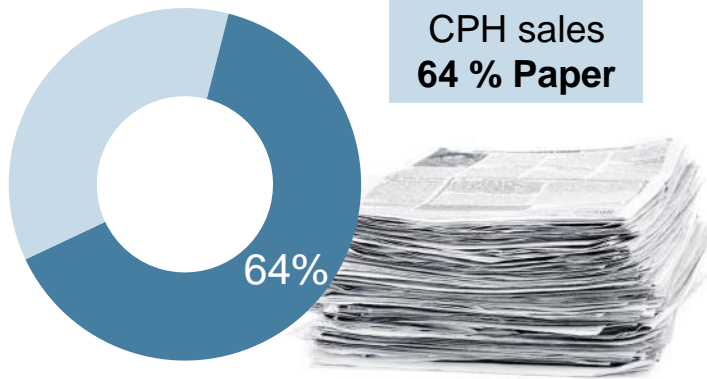
Perlen Papier AG

Perlen Packaging

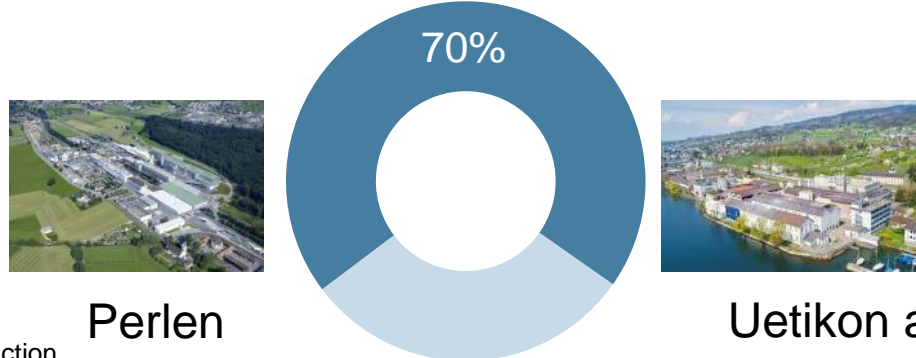
ZEOCHEM[®]



CPH at a glance



CPH value added
70 % Swiss Francs



CPH key figures

in CHF million	2012	2013
Net sales	488,7	481,3
Chemistry	67,1	59,2
Paper	314,3	305,7
Packaging	106,5	116,4
EBITDA	38,1	30,9
Shareholder's equity	709,8	434,3
Balance sheet total	972,4	681,8
Investments in tangible assets	10,9	18,2
Dividend per share (in CHF)	13	13

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
- 1979 Formation of Zeochem in Louisville, Kentucky, 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

73 personnel



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

- Molecular Sieves
- Specialty Zeolites



(www.weinmann.de)

Filling of a purification plant for natural gas

Medical oxygen production

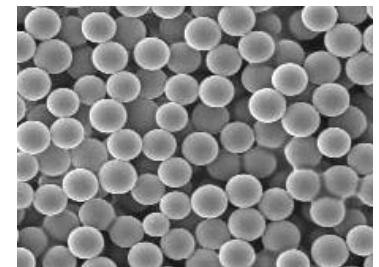
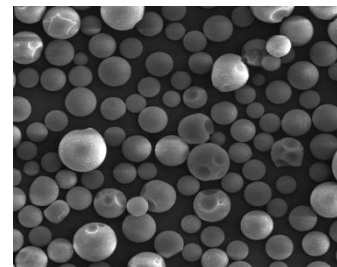
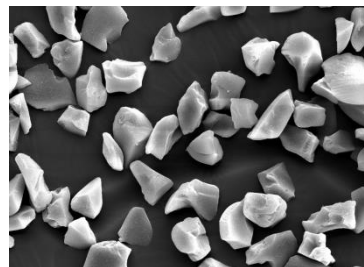
Purification of natural products, food, cosmetics, nutraceuticals and active pharmaceutical ingredients



(www.novasep.com)



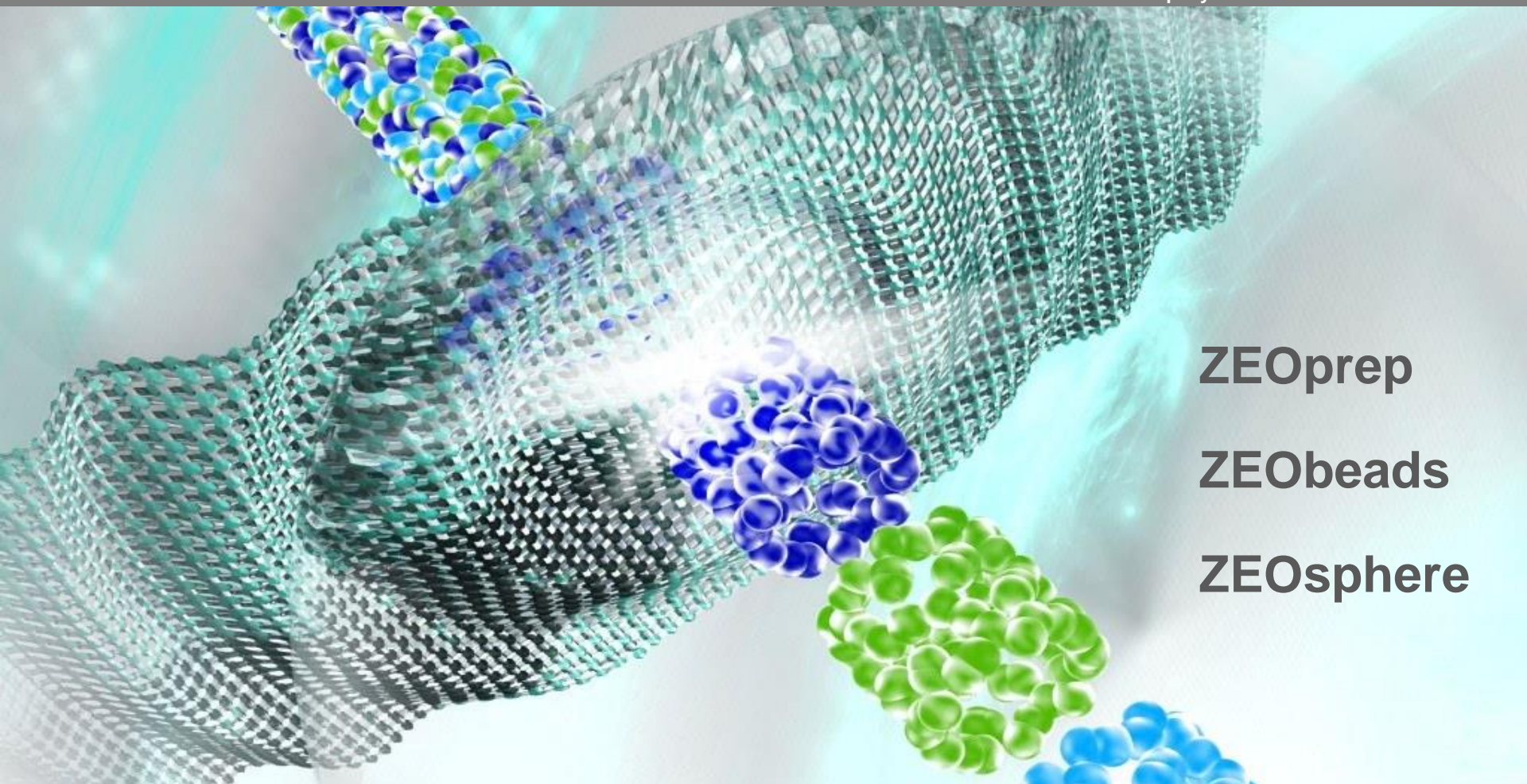
- Chromatography Gels



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ZEOprep

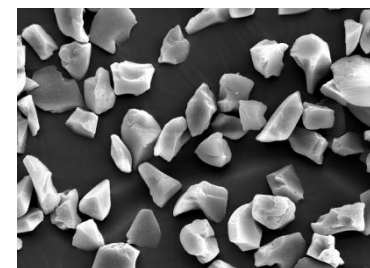
ZEObeads

ZEOsphere

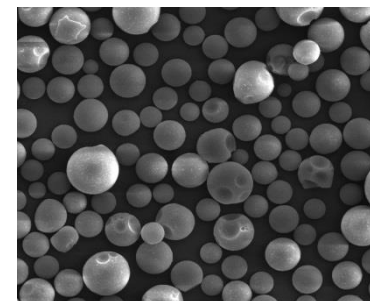
Chromatography Gels

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.



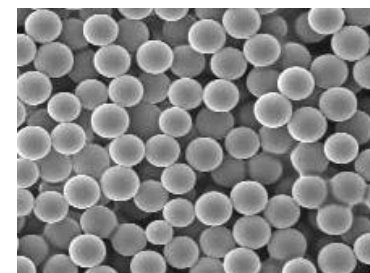
Zeochem's silica gels are preferably applied as chromatography media in industrial chromatography such as preparative liquid chromatography (LC) flash chromatography, analytical and preparative high pressure liquid chromatography (HPLC), supercritical fluid chromatography (SFC) and other chromatographic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

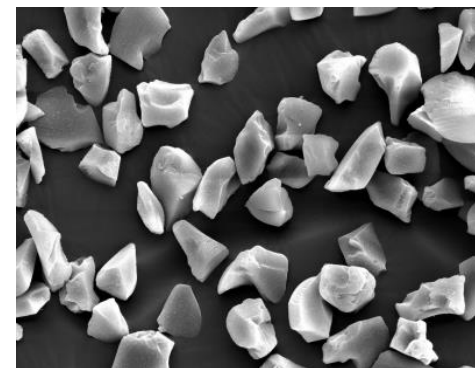
		unbonded	bonded							
			C18	C8	C4	Phenyl	NH2	DIOL	SH	CN
ZEOprep®	irregular shape	■	■	■			■	■	■	■
ZEObeads	microbeads		■	■			■	■		
ZEOsphere®	spherical *)		■	■	■	■	■	■		■

*) 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 can be obtained, giving a significant performance increase compared with conventional chromatography phases.

ZEOprep[®] **Amorphous porous Silica Gel in irregular shape**

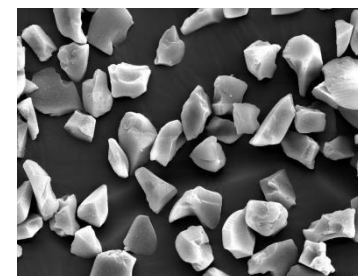
Manufactured for over 35 years, ZEOprep irregular Silica is one of the most widely used chromatography sorbents worldwide. ZEOprep Silica is produced at Zeochem's ISO-9001 certified facility in Switzerland. Strict QC controls from raw material to finished product ensure high lot-to-lot reproducibility and tightly controlled specifications.

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



			ZEOprep bonded					ZEOprep unbonded		
	Pore Size	Particle Size	Derivatization					moisture content		
			C18	C8	NH2	DIOL	SH	<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 are available ex stocks.

■ Products are available within 4-6 weeks.

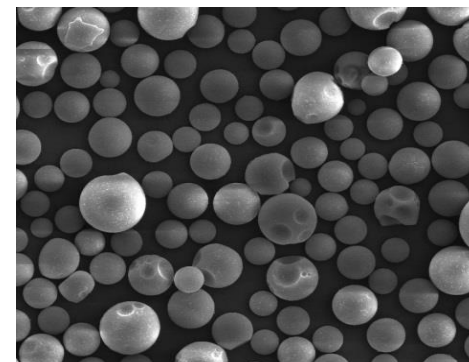


ZEObeads

Amorphous porous Silica Gel as micro beads

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

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 are usually available ex stocks.

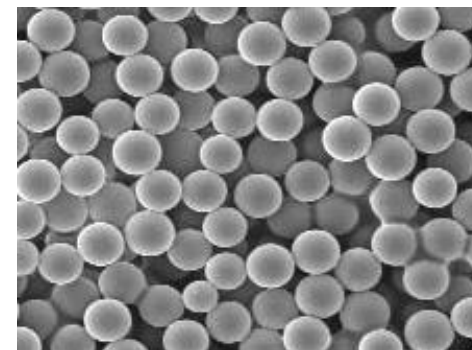
ZEOsphere[®]

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 lot-to-lot reproducibility and tightly controlled specifications.

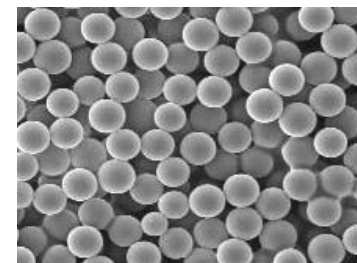
ZEOsphere is used as industrial column packing material for the purification of active pharmaceutical ingredients such as peptides, small proteins, oligonucleotides and its precursors.

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



ZEOsphere[®]

Amorphous porous Silica Gel in spherical shape



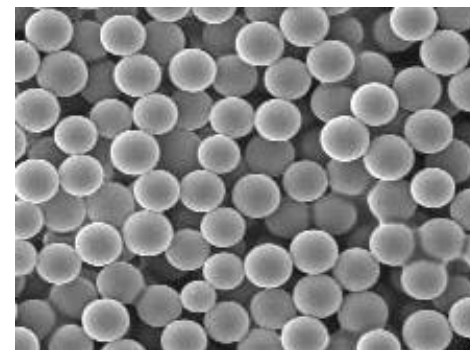
Currently the following products are available:

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



ZEOsphere® DRP Amorphous porous Silica Gel in spherical shape

Doped reversed phase (DRP) silica gels are reversed phase chromatography gels, merged with different amounts of ion exchanger. Both ionic and hydrophobic functionalities can be obtained, giving a significant performance increase compared with conventional chromatography phases.



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

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

■ Products are available ex stocks.

■ Products are available within 4-6 weeks.

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