

Products Data Sheet



Soda Lime Glass Balls

Product: Soda Lime Glass Balls

Material: Glass balls made of soda lime glass with polished or (fine-)matt surface
 Specific weight: 2.58 kg/l
 Hydrolytic resistance on Glass balls : HGB 2 (based on DIN ISO 720)
 Acidic resistance on Glass balls : S1 (according to DIN 12116)
 Alkaline resistance on Glass balls : A1 (according to DIN ISO 695)

Application: Glass balls are used as high precision balls for ball bearings,
 Valves of dosage pumps and dispensers in the cosmetic- and food industry,
 Closures of ink cartridges and many other special applications in the optical, space and medical technique.

Technical Data:

Roundness: ≥ 0.99 (ratio width/length (X_{min}/ X_{max}))
 Bulk density: mean value 1.53 kg/l (belonging to diameter)
 Refractive index: 1.53
 Size (Diameter): from 0.7 mm up to 55.0 mm (see table Standard Sizes)
 Transformation temperature: 525 °C
 Softening point (Littleton point): 718 °C
 Melting point: 1445 °C
 Specific thermal Conductivity: 1.102 W/ (m·K)
 Thermal expansion: $9.811 \cdot 10^{-6} \cdot K^{-1}$ [20 °C] (Coefficient of linear expansion α)
 Specific thermal capacity: 1.175 kJ/kg K [>600 °C]
 Youngs-Module: 65 GPa
 Hardness according to Mohs: ≥ 6
 Linear thermal expansion,
 ∞ (20-300 °C): $8.60 \times 10^{-6} K^{-1}$

Chemical Analysis; Glass balls 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 ₂	DIN 51001	69.30%	7631-86-9	231-545-4
Sodium oxide Na ₂ O	DIN 51001	10.30%	1313-59-3	215-208-9
Calcium oxide CaO	DIN 51001	4.90%	1305-78-8	215-138-9
Potassium oxide K ₂ O	DIN 51001	6.10%	12136-45-7	235-227-6
Barium oxide BaO	DIN 51001	4.80%	1304-28-5	215-127-9
further		4.60%		

The heavy metal content of the Glass balls 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):

Diameter*)	Tolerance**)	Roundness**†)	Surface	Weight per 1000 pieces	Amount (pieces per kg)
0.700 mm	+/- 0.02 mm	≤ 0.02 mm	polished	0.45 g	2,227,236
0.800 mm	+/- 0.02 mm	≤ 0.02 mm	polished	0.67 g	1,492,074
1.000 mm	+/- 0.02 mm	≤ 0.02 mm	polished	1.31 g	763,942
1.500 mm	+/- 0.02 mm	≤ 0.02 mm	polished	4.42 g	226,353
1.588 mm 1/16"	+/- 0.02 mm	≤ 0.02 mm	polished	5.24 g	190,769
2.000 mm	+/- 0.02 mm	≤ 0.02 mm	polished	10.47 g	95,493
2.381 mm 3/32"	+/- 0.02 mm	≤ 0.02 mm	polished	17.67 g	56,596
2.500 mm	+/- 0.02 mm	≤ 0.02 mm	polished	20.45 g	48,892
2.700 mm	+/- 0.02 mm	≤ 0.02 mm	polished	25.76 g	38,812
2.780 mm	+/- 0.02 mm	≤ 0.02 mm	polished	28.12 g	35,557
3.000 mm	+/- 0.02 mm	≤ 0.02 mm	polished	35.34 g	28,294
3.175 mm 1/8"	+/- 0.02 mm	≤ 0.02 mm	polished	41.90 g	23,869
3.400 mm	+/- 0.02 mm	≤ 0.02 mm	polished	51.45 g	19,437
3.500 mm	+/- 0.02 mm	≤ 0.02 mm	polished	56.12 g	17,818
3.969 mm 5/32"	+/- 0.02 mm	≤ 0.02 mm	polished	81.84 g	12,218
4.000 mm	+/- 0.02 mm	≤ 0.02 mm	polished	83.78 g	11,937
4.500 mm	+/- 0.02 mm	≤ 0.02 mm	polished	119.28 g	8,383
4.762 mm 3/16"	+/- 0.02 mm	≤ 0.02 mm	polished	141.35 g	7,074
5.000 mm	+/- 0.02 mm	≤ 0.02 mm	polished	163.63 g	6,112
5.500 mm	+/- 0.02 mm	≤ 0.02 mm	polished	217.79 g	4,592
5.556 mm 7/32"	+/- 0.02 mm	≤ 0.02 mm	polished	224.51 g	4,454
5.800 mm	+/- 0.02 mm	≤ 0.02 mm	polished	255.40 g	3,915
6.000 mm	+/- 0.02 mm	≤ 0.02 mm	polished	282.74 g	3,537
6.350 mm 1/4"	+/- 0.02 mm	≤ 0.02 mm	polished	335.17 g	2,984
6.500 mm	+/- 0.02 mm	≤ 0.02 mm	polished	359.48 g	2,782
6.747 mm 17/64"	+/- 0.02 mm	≤ 0.02 mm	polished	402.04 g	2,487
7.000 mm	+/- 0.02 mm	≤ 0.02 mm	polished	448.99 g	2,227
7.144 mm 9/32"	+/- 0.02 mm	≤ 0.02 mm	polished	477.27 g	2,095
7.500 mm	+/- 0.02 mm	≤ 0.02 mm	polished	552.23 g	1,811
7.938 mm 5/16"	+/- 0.02 mm	≤ 0.02 mm	polished	654.75 g	1,527
8.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	670.21 g	1,492
8.500 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	803.89 g	1,244
8.731 mm 11/32"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	871.23 g	1,148
9.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	954.26 g	1,048
9.525 mm 3/8"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	1131.19 g	884
10.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	1309.00 g	764
10.319mm 13/32"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	1438.31 g	695
10.500 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	1515.33 g	660
11.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	1742.28 g	574
11.112 mm 14/32"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	1796.04 g	557
11.906 mm 15/32"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	2209.21 g	453
12.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	2261.95 g	442
12.303 mm 31/64"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	2437.66 g	410
12.500 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	2556.64 g	391
12.700 mm 1/2"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	2681.33 g	373
13.000mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	2875.87 g	348
13.494 mm 17/32"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	3216.34 g	311
14.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	3591.90 g	278

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Diameter*)	Tolerance **)	Roundness **)	Surface	Weight per 1000 pieces	Amount (pieces per kg)
15.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	4417.88 g	226
15.081 mm 19/32"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	4489.83 g	223
15.875 mm 5/8"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	5236.98 g	191
16.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	5361.66g	187
17.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	6431.12 g	155
18.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	7634.09 g	131
19.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	8978.43 g	111
19.050 mm 3/4"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	9049.50 g	111
20.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	10472.00 g	95
22.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	13938.23 g	72
24.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	18095.62 g	55
25.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	20453.12 g	49
25.400 mm 1"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	21450.67 g	47
31.750 mm 1 ¼ "	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	41895.83 g	24
38.100 mm 1,5"	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	72396.00 g	14
55.000 mm	+/- 0.02 mm	≤ 0.02 mm	(fine-)matt	217784.88 g	5

**) special diameters by request, between 0.7 – 55,00 mm Ø

**) on special request tolerance +/- 0.01 mm and roundness 0.01 mm possible

Additional Information:

Storage indication: Store in a dry manner in closed (original) container by room temperature. Please
 Disposal: consult national laws and local regulations in force for disposal or landfill. High
 Safety advice: risk of slipping due to spillage of product

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