



*The German
spirit of quality
since 1854*



SiLibeads® Ceramic Beads deliver exceptional performance in grinding, dispersion and mixing processes. With their high density, hardness and chemical stability, they ensure efficient energy transfer, precise particle size control and minimal contamination, even in demanding applications such as coatings, pigments, ceramics, batteries and pharmaceuticals.

SiLibeads®
...better grinding



Application Overview

Tailored solutions for demanding industries



Grinding of API nanosuspensions

SiLibeads® ceramic beads enable contamination-free, high-precision wet grinding of pharmaceutical APIs.

Minimal wear and autoclave compatibility allow efficient nanometer-scale size reduction to improve bioavailability.



Cell disruption

Efficient wet milling enables reproducible disruption of microbial, plant and other biological cells.

Durable and chemically resistant beads ensure precise breakage while preserving sample integrity.



Grinding, Commi-nution & Dispersion

SiLibeads® ceramic beads enable efficient wet grinding and reliable dispersion.

Durable and chemically resistant, they ensure consistent results in paints, coatings, inks, chemicals and pharmaceuticals.



Efficient Grinding of Battery Materials

High-performance ceramic beads enable precise wet grinding of lithium/silicon compounds, carbon and aluminum oxide.

Durable beads ensure low contamination, precise particle control and high purity for optimal battery results.



Efficient Grinding of Ores & Minerals

Resource-saving wet grinding of gold, platinum, silver, rare-earth and base metals.

High abrasion resistance and purity help maximise yield, minimise contamination and improve overall process efficiency.



Agrochemical Wet Grinding

Wet grinding optimises active ingredients for fertilisers, pesticides and specialty chemicals.

High-purity ceramic beads minimise contamination, control particle size and boost efficacy and bioavailability of final formulations.



Precision Grinding for Ceramics

Precise wet grinding for consumer and technical ceramics.

High purity and abrasion resistance ensure uniform particle size, minimise contamination and enhance durability and performance.



Coatings & Filler Industry

SiLibeads® ceramic beads provide contamination-free dispersion and fine grinding of pigments and fillers.

High wear resistance and chemical stability ensure uniform color and reliable formulation performance.

Customised solutions for every industry

We provide solutions tailored to your specific requirements. Discover the benefits of our products across a wide range of applications. Arrange a free consultation with our SiLi team:

+49 9277 9940 or **silibeads@sili.eu**.

Ceramic Beads

Applications of Tungsten Carbide Zirconium Oxide Beads

- for energy-efficient grinding by high density and impact energy
- for products where standard grinding media are at their limits in terms of hardness and wear resistance
- for the preparation of high-purity electrical products
- for stable, consistent performance in highly viscous and demanding formulations, achieving very fine particle sizes and long-lasting grinding behavior



Ø = 0.2 – 0.3 mm

Type
TC 9.5

Applications of Cerium-stabilised Zirconium Oxide Beads

- for wet milling and dispersing of paints, coatings and dyes
- for organic and inorganic pigments
- for the grinding and dispersing of agrochemicals
- for ultra-fine grinding and preparation of ceramics, glazes, minerals, metals and nanomaterials
- for colouring of textiles, plastics, foodstuffs and customised technical applications



Ø = 1.0 – 1.2 mm

Type
ZC 6.1

Applications of Yttrium-stabilised Zirconium Oxide Beads

- for wet milling and dispersing of paints, coatings and dyes
- for grinding of minerals like titanium dioxide, calcium carbonate
- for high quality ceramic products: electroceramics, glazes, magnetic ceramics, medical ceramics and technical ceramic components
- for ultra-fine processing of battery materials, including cathode and anode materials for lithium-ion (and other) batteries



Ø = 0.2 – 0.3 mm

Type
ZY 6.0

Applications of Zirconium Silicate Beads

- for wet milling and dispersing of paints, coatings and dyes in water-based systems
- for organic and inorganic pigments, including colouring of textiles and plastics
- for dispersing agrochemicals such as fungicides, herbicides and insecticides
- for filler processing like the preparation of whitening agents (e.g. calcium carbonate) for paper production
- for grinding of minerals and precious metals in mining applications



Ø = 0.6 – 0.8 mm

Type
ZS 4.1

Applications of high purity Alumina Beads

- for wet milling of coatings for battery components such as cathode and anode raw materials
- for wet milling of ceramic inks and hard minerals used in technical ceramics
- for autogenic milling and dispersing of Alumina products
- for aluminium oxide colour systems, ideal for dispersing of organic & inorganic pigments
- for low- to medium-viscosity suspensions, aided by the beads' low specific weight



Ø = 0.9 – 1.1 mm

Type
A 99.3



Learn more about SiliBeads®
Ceramic Beads here:
[www.sili.eu/en/products/products/
silibeads-ceramic-beads-overview](http://www.sili.eu/en/products/products/silibeads-ceramic-beads-overview)

Ceramic Beads

Type
TC 9.5



Ø = 0.2 – 0.3 mm

Mechanical Properties

Specific weight	≥ 9.2 kg/l
Young's modulus	190 GPa
Microhardness HV 0.5	≥ 1600

Material

Tungsten Carbide with Zirconium Oxide / Yttrium stabilized

Article	Size Range [mm]	Bulk Density [kg/l]
950050-WC-ZY	0.05 – 0.06	5.7
9501-WC-ZY	0.08 – 0.13	5.7
95015-WC-ZY	0.10 – 0.20	5.7
95025-WC-ZY	0.20 – 0.30	5.7
95035-WC-ZY	0.30 – 0.40	5.7
9505-WC-ZY	0.40 – 0.60	5.7

Special diameters and fractional sizes available upon request.

Type
ZC 6.1



Ø = 1.0 – 1.2 mm

Mechanical Properties

Specific weight	≥ 6.1 kg/l
Young's modulus	205 GPa
Microhardness HV 10	>1050

Material

Cerium stabilized Zirconium Oxide

Article	Size Range [mm]	Bulk Density [kg/l]	Article	Size Range [mm]	Bulk Density [kg/l]
9805	0.40 – 0.60	3.68	9813	1.20 – 1.40	3.82
9807	0.60 – 0.80	3.69	9815	1.40 – 1.60	3.84
9809	0.80 – 1.00	3.71	9817	1.60 – 1.80	3.80
9810	0.90 – 1.10	3.75	9819	1.80 – 2.00	3.80
9811	1.00 – 1.20	3.75	9821	2.00 – 2.20	3.81
9812	1.10 – 1.30	3.79	98235	2.20 – 2.50	3.83

Type
ZY 6.0



Ø = 0.2 – 0.3 mm

Mechanical Properties

Specific weight	≥ 6.0 kg/l
Young's modulus	215 GPa
Microhardness HV 10	≥ 1300

Material

Yttrium stabilized Zirconium Oxide

Article	Size Range [mm]	Bulk Density [kg/l]	Article	Size Range [mm]	Bulk Density [kg/l]
96005	0.05 – 0.06	3.62	9607	0.60 – 0.80	3.66
960095	0.08 – 0.13	3.62	9609	0.80 – 1.00	3.66
96015	0.10 – 0.20	3.62	9611	1.00 – 1.20	3.67
96025	0.20 – 0.30	3.62	9613	1.20 – 1.40	3.68
9603	0.20 – 0.40	3.63	9615	1.40 – 1.60	3.69
96035	0.30 – 0.40	3.63	9617	1.60 – 1.80	3.71
96045	0.40 – 0.50	3.64	9619	1.80 – 2.00	3.73
9605	0.40 – 0.60	3.64	Sizes > 2.00–25.0 mm on request.		

Type
ZS 4.1



Ø = 0.6 – 0.8 mm

Mechanical Properties

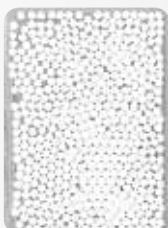
Specific weight	4.10 kg/l
Young's modulus	105 GPa
Microhardness HV 10	1000

Material

Zirconium Silicate

Article	Size Range [mm]	Bulk Density [kg/l]	Article	Size Range [mm]	Bulk Density [kg/l]
9305	0.40 – 0.60	2.39	9319	1.80 – 2.00	2.45
9307	0.60 – 0.80	2.40	9321	2.00 – 2.20	2.46
9309	0.80 – 1.00	2.41	9323	2.20 – 2.50	2.46
9311	1.00 – 1.20	2.42	9327	2.50 – 2.80	2.48
9313	1.20 – 1.40	2.43	9330	2.80 – 3.20	2.48
9315	1.40 – 1.60	2.43	9335	3.00 – 4.00	2.49
9317	1.60 – 1.80	2.44			

Type
A 99.3



Ø = 0.9 – 1.1 mm

Mechanical Properties

Specific weight	≥ 3.8 kg/l
Young's modulus	280 GPa
Microhardness HV 0.5	≥ 1600

Material

High purity Aluminium oxide

Article	Size Range [mm]	Bulk Density [kg/l]
92025-993	0.20 – 0.30	2.3
92035-993	0.30 – 0.40	2.3
9205-993	0.40 – 0.60	2.3
9210-993	0.90 – 1.10	2.3

Special diameters and fractional sizes available upon request.

