Natural Resource Efficiency
• **Sustainable Raw Material:** Perlite reserves are abundant and can be responsibly extracted for long-term use.
• **Minimal Processing Requirements:** No chemical refinement is needed, resulting in a lower environmental footprint.

Contribution to Energy Savings
• **High Thermal Resistance:** Low thermal conductivity reduces overall energy consumption.
• **Improved Building Efficiency:** Helps decrease heating and cooling demands, supporting sustainable construction standards.

Lightweight Advantage
• **Reduced Transportation Emissions:** Low bulk density lowers fuel consumption during logistics.
• **Improved Structural Performance:** Reduces dead load in construction applications.

Fire Safety Performance
• **Non-Combustible Mineral:** With a high melting point, it does not burn or contribute to fire load.
• **No Toxic Fumes:** Produces no smoke or hazardous gases under fire exposure.

Acoustic Performance
• **Sound Absorption:** Its porous structure enhances sound absorption capabilities.
• **Ideal for Architectural and Industrial Acoustic Solutions.**

Chemical Resistance
• **Inert to Acids and Organic Solvents:** Maintains stability in harsh chemical environments.
• **Non-Degradable:** Does not rot or decompose over time.

Water Management Benefits
• **Optimal Water Retention and Drainage:** Its lightweight and porous structure regulate moisture effectively (useful in horticulture and landscaping).
• **Freeze–Thaw Durability:** Maintains integrity in cold climates.

Long-Term Durability
• **Stable Over Time:** No volume loss or structural degradation.
• **Reduced Maintenance Costs:** High physical stability extends service life.

Recyclable Product Cycle
• **Mechanically Reprocessable:** Can be reclaimed and reused in various applications.
• **Supports Circular Economy:** Generates no hazardous waste.

Supports Green Building Certifications
• LEED, BREEAM, and Similar Standards: Contributes to credits related to natural materials, energy efficiency, and low environmental impact.

Tecosphere closed cell perlite and **Tecofill** mineral perlite fillers are widely used accross diverse industries due to their versatile properties.

Here are the primary application areas:

Construction and Building Industry
• **Lightweight Concrete and Mortars:** Perlite microspheres reduce weight while enhancing durability in lightweight concrete, improving energy efficiency and lowering costs.
• **Thermal and Acoustic Insulation:** Known for thermal insulation, they help reduce indoor heat loss and provide acoustic insulation.

Automotive and Aerospace Industry
• **Composite Materials:** Their lightweight and durable nature makes them ideal for adding to automotive parts and aircraft bodies, contributing to fuel efficiency.
• **Plastics and Polymers:** Added to plastics and polymers to reduce weight and production costs.

Oil and Gas Industry
• **Drilling Muds and Cements:** Used to lower the density of drilling mud and improve the durability of well cements in oil and gas extraction.
• **Well Sealing:** Acts as a filler material to ensure better sealing of underground layers.

Paints and Coatings
• **Surface Texture and Durability:** Adds durability and a light texture to paint and coating formulations.
• **Thermal Insulation:** Preferred in industrial coatings for its high-temperature resistance.

Cosmetics and Personal Care Products
• **Powders and Foundations:** Its lightweight, porous structure provides a soft touch and oil-absorbing properties in.

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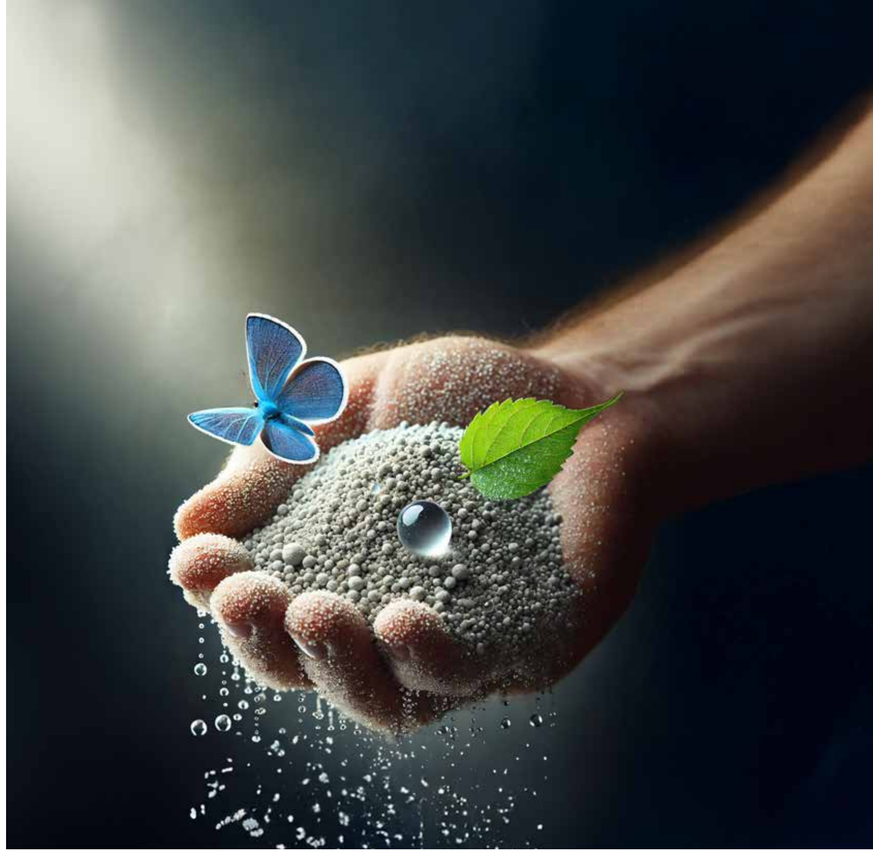
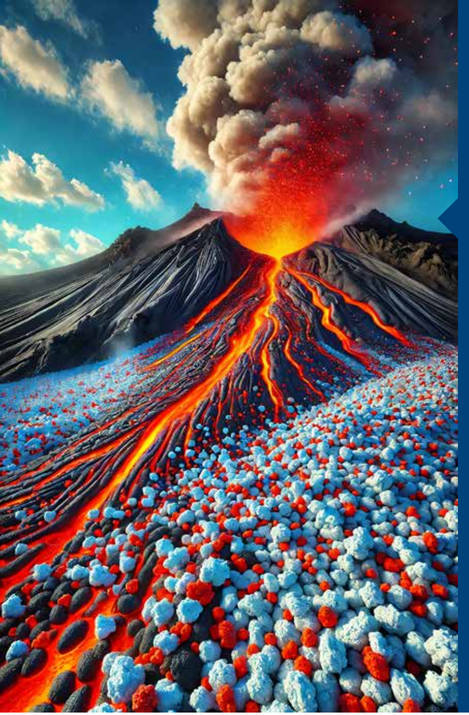


TECOSPHERE
CLOSED-CELL PERLITE MICROSPHERES

TECOFILL
MINERAL PERLITE FILLER

TECOLITE
PERLITE FILTER AID



What is Perlite?

Perlite is a natural volcanic glass formed when high-silica lava cools rapidly. Over time, groundwater creates tiny, sealed water pockets inside the rock. When heated to 850–1,100°C, this water vaporizes and expands the material up to 20 times its original volume, producing lightweight, porous expanded perlite.

Born from volcanic energy, perlite offers superior thermal insulation, fire resistance, and chemical stability, making it a versatile and sustainable material for modern industries.

Volcanic Origin

Perlite forms naturally from volcanic activity, making it one of the purest and most stable minerals used in modern applications.

Key Physical Properties

- Expansion factor: up to 20×
- Melting point: ~1,260°C
- pH: neutral
- Bulk density: 30–150 kg/m^3 (expanded form)

Scientific Characteristics

- Amorphous volcanic glass
- High silica and alumina content
- Low density, high porosity
- Chemically inert and non-toxic
- Non-combustible mineral

TecoFILL

MINERAL PERLITE FILLER

Expanded Milled Perlite

Product Description

Expanded Milled Perlite is produced by expanding natural perlite ore and subsequently milling it into fine, controlled particle sizes. The result is a highly porous, lightweight mineral powder with excellent thermal insulation, high surface area, and superior fire resistance. Expanded milled perlite functions as both a functional filler and a performance-enhancing additive across industrial applications.

Key Features & Technical Advantages

- **High Porosity:** Provides exceptional thermal insulating capabilities and low thermal conductivity.
- **Lightweight Mineral Powder:** Reduces density in final formulations, improving handling and efficiency.
- **Inorganic & Non-Combustible:** Offers outstanding fire resistance and stability under high temperatures.
- **High Surface Area:** Enhances bonding interaction in coatings, plasters, and composite matrices.
- **Chemical Inertness:** Non-reactive with most chemical systems; maintains long-term performance.
- **Acoustic Absorption:** Micro-porous structure contributes to sound absorption properties.
- **Dimensional Stability:** Does not shrink, swell, or degrade over time.
- **Improved Rheology:** Enhances viscosity control in paints, mortars, putties, and plasters.
- **Cost-Effective Functional Filler:** Provides performance with minimal environmental impact.

PRODUCT	Bulk Density	Type	Particle Size (d98)	Coating
TecoFill 100H	140	Milled EP	90 Micron	Yes
TecoFill 100	130	Milled EP	90 Micron	No
TecoFill 120H	110	Milled EP	150 Micron	Yes
TecoFill 120	100	Milled EP	150 Micron	No
TecoFill 140H	130	Milled EP	210 Micron	Yes
TecoFill 140	120	Milled EP	210 Micron	No
TecoFill 150H	180	Milled EP	210 Micron	Yes
TecoFill 150	180	Milled EP	210 Micron	No

TecoSPHERE

CLOSED-CELL PERLITE MICROSPHERES

Closed-Cell Perlite Microsphere

Product Description

TECOSPHERE Closed-Cell Perlite Microspheres are ultra-lightweight, spherical volcanic glass particles engineered through a controlled expansion process that seals the internal cells completely. This creates a highly stable, low-density filler with exceptional thermal insulation, chemical resistance, and dimensional stability. Their closed-cell structure prevents liquid absorption, making them ideal for applications where low permeability and high mechanical integrity are required.

Key Features & Technical Advantages

- **Closed Cell Structure:** Ensures extremely low liquid absorption and enhanced impermeability.
- **Ultra-Low Density:** Significantly reduces product weight in composite formulations.
- **Thermal Insulation:** Excellent thermal resistance derived from the trapped air within the microcells.
- **High Compressional Strength:** Durable spherical geometry supports mechanical load without collapse.
- **Chemical Inertness:** Resistant to acids, solvents, and corrosive environments.
- **Fire & Heat Resistance:** Non-combustible mineral with high softening point.
- **Dimensional Stability:** Maintains geometry under temperature and pressure variations.
- **Low Dielectric Constant:** Suitable for electronic and polymer applications.
- **Flowability:** Spherical shape improves slurry workability and reduces viscosity in polymer and resin systems.

PRODUCT	Bulk Density	Type	Particle Size (d98)	Coating
Tecosphere 100	130	Microspheres	100 Micron	Yes
Tecosphere 180	110	Microspheres	180 Micron	No
Tecosphere 180H	130	Microspheres	180 Micron	Yes
Tecosphere 250	110	Microspheres	250 Micron	No
Tecosphere 250H	130	Microspheres	250 Micron	Yes
Tecosphere 350	100	Microspheres	350 Micron	No
Tecosphere 350H	120	Microspheres	350 Micron	Yes
Tecosphere 350HD	150	Microspheres	350 Micron	Yes