

**Filler Beads** enhance material performance and efficiency. **SiLibeads<sup>®</sup> AIR Hollow Glass Beads** reduce weight and improve insulation while supporting lower material use and CO<sub>2</sub> savings. **SiLibeads<sup>®</sup> SOLID Micro Glass Beads** provide greater scratch resistance and durability, while optimizing flow behaviour for consistent processing and lasting results.

**SiLibeads<sup>®</sup>**  
...durable and resilient products

# Application Overview

## Tailored solutions for demanding industries



### Sealants & Adhesives for Construction

SiLibeads® Filler Beads enhance **strength, layer definition** and **application consistency** while reducing **material usage** and improving **thermal and acoustic performance** in construction products.



### Composites for Building & Construction

Lightweight SiLibeads® Filler Beads reduce **weight**, boost **strength and durability**, improve **surface quality** and ensure consistent, cost-effective performance.



### Paint, Varnish & Coating Industry

SiLibeads® Filler Beads improve paints, varnishes, and coatings with better **viscosity control**, enhanced **surface structure** and improved **optical properties**, ensuring consistent performance and durability.



### Casting Resins for Industrial Applications

SiLibeads® Filler Beads enhance **flow, dimensional stability** and reduce **shrinkage**, supporting larger castings, finer details and efficient, long-term performance.



### Automotive Applications

Automotive applications, adhesives, sealants, resins and rubbers benefit from SiLibeads® Filler Beads, **enhancing consistency with high roundness and narrow size distribution** while boosting durability.



### Reflective Beads for Enhanced Safety

For over 40 years, SiLibeads® Filler Beads have improved visibility by reflecting light back to its source. Durable and versatile, they enhance safety not only in **road markings** but also in **helmets, cycling gear, safety clothing and vehicle decals**.

## 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](mailto:silibeads@sili.eu)**.

# Filler Beads

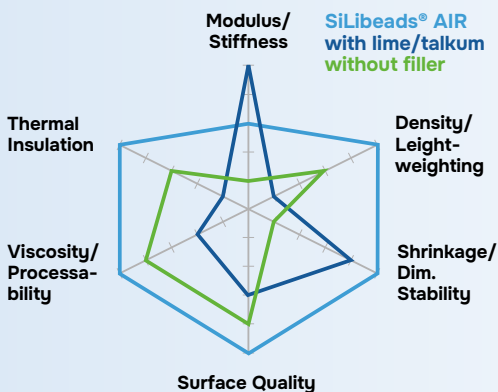
## SiLibeads® AIR Superlight Beads. Maximum Performance.

SiLibeads® AIR are ultra-light hollow glass beads that reduce weight and boost performance with a thin-walled borosilicate structure offering high strength and excellent chemical resistance.

- Lightweight solutions with outstanding mechanical stability
- Lower material use and costs
- Thermal and acoustic insulation
- High compressive strength even at very low density
- Improved flow and processability

**SiLibeads® AIR – Efficiency that pays off.**

**SiLibeads® AIR properties in polymer matrices vs. other fillers**



$\rho = 0.15 \text{ g/cm}^3$

**AIR**  
Hollow  
Glass Beads



$\rho = 0.70 \text{ g/cm}^3$

**AIR**  
Hollow  
Glass Beads

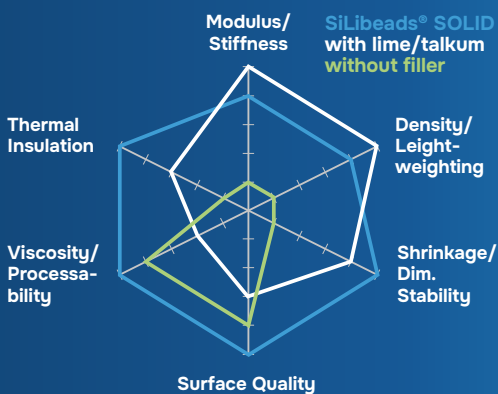
## SiLibeads® SOLID Durable Fillers. Pure Precision. Maximum Impact.

SiLibeads® SOLID are precision solid glass microspheres delivering durability, performance and clarity. Their uniform particle distribution ensures consistent processing and excellent mechanical and optical properties.

- Uniform particles ensure stable performance and consistent results
- Enhanced strength, stiffness and dimensional stability
- Durable, mechanically strong and chemically resistant
- Retroreflective effect for light-based applications
- Bright white appearance for functional and aesthetic use
- Wide particle size range (0–800  $\mu\text{m}$ ) for flexible applications
- Smooth, polished surfaces for efficient processing
- Custom silane coatings for resin and polymer compatibility

**SiLibeads® SOLID – Quality that performs.**

**SiLibeads® SOLID properties in polymer matrices vs. other fillers**



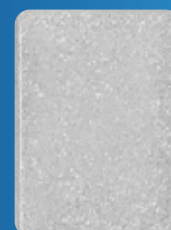
$\phi = 0 - 20 \mu\text{m}$

**SOLID**  
Micro  
Glass Beads



$\phi = 150 - 250 \mu\text{m}$

**SOLID**  
Micro  
Glass Beads



$\phi = 400 - 800 \mu\text{m}$

**SOLID**  
Micro  
Glass Beads



Learn more about Filler Beads here: [www.sili.eu/en/applications/applications/filler-materials](http://www.sili.eu/en/applications/applications/filler-materials)

# Filler Beads

## AIR Hollow Glass Beads



$\rho = 0.15 \text{ g/cm}^3$

## AIR Hollow Glass Beads



$\rho = 0.70 \text{ g/cm}^3$

### AIR Hollow Glass Beads

#### Standard Range\*\*

Article	(True) Density [g/cm <sup>3</sup> ]	Particle Sizes D10 / D50 / D90 [μm]	Crushing Strength	
			[MPa]	[psi]
8015	0.15	10 / 30 / 80	2	300
8020	0.20	15 / 30 / 80	4	500
8025	0.25	15 / 30 / 70	5	750
8032	0.32	15 / 30 / 50	14	1.500
8038	0.38	15 / 30 / 50	36	5.200
8040	0.40	15 / 35 / 55	28	3.000
8046	0.46	15 / 35 / 60	41	6.000
8050	0.50	15 / 35 / 65	42	6.000
8055	0.55	15 / 35 / 55	55	8.000
8060	0.60	15 / 35 / 60	55	8.000
8065	0.65	15 / 35 / 50	110	16.000
8070	0.70	15 / 25 / 45	124	18.000
8082	0.60	15 / 35 / 60	82	12.000
80100	1.00	15 / 35 / 55	165	24.000
80150	1.50	3 / 5 / 10	190	28.000

#### Technical Data

Size Range [μm]	10 – 150
(True) Density [g/cm <sup>3</sup> ]	0.15 – 1.50
Bulk Density [g/cm <sup>3</sup> ]	0.10 – 0.60
Rate of Floatage [%]	90 – 95 (typical)
pH-Value	8.0 – 9.5
Softening point [°C]	625
Appearance	colorless rigid spheres; white powder in bulk

#### Chemical Analysis [%]\*

SiO <sub>2</sub>	72.5
B <sub>2</sub> O <sub>3</sub>	11.5
CaO	10.0
Na <sub>2</sub> O	5.0
others	1.0

\* Reference values

\*\*Extended Range available by request

## SOLID Micro Glass Beads



$\phi = 0 - 20 \mu\text{m}$

## SOLID Micro Glass Beads



$\phi = 150 - 250 \mu\text{m}$

## SOLID Micro Glass Beads



$\phi = 400 - 800 \mu\text{m}$

### SOLID Micro Glass Beads

#### Standard Range\*\*

Article	Diameter [μm]	Bulk Density [g/cm <sup>3</sup> ]
5209	0 – 20	0.70
5210	0 – 50	1.30
5211	40 – 70	1.33
5212	70 – 110	1.37
5213	90 – 150	1.40
5214	100 – 200	1.42
5215	150 – 250	1.43
5216	200 – 300	1.44
5218	400 – 600	1.47
5219	400 – 800	1.49
5220	200 – 400	1.45
5223	300 – 400	1.46

#### Chemical Analysis [%]\*

SiO <sub>2</sub>	72.0
Na <sub>2</sub> O	13.0
CaO	9.0
MgO	4.0
others	2.0

#### Possible Silane Coatings

–	uncoated
Si1	Gamma-Methacryloxypropyltrimethoxysilane
Si2	Gamma-Glycidoxypropyltrimethoxysilane
Si3	Gamma-Aminopropyltriethoxysilane
Si4	Gamma-Mercaptopropyltrimethoxysilane
Si5	n-Octyltriethoxysilane

Also available:

### SOLID Micro High Index

Refractive Index	Grain Size [μm]	Specific Weight [g/cm <sup>3</sup> ]	Bulk Density [g/cm <sup>3</sup> ]
> 1.6	180 – 1400	2.9 – 3.1	1.6 – 1.8
> 1.9	180 – 1180	4.0 – 4.4	2.3 – 2.7
> 2.15	1 – 25	4.4 – 4.8	2.3 – 2.7

#### Chemical Analysis [%]

SiO <sub>2</sub>	34.0	13.0	–
Al <sub>2</sub> O <sub>3</sub>	14.0	–	–
TiO <sub>2</sub>	14.0	33.0	54.0
CaO	24.5	5.0	3.5
MgO	12.0	–	–
BaO	–	47.0	38.0
others	1.5	2.0	4.5

#### Technical Data

Size Range [μm]	0 – 800
Density [g/cm <sup>3</sup> ]	2.5
Bulk Density [g/cm <sup>3</sup> ]	0.7 – 1.5
Refractive Index	1.52
Roundness	≥ 0.89 (ratio width/length (x <sub>min</sub> /x <sub>max</sub> ))
Softening point [°C]	734
Melting point [°C]	1446

\* Reference values

\*\*Extended Range available by request

