

## Product Data Sheet

 First created on: 2016-08-01  
 Next inspection on: 2017-06-30

 Updated on: 2016-08-01  
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Product	SiLibeads Glass beads Type M
<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 2 (based on DIN ISO 720)</p> <p>Acid resistance on Glass beads (<math>\geq 9.5</math> mm): S1 (according to DIN 12116)</p> <p>Acid resistance on Glass beads (<math>\leq 9.0</math> mm): S3 (according to DIN 12116)</p> <p>Alcali resistance on Glass beads: A1 (according to DIN ISO 695)</p>
<b>Application</b>	<p>In the size range between 1.5 mm and 18.0 mm, Glass beads Type M are mainly used as stirring and mixing media in aerosol sprays, as valves for bottle closures and for the mechanical coating of small metallic pieces, through a special plating process (mechanical plating).</p> <p>Their high degree of purity allows them to reach excellent results in the grinding and dispersing of pigments, dyestuff, agro-chemicals, pharmaceuticals and cosmetic preparations.</p> <p>Glass beads Type M are further used as stilts- and filter material for construction of bubblers.</p>
<b>Technical Data</b>	
Roundness	$\geq 0.98$ ; ratio width/length ( $x_{\min}/x_{\max}$ )
Compressive strength	up to 20 kN (belonging to diameter)
Refractive index	+ 1.5
Size (Diameter)	from 1.5 mm up to 16.0 mm (see table Standard Sizes)
Transformation temperature	542 °C
Softening point (Littleton point)	719 °C
Melting point	1441 °C
Specific thermal Conductivity	1,129 W/km
Thermal expansion	$9.73 \cdot 10^{-6} \text{ K}^{-1}$ [20 °C] (Coefficient of linear expansion $\alpha$ )
Specific thermal capacity	1.312 kJ/kg K [ $>600$ °C]
Youngs-Module	65 GPa
Hardness according to Mohs	6

**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.

Microbiological requirements are fulfilled.

The heavy metal content of the Glass beads keeps the permitted limits of EU directive 2011/65/EC (RoHS).

Lead < 1000 ppm      Cadmium < 100 ppm      Chrome VI < 1000 ppm      Mercury < 1000 ppm

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Standard Sizes (special diameters by request)				
Article	Diameter	Tolerance	Bulk density	Amount (pcs. per kg)
5002	1.5 mm	+/- 0.2 mm	1.50 kg/l	226.350
5003	2.0 mm	+/- 0.2 mm	1.50 kg/l	95.490
5004	2.5 mm	+/- 0.2 mm	1.50 kg/l	48.890
5005	3.0 mm	+/- 0.3 mm	1.50 kg/l	28.290
5006	3.5 mm	+/- 0.3 mm	1.50 kg/l	17.810
5009	4.0 mm	+/- 0.3 mm	1.50 kg/l	11.930
5010	4.5 mm	+/- 0.3 mm	1.50 kg/l	8.380
5011	5.0 mm	+/- 0.3 mm	1.50 kg/l	6.110
5012	6.0 mm	+/- 0.3 mm	1.48 kg/l	3.530
5013	7.0 mm	+/- 0.3 mm	1.48 kg/l	2.220
5014	8.0 mm	+/- 0.4 mm	1.48 kg/l	1.490
5015	9.0 mm	+/- 0.4 mm	1.45 kg/l	1.040
50151	9.5 mm	+/- 0.4 mm	1.45 kg/l	880
5016	10.0 mm	+/- 0.5 mm	1.45 kg/l	760
50165	10.3 mm	+/- 0.5 mm	1.45 kg/l	670
5017	11.0 mm	+/- 0.5 mm	1.45 kg/l	570
5018	12.0 mm	+/- 0.5 mm	1.45 kg/l	440
5021	14.0 mm	+/- 0.5 mm	1.43 kg/l	270
5023	16.0 mm	+/- 0.8 mm	1.43 kg/l	180

Chemical Analysis; Glass beads made of soda lime glass; CAS-Nr. 65997-17-3 / EINECS 266-046-0				
Name	Method	Weight (Reference values)	CAS-No.	EINECS
Silicon dioxide SiO <sub>2</sub>	DIN 51001	68.10 %	7631-86-9	231-545-4
Sodium oxide Na <sub>2</sub> O	DIN 51001	15.00 %	1313-59-3	215-208-9
Calcium oxide CaO	DIN 51001	8.30 %	1305-78-8	215-138-9
Aluminium oxide Al <sub>2</sub> O <sub>3</sub>	DIN 51001	3.30 %	1344-28-1	215-691-6
Magnesium oxide MgO	DIN 51001	2.50 %	1309-48-4	215-171-9
further		2.80 %		

Additional Information	
Storage indication	Store in a dry manner in closed (original) container by room temperature.
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 M; Test Reports
<b>Manufacturer/Supplier</b>	Sigmund Lindner GmbH; Oberwarmensteinacher Strasse 38; 95485 Warmensteinach / GERMANY Phone: +49-9277-9940 Fax: +49-9277-99499 Web: <a href="http://www.sili.eu">www.sili.eu</a> E-Mail: <a href="mailto:sili@sigmund-lindner.com">sili@sigmund-lindner.com</a>

All data are reference values – subject to change without prior notice