

**Product Data Sheet**

First created on: 2012-06-06  
Next inspection on: 2013-06-06

Updated on: 2012-06-06  
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Produkt	SiLibeads Glass beads Type S; Microglass beads
<b>Material</b>	<p>polished Glass beads made of soda lime glass</p> <p>Specific weight: 2.50 kg/l</p> <p>Hydrolytic resistance on Glass beads: HGB 1 (based on DIN ISO 719)</p> <p>Acidic resistance on Glass beads: S3 (according to DIN 12116)</p> <p>Alcaline resistance on Glass beads: A1 (according to DIN ISO 695)</p>
<b>Application</b>	<p>Grinding and dispersing media in horizontal and vertical pearl mills for the wet grinding of paints, pigments, dyestuff, ink, agro-chemicals and minerals</p> <p>Filling material for the modification of the physical properties of thermoplast and duroplast</p> <p>Reflection beads for road marking (in diameters &gt; 0.8 mm), specially to improve the visibility at night in case of rain, Type II marking</p> <p>Polishing agent for optical and interocular lenses; diameters between 0.3 - 0.4 mm and 0.4 - 0.6 mm show excellent results.</p> <p>Glass beads for shot peening of the surface of metal, plastics, ceramics and wood</p>
<b>Technical Data</b>	
Roundness	<p>Article 52xx in size 0.1 – 0.8 mm: <math>\geq 0.89</math> (ratio width/length (<math>x_{min}/x_{max}</math>))</p> <p>Article 45xx in size 1.0 – 3.0 mm: <math>\geq 0.95</math> (ratio width/length (<math>x_{min}/x_{max}</math>))</p>
Compressive strength	up to 2.100 N (belonging to diameter)
Refractive index	1.5188
Air bubbles inside bead (> 0.3mm)	<p><math>\leq 2.5</math> %</p> <p>Visual test: internal control of 200 Glass beads by Microscope</p>
Size (Diameter)	<p>Microglass beads in size between 0 and 800 <math>\mu\text{m}</math></p> <p>Glass beads Type S in size between 0.25 – 4.40 mm (see table Standard Sizes)</p>
Transformation temperature	549 °C
Softening point (Littleton point)	734 °C
Melting point	1446 °C
Specific thermal Conductivity	1.129 W/km
Coefficient of expansion	$9.05 \cdot 10^{-6}$ (1/K) [20-400 °C]
Specific thermal capatcity	1.329 kJ/kg K [>600 °C]
Youngs-Module	63 GPa
Hardness according to Mohs	$\geq 6$
Abraison after 9 h grinding	<p>23.85 Weight-%</p> <p>(Test conditions: DRAIS laboratory mill PML H/V, Speed 13.4 m/s, Filling grade 70 Vol.%; Milling suspension: 4 kg Water, 1 kg Titandioxide, Beads: Art. 4505, 1.25 – 1.65 mm <math>\varnothing</math>)</p>

all datas are reference values

**Assessment acc. to Food Legislation**

The Glass beads are a consumer good in the sense of §2 clause 6 no. 1 German Code for Food Stuff (LFGB), Commodities and Feeding Stuff. Therefore they have to comply with the legal requirements.

The Glass beads comply with the requirements § 31 of the German Food and Feed Code (LFGB) and of the European Food Regulation 1935/2004/EC, Article 3.



The heavy metal content of the Glass beads keeps the permitted limits of RoHS

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**Standard Sizes** –special diameters available by request

Article	Diameter	Resistance to compression *)	Bulk density	Amount (pcs. per kg)
5209-7	0 – 20 µm	-----	0.70 kg/l	-----
5210-7	0 – 50 µm	-----	1.30 kg/l	-----
5211-7	40 – 70 µm	-----	1.33 kg/l	-----
5212-7	70 – 110 µm	-----	1.37 kg/l	-----
5213-7	90 – 150 µm	-----	1.40 kg/l	-----
5214-7	100 – 200 µm	-----	1.42 kg/l	-----
5215-7	150 – 250 µm	-----	1.43 kg/l	-----
5216-7	200 – 300 µm	-----	1.44 kg/l	-----
5220-7	200 – 400 µm	-----	1.45 kg/l	-----
5223-7	300 – 400 µm	-----	1.46 kg/l	-----
5218-7	400 – 600 µm	-----	1.47 kg/l	-----
5219-7	400 – 800 µm	-----	1.49 kg/l	-----
5225-7	800 – 1000 µm	-----	1.51 kg/l	-----
5226-7	1000 – 1300 µm	-----	1.51 kg/l	-----
4501	0.25 – 0.50 mm	-----	1.46 kg/l	14.486.600
45015	0.40 – 0.60 mm	-----	1.47 kg/l	6.111.500
4502	0.50 – 0.75 mm	-----	1.49 kg/l	3.129.100
4503	0.75 – 1.00 mm	-----	1.50 kg/l	1.140.300
4504	1.00 – 1.30 mm	250 – 350 N	1.51 kg/l	502.300
4505	1.25 – 1.65 mm	350 – 500 N	1.51 kg/l	250.580
4506	1.55 – 1.85 mm	500 – 650 N	1.52 kg/l	155.490
4507	1.70 – 2.10 mm	600 – 750 N	1.52 kg/l	111.370
4508	2.00 – 2.40 mm	750 – 900 N	1.53 kg/l	71.740
4510	2.40 – 2.90 mm	950 – 1100 N	1.53 kg/l	41.050
4511	2.85 – 3.45 mm	1100 – 1450 N	1.53 kg/l	24.440
4512	3.40 – 4.00 mm	1450 – 1650 N	1.53 kg/l	15.080
4513	3.80 – 4.40 mm	1700 – 2100 N	1.53 kg/l	11.080

\*) Resistance to compression: internal test with Compressive strength inspector No. 10004.1, Company Hegewald &amp; Peschke

**Chemical Analysis;** Glass beads made of soda lime glass; CAS-Nr. 65997-17-3 / EINECS 266-046-0

Name	Method	reference value in Weight-%	tolerance value in Weight-%	CAS-No.	EINECS
Silicon dioxide SiO <sub>2</sub>	DIN 51001	72.50 %	+/- 0.90	7631-86-9	231-545-4
Sodium oxide Na <sub>2</sub> O	DIN 51001	13.00 %	+/- 0.80	1313-59-3	215-208-9
Calcium oxide CaO	DIN 51001	9.06 %	+/- 0.28	1305-78-8	215-138-9
Magnesium oxide MgO	DIN 51001	4.22 %	+/- 0.10	1309-48-4	215-171-9
Aluminium oxide Al <sub>2</sub> O <sub>3</sub>	DIN 51001	0.58 %	+/- 0.18	1344-28-1	215-691-6

**Additional Information**

Storage indication	Store in a dry manner in closed (original) container by room temperature. We recommend storage life of maximum 3 years.
Disposal	Please consult national laws and local regulations in force for disposal or landfill.
Safety advice	High risk of slipping due to spillage of product
Product information	Sample card ... glass beads for technical applications, Safety Data Sheet SiLibeads Type S, Microglass; Test Reports
<b>Manufacturer/Supplier</b>	Sigmund Lindner GmbH; Oberwarmensteinacher Straße 38; 95485 Warmensteinach/GERMANY Phone: +49-9277-9940      Web: <a href="http://www.sili.eu">www.sili.eu</a> Fax: +49-9277-99499      E-Mail: <a href="mailto:sili@sigmund-lindner.com">sili@sigmund-lindner.com</a>