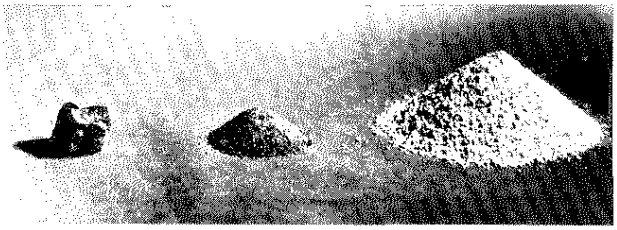
PERLITE AS AN ABSORBENT OR CARRIER

What is Perlite?

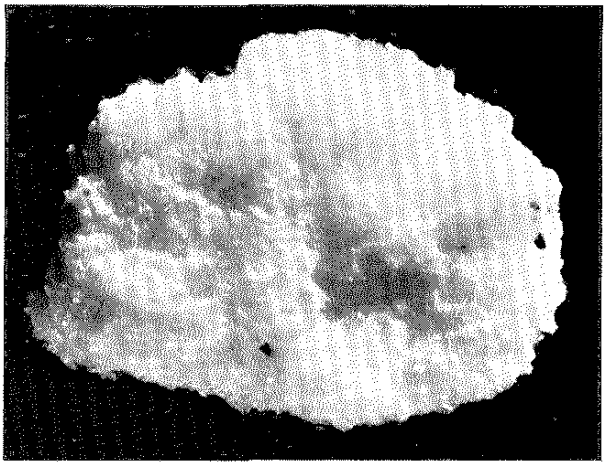
Perlite is not a trade name but a generic term for naturally occurring siliceous volcanic rock. The distinguishing feature which sets perlite apart from other volcanic glasses is that when heated to a suitable point in its softening range, it expands four to twenty times its original volume.

This expansion is due to the presence of two to six percent combined water in the crude perlite rock. When quickly heated to above 1600° F (870° C) the crude rock pops in a manner similar to popcorn as the combined water vaporizes and creates lightweight particles with countless internal cells and high surface area. It is this multicellular nature and high surface area which accounts for the excellent absorption properties of perlite.



Crude Perlite | Crushed Crude Perlite | Expanded Perlite

Three stages of perlite production shown above illustrate the great increase in volume after furnacing. The same weight of perlite, 1 oz (28 gm) is shown in each photo.



Expanded perlite particle.

The expansion process also creates one of perlite's most distinguishing characteristics: its white color. While the crude rock may range from transparent to light gray to glossy black, the color of expanded perlite ranges from snowy white to grayish white.

Expanded perlite can be manufactured to weigh from 2 lb/ft^3 (32 kg/rn^3) to 15 lb/ft^3 (240 kg/m^3) making it adaptable for numerous uses, including filtration, horticultural applications, insulation, inert carriers and a multitude of filler applications.

Perlite as an Absorbent

Expanded perlite can be used to control and clean up liquid spills. The perlite may also be used to provide rapid deoderization and dehydration of animal waste liquids. In these applications the perlite may be use din granular form and compressed into pellets of the desired size and shape. Perlite is also suggested as an absorbent media in enclosed containers for the disposal of liquid toxic waste substances.

By activating the expanded perlite with hydrochloric acid and/or sulfuric acid the material can be used as a purifying agent for waste and process waters.

TYPICAL CHEMICAL ANALYSES*

Silicon	33.8
Aluminum	7.2
Potassium	3.5
Sodium	3.4
Iron	0.6
Calcium	0.6
Magnesium	0.2
Traces	0.2
Oxygen (by difference)	47.5
Net Total	97.0
Bound Water	3.0
Total, %	100.0

* All analyses are shown in elemental form even though the actual forms present are mixed glassy silicates. Free silica may be present in small amounts, characteristic of the particular ore body. More specific information can be obtained from the ore supplier involved.

Perlite as a Carrier

Expanded perlite is recommended as a carrier for pesticides, feed concentrates, herbicides, and other similar applications.

As a carrier for feed concentrates perlite will readily absorb the concentrate while remaining free flowing (anti-caking), and chemically resistant to micro-biological degradation. The perlite also permits quick liquid movement between the carrier surface and the recipient of the feed concentrate.

TYPICAL PRODUCT CHARACTERISTICS

Color	White
G.E. Brightness, %	80-85
Refractive Index	1.47
Specific Gravity	2.34
Apparent density, lb/ft ^{3}	2.5-10.5
kg/m^3	40-170
Water absorption, % wt.	200-600
Oil absorption, gms oil/gm	50-100
Moisture, %	< 1
Ignition Loss, (1 hour at 1800° F)	2.0% max.
Wet density, lb/ft ^{3}	5.0-20.0
kg/m^3	80-320

Flowability (when damp)	Good
Handleability (caking resistance)	Good
Absorption rate	Instantaneous
Particle size, mesh (range)	20-200 U.S. Standard (.074-.8 mm)
Weight gain, %*	
(50% R.H.-5 days)	7.0 max.
(90% R.H.-5 days)	14.0 max.
pH (water slurry)	Neutral
Solubility	Slightly soluble (< 3%) in Mineral Acids (IN)

*Weight gain of perlite concentrate (perlite and material being carried).

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