



E-SPHERES[®] Hollow Ceramic Microspheres

TECHNICAL DATA

APPLICATION: EXFOLIATING SOAP AND EMULSION HAND CLEANERS

DESCRIPTION: Advanced functional additive and exfoliating filler with spherical hollow structure and ceramic composition. Its main characteristics are lightness, chemically unreactive or inert, unique white colour, neutral pH, friendly exfoliating/abrasive properties and high compressive strength.

APPLICATION: E-SPHERES[®] Hollow Ceramic Microspheres (HCM) are widely utilised across different industries in the formulation of skin care products. E-SPHERES[®] improve value and performance of products by delivering weight reduction, friendly abrasive and exfoliating properties, improved flow and workability, enhanced ecological compatibility, colour, and potential cost reduction. Typical applications include:

- Soap bars
- Industrial and domestic hand cleaners (emulsions)
- Exfoliating skin care products

These are only examples of possible applications.

ADVANTAGES

Density and weight reduction
Improved rheology/flow characteristics
Effective abrasive performance
Environmentally friendly
pH neutral
Easy formulation

VALUE IN USE

thanks to volume displacement by low density filling material
act as miniature bearings due to its smooth surface and spherical geometry as a result of its insoluble nature and shape
Eco-friendly option to polybeads thanks to its inert chemistry
due to its ceramic composition, contributes to skin friendly products
results from simple incorporation in existing or new formulas

Cost Saving and value added

Lower formulation costs

due to substitution of more expensive raw materials and optimised area of contact, especially when compared to polybeads

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 soap and hand cleaners. Widely used solvent based waterless emulsified gel hand cleaners until recently, have predominately used pumice, polybeads or in some cases silica flour as an abrasive agent; most of these tend to be highly abrasive compounds. Spherically shaped, E-SPHERES® offer a milder, softer yet efficient abrasive alternative. At a loading of approximately 10 – 15% by weight the resultant product will be noticeably lighter and better for the health and the environment that products formulated with polybeads.

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 emulsion systems.

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.