

Chemical Materials Division

Kenospheres WS-500

Product Name: Kenospheres - White Series - 500µm - (Alumino-Silicate Hollow Ceramic Microspheres)

Introduction

Kenospheres Light Grey Series 500µm (Hollow Ceramic Microspheres) serve as high-performance additives derived from alumino-silicate material. These hollow ceramic microspheres are byproducts of coal combustion and are designed to offer enhanced thermal insulation and buoyancy across a range of demanding applications.

They are particularly effective in industries such as paints and coatings, automotive composites, and construction materials. Kenospheres contribute to weight reduction and offer additional benefits like noise and vibration dampening, reduced thermal expansion, and overall cost savings. They are utilized in a multitude of applications across diverse markets, including aerospace, marine, and thermal insulation materials.

The spherical shape of Kenospheres allows for higher filler loading and superior flowability, thereby elevating the overall performance of your products. Composed of a silica-alumina blend, these microspheres are water-resistant and compatible with a wide range of resins. Their non-combustible and non-porous nature further enhances their versatility, positioning them as a premium alternative to traditional fillers like silica and calcium carbonate.

*The data provided represents the standard characteristics of the product, based on our most reliable information. This test data is generated through documented procedures and test methods.

Material Description (Not for specification purposes.)

Property	Kenospheres™ WS-500
Shape	Hollow spheres with thin walls
Composition	Alumino-Silicate Ceramic Material
Color, unaided eye	White

Typical Physical Properties (Not for specification purposes.)

Property	Kenospheres™ WS-500
Bulk weight (g/cm ³)	0.36 - 0.46
Specific gravity (g/cm ³)	0.75 - 0.85
Packing factor (bulk density to true particle density)	60%
Average diameter (microns)	174
Softening point (°C)	1200
Melting point (°C)	1525 - 1650
Moisture content (%)	< 0.3
Sinker (%)	< 6
pH	7.0 - 9.9

Typical Chemical Composition by Element (Not for specification purposes.)

Element	Typical Composition	Range
Al ₂ O ₃	35.00%	34 - 38%
SiO ₂	56.50%	54 - 60%
Fe ₂ O ₃	1.60%	1.0 - 3.0%
MnO	0.20%	0.1 - 0.5%
MgO	0.60%	0.5 - 1.0%
Na ₂ O	0.50%	0.4 - 0.9%
TiO ₂	1.00%	0.8 - 2.0%
CaO	1.30%	1.0 - 2.0%

Typical Particle Size Distribution (Not for specification purposes.)

Particle Size Range	Typical Distribution	Maximum
> 720µm	0%	0%
500 - 720µm	0.5%	2%
300 - 500µm	5%	20%
150 - 300µm	40%	70%
63 - 150µm	55%	70%
< 63µm	5%	15%

Formulating Information

Flow Properties

Kenospheres WS-500 maintain their free-flowing nature for an extended period, ensuring easy mixing and even distribution. Proper storage in the original, unopened container as per recommended conditions will preserve these properties for years.

Microsphere Breakage

While Kenospheres WS-500 are designed for high strength-to-weight ratios, breakage can occur under severe processing conditions. To minimize this, it's advisable to limit exposure to high-shear processes and point contact shear, such as gear pumps and 3-roll mills.

For extrusion processes, the material should be added downstream of the feed hopper via a side stuffer or top feeder, similar to the addition of glass fibers. For any concerns regarding breakage or processing, please contact our technical service team for assistance.

For additional technical information on Kenospheres, visit our website <https://kenospheres.com/> or contact our customer service team. email: support@kenospheres.com

Packaging

Kenospheres are available in the following packaging sizes to suit various industrial needs:

Big bags: 500 kg with a plastic liner (2 bags stacked per pallet).

Paper bags: 20 kg net, on pallets.

Product Storage, Handling & Safety

Storage

Optimal storage conditions for Kenospheres include keeping them in unopened bags within a dry, temperature-controlled environment.

Prolonged exposure to high humidity or conditions prone to condensation may result in "caking" of the microspheres. To minimize caking and maximize storage life, consider the following:

- Promptly reseal opened bags after use.
- If the bag is damaged during shipping or handling, seal the hole immediately or transfer the contents to an undamaged bag.
- During hot and/or humid months, store bags in the driest, coolest space available.

-If controlled storage conditions are not available, maintain a minimal inventory and operate on a first-in, first-out basis.

Handling

Due to the lightweight and small particle size of Kenospheres, dusting may occur during handling and processing. To minimize dusting, consider:

- Not opening Kenospheres packages until ready for use.
- Using local exhaust ventilation near the opening to capture airborne particles.
- Employing a suction "wand" for transferring to a closed mixing tank, or using dust collection equipment if a closed tank is not available.
- Utilizing static eliminators to prevent static buildup.

Safety

For worker protection, consider:

- Wearing safety glasses with side shields.
- Using an air-purifying respirator suitable for particulates after conducting an optional exposure assessment.
- Employing local exhaust ventilation/dust collection in the work area.
- Refer to the Kenospheres Safety Data Sheet for additional safety information.



Kenospheres.

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