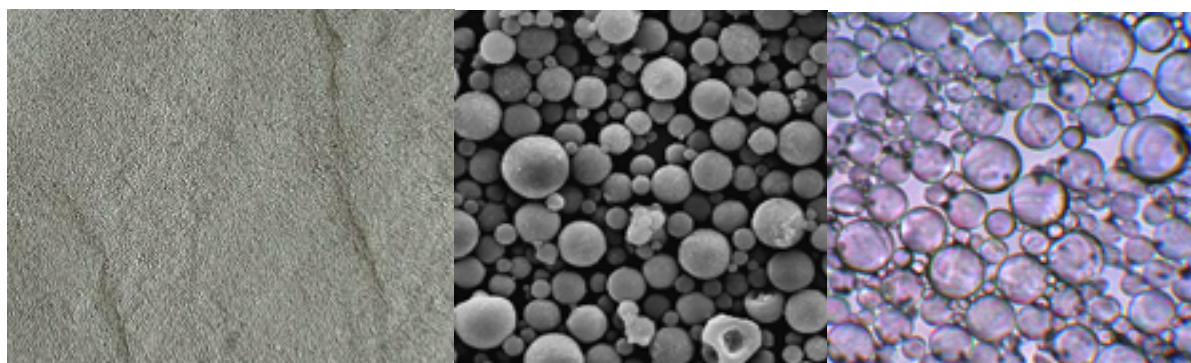


Langfang Olan Glass Beads Co.,Ltd.

Cenosphere (hollow ceramic microsphere)



Working with the material research institution in China, We pioneer in manufacturing cenosphere in various sizes between 10 μ m to 850 μ m and has established an annual production capacity of 5000MTS. Due to its unique combination of hollow spherical shape, light weight, high melting point, high compression strength, good sound electrical and thermal insulation, cenosphere is one of the best filling materials for paint, printing ink, carbon, fiber, GRP, leatheroid, rubber, plastic, petroleum field(anchoring, pipeline, anticorrosion and warm keeping),and so on.

Cenospheres are light are light gray or off-white, light, inert and nonmetallic hollow ceramic spheres in the range from 10 μ m to 850 μ m.With N₂ or CO₂ inside and over 95% spheres, the material has excellent fluidity as well as sound electric and heat insulation, Hence it is called" The Space Era Material". The hollow micro-spheres can be further divided into two kinds: Thin Wall Hollow Ceramic Micro-sphere and Thick Wall Hollow Ceramic Micro-sphere.

Chemical Composition

Chemical Composition	SiO ₂	Al ₂ O ₃	Fe ₂ O ₃	CaO	MgO	Na ₂ O, K ₂ O	C	TiO ₂
Content(%)	55-65	26-35	0.2-1	0.2-0.6	1-2	0.5-4.0	0.01-2	0.5-2.0

Physical Properties of Cenosphere

Parameter	Cenosphere
Particle Size(μ m)	10-850um
Ratio of Sphere	>80%
True Density(g/cm ³)	0.4-0.8
Bulk Density(g/cm ³)	0.26-0.45
Color	Gray
Moisture	<0.5%
Compressive Strength (kg/cm ²)	100-350
Hardness(Mohs Scale)	5-7
Melting Point (°C)	1200-1750
Lost in Ignition	<1%
Specific Surface Area (m ² /cm ³)	0.02-0.1

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Oil Absorption g(oil)/100g	16-18
Thermal Conductivity (W/mK)	0.07-0.12
Volume Resistance($\Omega \cdot \text{CM}$)	1.5×10^{10}

Characteristics of Cenosphere

1. IMPROVED RHEOLOGY: Cenospheres are nonmetallic hollow ceramic spheres in the range from 10 μm to 850 μm . With the spherical shape of cenospheres, rheology will improve greatly for most applications.
2. LOW DENSITY: When density, counts, cenospheres can be the answer with a density ranging from 0.50g/cm³ to 0.80g/cm³. Compared to most ground minerals and other resins, cenospheres are 30-85% lighter.
3. LOW RESIN DEMAND/HIGH LOADING POTENTIAL: Spheres have the lowest surface area to volume achievable. With their spherical shape, cenospheres produce far less viscosity.
4. HIGH COMPRESSIVE STRENGTH: cenospheres can greatly improve the weariness properties of the end products.
5. LOW SHRINKAGE: cenospheres are one of the few products in the filler industry today that can meet the requirements for low shrinkage.
6. LOW THERMAL, ELECTRICAL, AND SOUND CONDUCTIVITY: cenospheres are extremely resistant to heat and typically have a melting point in excess of 1300 $^{\circ}\text{C}$. As cenospheres are hollow they have a relatively low coefficient of thermal conductivity. typically 0.09W/mK.
7. INERTNESS: cenospheres/HG-spheres can be utilized in solvents, organic chemicals water, acids or alkalis while maintaining their integrity.
8. THERMAL STABILITY: Because cenospheres are formed in the boilers, they are thermally stable in temperatures exceeding 1000 $^{\circ}\text{C}$.
9. INSULATION: Can be used in electronic filling and sealing materials, instrument boards, switches, etc.
10. COST EFFECTIVENESS: cenospheres are 50-200% less expensive than man-made hollow glass spheres, in comparison to less expensive fillers.

Main Usage of cenosphere

1. Paints & ink: ink, bond, vehicle putty, insulating, antiseptic, fireproof paints.
2. Plastics: the products of POM、PA、PBT、PET、PP and so on. Like panels, boards, vehicle decorations, glass fiber products.
3. Rubber: floors、boards、wires and lines, insulating devices, sole, conveyer belt, vehicle parts and bodies, fender-guard, etc.
4. Construction materials: fire and water-proof materials, processed asphaltum, high-level road pavement, concrete repair materials.
5. Encapsulation material: transformer filling material, electric encapsulation material, electric encapsulation materials.
6. Glass steel products: glass steel furniture, boats, etc.
7. Space or military products: explosives, invisible paints for planes, ships and even soldiers, heat and compression insulating compounds, deep-water submarine. 700/mt