E-SPHERES® Hollow Ceramic Microspheres

TECHNICAL DATA

APPLICATION: FAIRING COMPOUNDS AND BODY FILLERS

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 utilised across different industries in the formulation of repair putties, fairing compounds and light body fillers. E-SPHERES® improve value and performance of products by delivering weight reduction, less shrinkage, improved flow and workability, enhanced mechanical properties, colour, and potential cost reduction. Typical applications include:

- Automotive light body filler
- Marine fairing compounds
- Fibre reinforced fillers
- Filler compounds
- Timber / wood putty
- Polyester bog

These are only examples of possible applications.

ADVANTAGES	VALUE IN USE
Density and weight reduction	thanks to volume displacement by low density filling material
Improved rheology/flow characteristics	act as miniature bearings due to its smooth surface and spherical geometry
Improved corrosion resistance	due to its inert ceramic composition
Reduced shrinkage	as a result of its non-absorbent properties and dimensional stability
Improved impact resistance	owing to its capacity to absorb sound and vibration within the binder matrix
Improved sanding	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_2O_3 (Hematite)	0.4 – 0.5%
Aluminium Oxide Al_2O_3 (Alumina)	36 – 40%	Titanium Dioxide TiO_2 (Rutile)	1.4 – 1.6%

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

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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 fairing compounds and body fillers; 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 all acrylics, polyurethanes, epoxy or polyesters binder systems, and often contribute to optimise pigmented products by potential reduction of TiO_2. For more about formulating information or suggested starting point, please contact Envirospheres.

OTHER ADVANTAGES: Improved impact resistance on body fillers formulated with E-SPHERES®, which typically resist higher mechanical stress with less damage against other forms of hollow microspheres with low impact resistance.