

"Perlite"

* Origin and characteristics *



Perlite is not a trade name but a generic term for naturally occurring siliceous rock. The distinguishing feature which sets Perlite apart from other volcanic glasses is that when heated to a suitable point in its softening range, it expands from (4 : 20) times its original volume.

This expansion is due to the presence of (2 – 6)% combined water in the crude Perlite rock. When quickly heated the crude rock pops in a manner similar to popcorn as the combined water vaporizes and creates countless tiny bubbles which account for the Ultra light weight and other exceptional physical properties of expanded Perlite that is suitable for many uses in different fields (Agricultural, Construction, Industrial, and Filter Aid).

* Physical properties *

Color: White to grayish white	Fusion Point : 1280 - 1350°C
Bulk Density: 45-350 kg/m ³	Thermal conductivity at (24°C): 0.04 - 0.06 w/m.k
Grain size Available: As desired, 5 mm and finer	Combustible and flammable ability: non
Specific Gravity: 0.32	Solubility : soluble in heat concentrated alkali
P.H : 6.5 - 7.5	Free moisture: 0.5% Maximum

*** Chemical analysis of crude Perlite rock ***

SiO₂ : 72 – 76%	Bound water : 2- 6%
Al₂O₃: 11 – 14%	Other oxides : 5 - 13%

*** Heavy elements analysis ***

(Fe)	0.7 mg\kg
(Mn)	Less than 0.01 mg\kg
(Cu)	Less than 0.02 mg\kg
(Zn)	0.2 mg\kg
(Pb)	Less than 0. 1 mg\kg
(Cd)	Less than 0.007 mg\kg
(As)	Less than 0. 1 mg\kg
(Cr)	Less than 0.01 mg\kg
(Ni)	Less than 0.03 mg\kg
(Se)	Less than 0. 1 mg\kg

** Perlite doesn't contain heavy elements,(Toxic).



Uses for Perlite

The world's most versatile mineral

- **Construction Applications :-**

Because of Perlite's outstanding insulating characteristics and lightweight, it is widely used as a loose-fill insulation in masonry construction. In this application, free-flowing Perlite loose-fill masonry insulation is poured into the cavities of concrete block where it completely fills all cores, crevices, mortar areas and air holes. In addition to providing thermal insulation, Perlite is also ideal for insulating low temperature and cryogenic vessels. When Perlite is used as an aggregate in concrete, lightweight, fire resistance, insulating concrete is produced that is ideal for roof decks and other application. Perlite can also be used as an aggregate with Portland cement and gypsum for exterior applications and for the fire protection of beams and columns. Other construction applications include under floor insulation, chimney linings, paint texturing, gypsum boards, ceiling tiles and roof insulation boards. Also Perlite high heat resistant property gives advantage of when Perlite is used in manufacture refractory bricks and mortars.

- **Agricultural Applications :-**

In horticultural applications, Perlite is used through-out the world as a component of soilless growing mixes where it provides aeration and optimum moisture retention for superior plant growth. For rooting cuttings, 100% Perlite is used. Studies have shown that outstanding yields are achieved with Perlite hydroponic systems. Other benefits of horticultural Perlite are its neutral PH and the fact that it is sterile and weed-free. In addition, its lightweight makes it ideal for use in container growing. Other horticultural applications for Perlite are as a carrier for fertilizer, herbicides and pesticides and for pelletizing seed. 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.

- **Industrial Applications :-**

Industrial applications for Perlite are the most diverse , ranging from high performance fillers for plastics to rubber. Other applications include its use as an abrasive in soaps, cleaners and polishes ... Also industrial Perlite use as a stone washing for manufacture jeans.

- **Filter Aid Applications :-**

Filter aid Perlite use as a filter media for pharmaceuticals, food products, chemicals, wastewater and swimming pools.