



E-SPHERES® Hollow Ceramic Microspheres

TECHNICAL DATA

APPLICATION: CAULKS, SEALANTS AND ADHESIVES

DESCRIPTION: Advanced functional additive and reinforcing filler with spherical hollow structure and ceramic composition. Its main characteristics are lightness, high compressive strength, thermal resistance (high melting point), chemically unreactive or inert and unique off-white colour.

APPLICATION: E-SPHERES® Hollow Ceramic Microspheres (HCM) are widely utilised across different industries in the formulation of sealants, adhesives, filler compounds, putties and caulks. E-SPHERES® improve value and performance of products by delivering weight reduction, less shrinkage and cracking, improved flow and workability, enhanced mechanical properties, colour, and potential cost reduction. Typical applications include:

- Acrylic caulks
- Spackle/putties
- Jointing compounds
- Acrylic latex grouts
- Adhesives and glues
- Tile adhesives
- Wood/timber putty
- Automotive body putty
- Gaskets
- Marine body fillers
- Sealants
- Filler compounds

These are only examples of possible applications.

ADVANTAGES

Density and weight reduction
 Improved rheology/flow characteristics
 Improved corrosion resistance
 Reduced shrinkage
 Improved acoustical properties
 Improved sanding

VALUE IN USE

thanks to volume displacement by low density filling material
 act as miniature bearings due to its smooth surface and spherical geometry
 due to its inert ceramic composition
 as a result of its non-absorbent properties and dimensional stability
 owing to its capacity to absorb sound and vibration within the binder matrix
 by less over-heating of sandpaper thanks to its thermal properties

Cost Saving and value added throughout the life cycle of the end products

Lower formulation costs	due to resin or binder extension thanks to optimised area of contact
Transport costs	by producing a lighter final product
Packaging costs	less expensive packaging materials needed for lighter products
Application costs	with easier and faster to apply products

CHEMICAL COMPOSITION: These figures are for general representation only, not for specification purposes:

Silicon Dioxide SiO ₂ (Silica)	55 – 60%	Iron Oxide Fe ₂ O ₃ (Hematite)	0.4 – 0.5%
Aluminium Oxide Al ₂ O ₃ (Alumina)	36 – 40%	Titanium Dioxide TiO ₂ (Rutile)	1.4 – 1.6%

E-SPHERES® HCM can be described as aluminosilicate microspheres.



TYPICAL PHYSICAL PROPERTIES (for general representation only, not for specification purposes)

Property	Value
Physical Form	Free flowing powder
Colour	White: SL Series, Off-White: ES Series
Geometry	Spherical shape (hollow)
Particle Size	20 – 500 microns *
Relative Density	0.65 – 0.95 g/cc
Bulk Density	0.35 – 0.45 g/cc
Compressive Strength	4,800 psi (33 MPa)
Oil Absorption	~ 7g / 100g **
pH of Water Dispersion	6 - 8
Thermal Conductivity	0.1 W/m/°C
Melting Point	1500 °C – 1800 °C
Hardness	6 Mohs scale
Refractive Index	1.53

* Consult product specifications for grades of particle size and distribution.

** g of oil / 100g E-SPHERES®

GENERAL: E-SPHERES® HCM when utilised in formulated compounds, provide major benefits and add value through enhanced performance of caulks, sealants and adhesives; enabling manufacturers to further improve existing products or to develop new ones.

E-SPHERES® are not classified as dangerous goods - they are non combustible, non flammable, non reactive, non corrosive, non toxic. E-SPHERES® are compatible with both waterborne and solvent based binder systems, and often contribute to optimise pigmented products by potential reduction of TiO₂. For more about formulating information or suggested starting point, please contact EnviroSpheres.

DISCLAIMER: The information stated represents typical values; all advice given should be taken as a guide only. Both are given in good faith and are to the best of EnviroSpheres' knowledge, true and accurate at the time of publishing this technical data sheet. This information is intended to give a fair description of the product and its capabilities under specific conditions. No guarantee of the accuracy and integrity of the information is made and persons receiving the information should apply technical skills and conduct their own tests to determine its suitability in all respects for their particular purpose. Users are solely responsible for the application, use and outcomes when utilising the products. EnviroSpheres assumes no liability for the use of this information, results, products related or the outcome, as most variables are in control of the user and not EnviroSpheres.

Before handling, refer to the Safety Data Sheet for health and safety information of products. Ensure that all personnel using this product have read and understood this technical data sheet and the associated SDS before using the products.