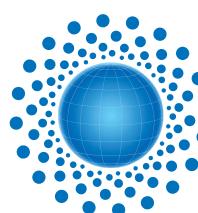


PRECISION BALLS



RGPBALLS
A WORLD OF SPECIAL BALLS

COMPANY PROFILE

RGPBALLS Srl, for over fifty years has been one of the major European companies in the production, marketing and distribution of precision spheres, rollers and bearing spheres. The company is ISO 9001:2015, ISO 14001:2015, ISO 18001:2007 certified.

The main headquarters, recently expanded with a new 3,000 m² warehouse, has 10,000 m² available including offices, warehouse, selection department, metrological laboratory, metallographic laboratory.

Located in Cinisello Balsamo, easily reachable thanks to the immediate vicinity of the main motorway junctions, RGPBALLS Srl employs 70 people in the main headquarters, 20 of which are responsible for the marketing/administrative part, 12 of the metallographic measurement and control laboratory. The rest of the staff is employed in the selection, logistics and warehouse department.

Our warehouses have more than 4,000 tons of stocked products available in order to quickly meet the needs of customers all over the world.

For years, the Group has set the goal of achieving high quality standards by continuing to invest in order to obtain an always increasing reliability towards its customers. Last but not least, the inclusion of a metallographic laboratory with cutting-edge machinery for the analysis of steel microstructures.

We also have qualified personnel available to perform ad hoc consultancies to identify the most suitable item for the requested application.

Thanks to the factories of our Group we have the option of monitoring production with a 100% control on every stage of product processing, by means of a precise and reliable Quality Management.

2015
Foundation

10.000
m² Headquarter

70
employees

4.000
tons of products

More than
3.000
customers

CERTIFICATIONS



SODA LIME GLASS BALLS

Light weight glass balls, they are chemically inert and they allow to get excellent surface finishing.

Applications

Special bearings and valves, plastic bearings, low-cost check valves, metering pumps, flow meters, measurement instruments, agitators, optic fiber devices, ink cartridges, closures for bottle, shot blasting, grinding. They are used even into art and decoration fields.

Chemical composition

%SiO2	%Na2O	%CaO	%MgO	%Al2O3	%Li2O	%K2O	%TiO2	%Fe2O3	%PbO	-	-
63,00-81,00	9,00-15,00	7,00-14,00	6,00 max	2,00 max	2,00 max	1,50 max	0,80 max	0,80 max	0,010 max	-	-

Physical / mechanical / thermal / electric / magnetic properties

Property	Symbol	U.o.M.	Type	Notes	Values
Density	δ	g/cm3	Physical	Room temp.	2,50
Young's modulus	E	GPa	Mechanical	-	70
Refractive index	n	-	Optic	-	1,518
Softening temperature	-	°C/°F	Thermal	Room temp./P.atm.	726 / 1340
Coefficient of linear thermal expansion	α	10^-6/°C	Thermal	($\Delta T=0-100°C$)	9,4
Thermal conductivity	λ	W/(m·K)	Thermal	Room temp.	1,00
Volume resistivity	ρ	Ω^*m	Electric	-	> 10^14
Relative magnetic permeability	μ	-	Magnetic	Diamagnetic	~1

Technical data

Property	Type	U.o.M.	Values	U.o.M.	Values
Hardness	Mechanical	Knoop	465 - 585	Mohs	6
Ultimate compressive strength	Mechanical	MPa	900 - 1100	$psix10^3$	131 - 159
Service temperature	Thermal	°C	0 / 200	°F	32 / 392

Range

Diameters (min/max)	U.o.M.	Diameters (min/max)	U.o.M.	Precision grades
1,000 - 100,000	mm	3/64 - 4	"	G50-100-200-500-1000-2000

Corrosion Resistance

Basically inert material, soda lime balls resist even to strong alkaline solutions.

BOROSILICATE GLASS BALLS

Glass balls with high chemical and thermal stability. They are electric insulators and they are resisting even at strong external strengths and pressure variations.

Applications

Special valves, safety valves, metering pumps. They are used in the pharmaceutical field and photographic devices.

Chemical composition

%SiO2	%Na2O	%CaO	%Al2O3	%B2O3	%K2O	%BaO	-	-	-	-	-
65,00-85,00	3,00-9,00	2,50 max	1,00-5,00	8,00-15,00	2,00 max	1,00 max	-	-	-	-	-

Physical / mechanical / thermal / electric / magnetic properties

Property	Symbol	U.o.M.	Type	Notes	Values
Density	δ	g/cm3	Physical	Room temp.	2,23
Young's modulus	E	GPa	Mechanical	-	64
Refractive index	n	-	Optic	-	1,471
Softening temperature	-	°C/°F	Thermal	Room temp./P.atm.	821 / 1510
Coefficient of linear thermal expansion	α	10^-6/°C	Thermal	($\Delta T=0-100°C$)	3,30
Thermal conductivity	λ	W/(m·K)	Thermal	Room temp.	1,15
Volume resistivity	ρ	Ω^*m	Electric	-	$> 10^{15}$
Relative magnetic permeability	μ	-	Magnetic	Diamagnetic	~ 1

Technical data

Property	Type	U.o.M.	Values	U.o.M.	Values
Hardness	Mechanical	Knoop	420 - 520	Mohs	6
Ultimate compressive strength	Mechanical	MPa	1900 - 2100	$psix10^3$	275 - 305
Service temperature	Thermal	°C	0 / 200	°F	32 / 392

Range

Diameters (min/max)	U.o.M.	Diameters (min/max)	U.o.M.	Precision grades
1,000 - 100,000	mm	3/64 - 4	"	G10-25-50-100-200-500-1000-2000

Corrosion Resistance

Borosilicate balls have excellent corrosion resistance into water, most acid compounds, salt solutions, organic solvents and halogens. They are useful to resist in strong oxidizing environments. Fairish resistance to alkaline solutions, they do not resist to strong alkaline solutions, hydrofluoric acid and hot concentrated phosphoric acid.

BLACK GLASS BALLS

High dimensional stability, these balls are resistant to corrosion and to chemical absorption.

Applications

Medical and chemical flowmeters, aircraft slips, turn indicators. Variety of functions, most common use into precision instruments.

Chemical composition

%SiO2	%Na2O	%CaO	%Al2O3	%B2O3	%K2O	%BaO	%MnO2	-	-	-
65,00-75,00	9,50-15,50	3,00-5,00	1,00 max	1,00-3,00	2,00-3,00	3,00-4,00	5,00-7,00	-	-	-

Physical / mechanical / thermal / electric / magnetic properties

Property	Symbol	U.o.M.	Type	Notes	Values
Density	δ	g/cm3	Physical	Room temp.	2,57
Young's modulus	E	GPa	Mechanical	-	66
Refractive index	n	-	Optic	-	1,520
Softening temperature	-	°C/°F	Thermal	Room temp./P.atm.	650 / 1202
Coefficient of linear thermal expansion	α	10^-6/°C	Thermal	($\Delta T=0-100°C$)	7,2
Thermal conductivity	λ	W/(m·K)	Thermal	Room temp.	0,76
Volume resistivity	ρ	Ω^*m	Electric	-	$> 10^{14}$
Relative magnetic permeability	μ	-	Magnetic	Diamagnetic	~ 1

Technical data

Property	Type	U.o.M.	Values	U.o.M.	Values
Hardness	Mechanical	Knoop	468 - 530	Mohs	6
Ultimate compressive strength	Mechanical	MPa	750 - 950	psix10^3	109 - 138
Service temperature	Thermal	°C	0 / 300	°F	32 / 572

Range

Diameters (min/max)	U.o.M.	Diameters (min/max)	U.o.M.	Precision grades
1,000 - 100,000	mm	3/64 - 4	"	G25-50-100-200-500-1000-2000

Corrosion Resistance

Good corrosion resistance in contact with most acid and basic compounds.

QUARTZ (SiO₂) BALLS

Pure amorphous silicone dioxide (fused silica) transparent balls, they feature elevated hardness, heat resistance, excellent optical properties (high transmittance both in UV and IR wavelengths).

Applications

They are mainly used in optical devices and anti-reflective coatings.

Chemical composition (%)

%SiO ₂	% Other	-	-	-	-	-	-	-	-	-	-	-
99,99	0,01	-	-	-	-	-	-	-	-	-	-	-

Physical / mechanical / thermal / electric / magnetic properties

Property	Symbol	U.o.M.	Type	Notes	Values
Density	δ	g/cm ³	Physical	Room temp.	2,20
Young's modulus	E	GPa	Mechanical		73
Refractive index	n	-	Optic		1,459
Softening temperature	-	°C/°F	Thermal	Room temp./P.atm.	1650 / 3002
Coefficient of linear thermal expansion	α	10 ⁻⁶ /°C	Thermal	($\Delta T=0-100^{\circ}\text{C}$)	0,5
Thermal conductivity	λ	W/(m·K)	Thermal	Room temp.	1,42
Volume resistivity	ρ	$\Omega \cdot \text{m}$	Electric		> 10 ¹⁵
Relative magnetic permeability	μ	-	Magnetic	Diamagnetic	<~1

Technical data

Property	Type	U.o.M.	Values	U.o.M.	Values
Hardness	Mechanical	Knoop	500 - 700	Mohs	7
Ultimate compressive strength	Mechanical	MPa	1050 - 1150	$\text{psi} \cdot 10^3$	152 - 166
Service temperature	Thermal	°C	0 / 1000	°F	32 / 1832

Range

Diameters (min/max)	U.o.M.	Diameters (min/max)	U.o.M.	Precision grades
0,300 - 50,000	mm	1/64 - 2"	"	G10-25-50

Corrosion Resistance

Fused silica balls are insoluble in water, they resist against strong acids (chloridric, nitric, sulphuric) except hydrofluoric acid. They are not resisting against alkaline solutions (they are attacked by sodium hydroxide, potassium hydroxide, sodium carbonate).

PRECISION GRADES OF GLASS BALLS

Material	Minimum diameter	Maximum diameter	Units	Precision grade	Tolerance on diameter	Units	Roundness	Units
BSG/QUA	0,300	3,499	mm	G10	+/- 2,5	µm	0,25 max	µm
BSG/QUA	3,500	10,000	mm	G10	+/- 5	µm	0,30 max	µm
BSG	10,001	12,700	mm	G10	+/- 5	µm	0,30 max	µm
BSG/BLG/QUA	0,300	3,499	mm	G25	+/- 2,5	µm	0,63 max	µm
BLG	3,500	12,700	mm	G25	+/- 2,5	µm	0,63 max	µm
BSG/QUA	3,500	10,000	mm	G25	+/- 10	µm	0,50 max	µm
BSG	10,001	12,700	mm	G25	+/- 10	µm	0,50 max	µm
BSG/QUA	0,300	50,000	mm	G28	+/- 5	µm	1,00 max	µm
BSG	1,000	25,400	mm	G40	+/- 5	µm	5,00 max	µm
SLG/BSG/BLG	1,000	100,000	mm	G50	+/- 10	µm	10 max	µm
SLG/BSG/BLG	1,000	100,000	mm	G100	+/- 20	µm	20 max	µm
SLG/BSG/BLG	1,000	100,000	mm	G200	+/- 30	µm	30 max	µm
SLG/BSG/BLG	1,000	100,000	mm	G300	+/- 50	µm	50 max	µm
SLG/BSG/BLG	1,000	100,000	mm	G500	+/- 100	µm	100 max	µm
SLG/BSG/BLG	1,000	100,000	mm	G600	+/- 200	µm	-	-
SLG/BSG/BLG	1,000	100,000	mm	G700	+/- 300	µm	-	-
SLG/BSG/BLG	1,000	100,000	mm	G1000	+/- 500	µm	-	-
SLG/BSG/BLG	1,000	100,000	mm	G2000	+/- 1000	µm	-	-

Legend of materials

SLG Sodalime Glass

BSG

Borosilicate Glass

BLG

Black Glass

QUA

Quartz



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11

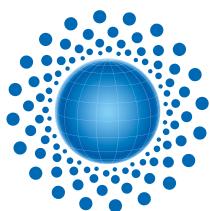
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