perlite

Main end-uses of perlite

The product:

Perlite is a natural volcanic glassy material, formed by rapidly cooled lava trapping water within its mass (the so called crystalline water). This phenomenon gives perlite its most important physical property, the ability to expand at its softening temperature range of 800°-950°C. A white mass of tiny, glass-sealed bubbles is formed when sudden controlled heating causes perlite to expand by the evaporation of the crystalline water. Its volume increases 10 to 20 times and its bulk density decreases accordingly, giving perlite excellent properties.

Building and Construction

As a low density material with excellent thermal and acoustical insulation properties, expanded perlite is used in the manufacturing of formed products (ceiling tiles, boards) and building materials (plasters, mortars), as well as in lightweight concrete with increased fire resistance and improved lightness of the final product. Its environmental friendly nature has rendered its use in construction advantageous when compared to other non-natural materials. The addition of perlite to the formula of gypsum or cement plasters and mortars gives lightness to the end product, lower coefficient of linear expansion, greater elasticity, higher adhesion, and better workability with considerably improved heat and sound insulation.

Insulation

Expanded perlite is used for a wide range of insulating applications; i.e. from cryogenic vessels requiring insulation to extremely low temperatures (around -200°C) to medium or high temperature applications such as insulating concrete, refractory bricks, and underfloor insulation. At low temperatures perlite is most suitable for the storage of liquefied industrial gasses such as oxygen, nitrogen, LNG or for the insulation of double-wall helium and hydrogen storage spheres.
Thanks to its free-flowing nature, loose perlite can be also easily poured into cavities as loose-fill insulation, and therefore it is widely used for filling floors, wall crevices and holes as well as the pitch in flat roofs. Coated perlite gives a unique roofing base and a stable underfloor filling and insulation. It is also an excellent material for repair of existing roofs providing additional insulation and drainage. In addition to excellent thermal properties, perlite insulation is relatively low in cost, easy to handle and install, and does not shrink, well, warp or slump.
It is also noncombustible and meets fire regulations.

Horticulture

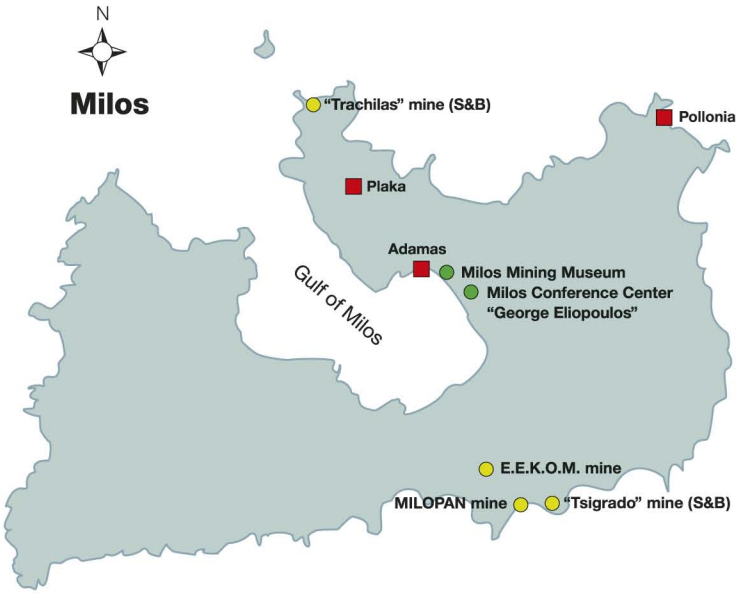
Expanded perlite is used as a substrate for soilless culture and in mixture with peat as a propagating media. Perlite success in this market is attributed to the combination of various properties; it provides optimum air-water relation in the root environment, improved drainage, strong capillary attraction of water and high water holding capacity. Perlite is a uniform growing medium and as a result roots are denser with even distribution in the substrate. Other benefits of horticultural perlite are its neutral pH and the fact that it is sterile and weed-free. In addition, its light weight makes it ideal for use in container growing. Other horticultural applications for perlite are as a carrier for fertilizer, herbicides and pesticides. Horticultural perlite is as useful to the home gardener as it is to the commercial grower. It is used with equal success in greenhouse growing, landscaping applications and in the home in house plants.

Filtration

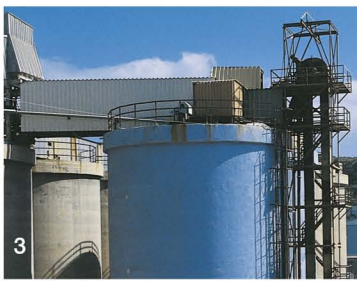
Expanded and further processed perlite is an effective filtration medium, characterized by a large surface area, chemical purity, stability, and inertness. Perlite does not change the chemical composition of the liquid filtered but purifies it from any solid materials it may contain through a physical separation process, offering high throughput and adequate filtrate clarity. Perlite is used mainly for the clarification of wines, syrup and sugar, edible oils, water, fruit juices and also in the chemical and pharmaceutical industries.
It is applied to filtration devices where a filter aid cake layer is formed for the removal of impurities out of the various liquids passing the filter.

MILOS MINING MUSEUM

perlite



From perlite mines on Milos, more than 550,000 MT of raw graded perlite are produced annually.



Images:

1. Perlite mine on Milos
2. Raw perlite processing unit
3. Graded perlite silos
4. Construction applications of perlite

Markets/Segments	Main End-Uses
• Formed building products	• Acoustical ceiling tiles, roofing tiles, boards & panels
• Bulk Building materials	• Plasters, mortars, light weight aggregates for roofs and under layments and loose-fill insulation
• Horticulture	• Growing medium for greenhouse cultivation and soil mixes, substrates
• Filtration	• Filter aids for the production of juices, beverages, edible oils, chemical, pharmaceutical, and petroleum products
• Industrial applications	• Cryogenic insulation, pipeline insulations for industrial gases, heat-resistant applications in foundries
• Chemical industries	• Raw material for the pozzolanic cement, silica source

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Sep. 2008/c-2000

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M U S E U M

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