SiLibeads®

... crystal clear water

- Microbiological and chemically pure
- Precisely spheric and uniform
- Large variety of narrow size tolerances
- Very high crush strength and abrasion resistance (compared to gravel)
- Pure and smooth surface – minimizing biological build-up
- Maximum permeability and effective porosity
- Maximum well capacity
- Conservation of energy and backwash water

Article	Diameter mm	(approx.) Mesh Sizes	Compressive Resistance (Reference values for middle diameter)	Bulk density kg/l	Bulk density lbs./ ft.³
4501R	0.25 – 0.50	60 – 35	N/A	1.46	91.14
45015R	0.40 – 0.60	40 – 30	N/A	1.47	91.77
45021R	0.60 – 0.90	30 – 19	N/A	1.49	93.02
4503R	0.80 – 1.00	22 – 18	170 N	1.50	93.64
4504R	1.00 – 1.30	18 – 15	250 N	1.51	94.27
4505R	1.25 – 1.65	16 – 12	370 N	1.51	94.27
4506R	1.55 – 1.85	13 – 11	520 N	1.52	94.89
4507R	1.70 – 2.10	12 – 9	620 N	1.52	94.90
4508R	2.00 – 2.40	10 – 8	770 N	1.53	95.51
4510R	2.40 – 2.90	8 – 7	920 N	1.53	95.52
4511R	2.85 – 3.45	7 – 6	1,270 N	1.53	95.53
4512R	3.40 – 4.00	6 – 5	1,550 N	1.53	95.54
4513R	3.80 – 4.40	5 ½ – 4 ½	1,900 N	1.53	95.55
4514R	4.50 – 5.50	4 ½ – 3 ½	2,350 N	1.49	93.02
4515R	5.00 – 6.00	3 ¾ – 3 ¼	3,150 N	1.47	91.77

Other diameters and tolerances available upon request

Article	Diameter mm	(approx.) Inches	Compressive Resistance (Reference values for middle diameter)	Bulk density kg/l	Bulk density lbs./ ft.³
50165-B	9.40 – 10.60	3/8" – 7/16"	6,000 N	1.45	90.52
5017-B	10.50 – 11.50	13/32" – 15/32"	7,500 N	1.45	90.52
5018-B	11.50 – 12.50	7/16" – 1/2"	10,500 N	1.45	90.52
5021-B	13.50 – 14.70	17/32" – 9/16"	13,200 N	1.43	89.27
5023-B	15.30 – 16.70	19/32" – 21/32"	16,500 N	1.43	89.27

Other diameters and tolerances available upon request

Sphericity/Roundness: ≥ 0.92
(simultaneous measurement of roundness through digital image processing (Retsch-Camsizer, value b/l3))

Free of Silanes / Glycol / Epoxy
We hereby confirm that Silanes, Glycol or Epoxy are not used during the production and packaging process.

Approximate Metric and Imperial Conversion Data

1 Cubic Feet = 1,728 Cubic Inches = 28.32 liters
1 US Liquid Gallon = 3.785 liters
1 liter = 0.035314666721488 59 Cubic Feet
1 Cubic Yard = 27 Cubic Feet
1 kg = 2.2046 lbs. or 1 lb. = 0.4536 kgs
1 Cubic Meter = 1,000 liter = 35.315 Cubic Feet

Calculating Annular Volume => $(R^2 - r^2) \times \pi \times h$

R^2 = Outer Cylinder Radius or Borehole Radius
r^2 = Inner Cylinder Radius or Casing
π = 3.14159265359
h = Height of Filling

Bead Sizing - Helpful Formula => $D = d_{10} \times F_o$

With: $U = d_{60} / d_{10}$

$F_o = 5 + U$ for $U < 5$ and $F_o = 10$ for $U > 5$

Derived from uniformity coefficient (U), characteristic grain size (d_{10}) and filter factor (F_o) based on reliable formation sieve analysis.

Particle Size Conversion	
Mesh	mm
80	0.177
70	0.210
60	0.250
50	0.297
45	0.354
40	0.420
35	0.500
30	0.595
25	0.707
20	0.841
18	1.00
16	1.19
14	1.41
12	1.68
10	2.00
8	2.38
7	2.83
6	3.36
5	4.00
4	4.76
3½	5.66

Inches	mm
1/4	6.35
0.265	6.73
5/16	8.00
3/8	9.51
7/16	11.2
1/2	12.7
0.53	13.5
5/8	16.0
3/4	19.0
7/8	22.6
1.0	25.4

4503R
0.80 – 1.0 mm

4505R
1.25 – 1.65 mm

4508R
2.0 – 2.4 mm

4513R
3.8 – 4.4 mm

4515R
5.0 – 6.0 mm

SiLibeads®

... crystal clear water

The German spirit of quality since 1854

SiLi® SIGMUND LINDNER

Comparative Lifecycle costs, Water well

Comparative Lifecycle costs, Water well, alluvial formation, depth 25 m natural gravel vs. glass beads as filtermaterial				
		25 years		40 years
Capital expenditure	glass beads	gravel	glass beads	gravel
	EURO	EURO	EURO	EURO
construction site set up	15,000	15,000	15,000	15,000
well drilling	7,800	7,800	7,800	7,800
installations (well screens, etc.)	72,000	72,000	72,000	72,000
gravel	50	1,800	50	1,800
glass beads	6,000	0	6,000	0
pumping test	14,650	14,650	14,650	14,650
clean out pumping	400	2,400	400	2,400
sand removal pumping	150	600	150	600
Total capital expenditure	116,050	114,250	116,050	114,250
Differences	1,800		1,800	
Percentage total	102%		102%	
Operating costs				
Energy	44,794	59,725	71,670	95,560
Well rehabilitation (à 10,000)	25,000	50,000	50,000	100,000
Total operating costs	69,794	109,725	121,670	195,560
Total costs during lifecycle	185,844	223,975	237,720	309,810
Percentage total	83%		77%	
Cost saving	38,131		72,090	
percent	17%		23%	

Comparative Lifecycle costs, Water well, bed rock, depth 50 m natural gravel vs. glass beads as filtermaterial				
		25 years		40 years
Capital expenditure	glass beads	gravel	glass beads	gravel
	EURO	EURO	EURO	EURO
construction site set up	20,000	20,000	20,000	20,000
well drilling	15,000	15,000	15,000	15,000
installations (well screens, etc.)	101,750	101,750	101,750	101,750
gravel	1,250	2,500	1,250	2,500
glass beads	8,000	0	8,000	0
sand removal pumping	600	1,300	600	1,300
clean out pumping	225	450	225	450
Total capital expenditure	146,825	141,000	146,825	141,000
Differences	5,825		5,825	
Percentage total	104%		104%	
Operating costs				
Energy	62,370	86,625	99,792	138,600
Well rehabilitation (à 10,000)	30,000	60,000	50,000	100,000
Total operating costs	92,370	146,625	149,792	238,600
Total costs during lifecycle	239,195	287,625	296,617	379,600
Percentage total	83%		78%	
Cost saving	48,430		82,983	
percent	17%		22%	

Relation between glass beads and standard filter:

Edition 1.0/November 2018 Supersedes previous editions.

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Filter Pack Beads

NSF Certified to NSF/ANSI/CAN 50

NSF Certified to NSF/ANSI/CAN 61

SIGMUND LINDNER GmbH Oberwarmensteinacher Str. 38 • 95485 Warmensteinach/Germany
Phone (+49) 92 77 - 99 40 • Fax (+49) 92 77 - 9 94 99 • E-Mail: sili@sigmund-lindner.com • www.sili.eu