



## GLASS MICROSPHERE TECHNICAL SPECIFICATION (SODA-LIME GLASS)

### Chemical Composition

SiO <sub>2</sub>	74.00% +/- 0.20%
Na <sub>2</sub> O	11.90% +/- 0.05%
TiO <sub>2</sub>	0.04% +/- 0.002%
MgO	4.13% +/- 0.01%
Al <sub>2</sub> O <sub>3</sub>	0.98% +/- 0.02%
Fe <sub>2</sub> O <sub>3</sub>	0.08% +/- 0.002%
K <sub>2</sub> O	0.28% +/- 0.01%
CaO	8.15% +/- 0.01%
SO <sub>3</sub>	0.25% +/- 0.01%
B <sub>2</sub> O <sub>3</sub>	0.10% +/- 0.01%
Sb <sub>2</sub> O <sub>3</sub> , BaO, ZnO, PbO	<0.01% +/- 0.01%

Chemical analysis according to DIN 51001

### Physical Properties

Specific Gravity	2.43 - 2.49 g/cm <sup>3</sup>
Refractive Index	1.51 - 1.52
Hardness Mohs	6
Rockwell	47 RC
OPH 50g load	540 kj/mm <sup>2</sup>
Knoop 100g load	517 kj/mm <sup>2</sup>
Coefficient of friction	
Static	0.9 - 1.0
Dynamic	0.7 - 0.8

### Mechanical Properties

Young Modulus	6.89 x 10 <sup>4</sup> N/mm <sup>2</sup>
Rigidity Modulus	2.96 x 10 <sup>4</sup> N/mm <sup>2</sup>
Poissons ration	0.21

### Electrical Properties

Volume Resistivity at 50Hz	300 G.Ohm-m
Dielectric Strength	4500 kV/cm
Dielectric Constant (at 1KHz)	7.6
Power Factor	0.9

### Thermal Properties

Softening Point	740°C
Thermal Conductivity	1.05 W/mK
Expansion of Co-efficient (0-300°C)	7.75 x 10 <sup>-6</sup> /K
Specific Heat	770 J/kgK