

## 59831 Glass Beads, fine

Glass beads are high performance functional fillers and extenders offering unique advantages when used in thermoplastic and thermoset systems.

They are used by formulators in automotive, aerospace, chemical, electronic and other industries to enhance performance and reduce reject rates in production, and to improve thermoplastic and thermoset properties. These products disperse evenly, pack closely and wet-out easily in resin compounds. They are available uncoated, or coated with coupling agents suited to a wide variety of resin chemistries.

Composition:	Inorganic soda lime glass (Type A)
Appearance:	White powder
Physical form:	Spherical, non porous
CAS No.:	65997-17-3
EINECS No.:	266-046-0

### Chemical Composition

SiO <sub>2</sub>	70 – 75 %
Na <sub>2</sub> O	12 – 15 %
K <sub>2</sub> O	0 – 1.5 %
CaO	7 – 12 %
MgO	0 – 5 %
Al <sub>2</sub> O <sub>3</sub>	0.1 – 2.5 %
Fe <sub>2</sub> O <sub>3</sub>	0 – 0.5 %

### Size Gradation

Sieve Size µm	% Passing	Test Method
250	100	CILAS Laser Particle Analyser ISO 13320-1, FRAUENHOFER Correlation  The analysis is done by laser scattering. We cannot guarantee that traces of coarse particle are not there.
212	90 – 100	
106	0 – 20	
90 % of microspheres between	106 – 212	

### Physical Properties

		Test Method
Refractive index	1.51	ISO 489 / ASTM D542
Specific gravity	2.5 g/cm <sup>3</sup>	ISO 787/10
Bulk density	1.51 – 1.52 g/cm <sup>3</sup>	ISO 787/11 ASTM D3101-78

### Chemical Properties

		Test Method
Oil absorption	18 g / 100 g	ISO 787/5 ASTM D1483
pH (25°C)	11 – 12	ISO 787-9
Chemical resistance in H <sub>2</sub> O, 4h (90°C)	0.05 % Na <sub>2</sub> O extract	ISO 787-3
% weight loss, 1h H <sub>2</sub> O boiling	11.1	ISO 787-4
Hydrolytic class	3	DIN ISO 719

### Electrical Properties

Dielectric Constant (1 MHz, 20°C)	6.9
Volume Resistivity (25°C)	6.5 x 10 <sup>-12</sup> ohm·cm
Resistivity	10 <sup>5</sup> ohm·m

### Thermal Properties

Softening point	730°C
Annealing point	548°C
Coefficient of expansion	90 x 10 <sup>-7</sup>
Specific heat	750 J/kg·K (0 to 300°C)
Thermal conductivity	0.84 W/M·K
Thermal diffusivity (20°C)	5 x 10 <sup>7</sup> m <sup>2</sup> /sec

### Mechanical Properties

Young Modulus	68.9 GPa
Rigidity Modulus	29.6 GPa
Poisson's Ratio	0.21
Crush Resistance	>30,000 psi (207 MPa)
Knoop Hardness	515 kg/mm <sup>2</sup>
Rockwell Hardness	47 RC
Mohs Hardness	6 – 6.5

### Benefits

Glass microspheres are available in sizes ranging from 5 to 850 microns in diameter.

Further benefits:

- Solid smooth transparent shape
- Non flammability
- Lowest surface-to-volume ratio
- Uniform dispersion
- High abrasion resistance
- Low uniform shrinkage
- High compressive strength
- High flexure modulus