

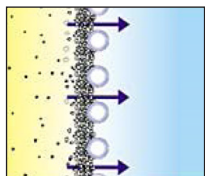
# Perlite for Filtration

*The physical character of expanded perlite is ideal for use as a filter aid separating small solid particles from liquids.*

Lightweight expanded perlite bubble structures are milled and classified using strictly defined processes to produce perlite filter aids with specific flow characteristics. The various grades utilize the



jagged interlocking structures to create billions of microscopic channels between the filter



*The jagged interlocking structures of milled perlite make it an ideal filter aid.*



*A filter aid is a finely graded material which, when added to the liquid to be filtered, collects on the septum (a screen or cloth). The filter aid forms a porous layer on the septum and thus the filter aid is the filtering medium that traps the solids being removed and prevents them from blinding the septum.*

aid particles to produce optimum flow rates and clarification abilities for a wide variety of applications.

## ***The Benefits of Perlite as a Filter Aid***

Perlite filter aids are lightweight, inert, impart no taste or odor to liquids being filtered, and are virtually insoluble in mineral and organic acids at all temperatures. Solubility in strong alkaline solutions varies depending on temperature and contact time.

Without using a filter aid the solid particles in the liquid will soon accumulate on filtering surfaces and block them.

A perlite filter aid makes a filtering layer (cake) that transfers the actual filtering from the septum to the whole mass of filter aid. Filtration occurs in the tiny pores formed by the fine particles of filter aid.

## ***Volume-Based Pre-coat Filtration***

Perlite filter aids provide users with a lightweight material choice. Perlite filter aid grades provide the user with a density advantage from 20 to 50% over other types of filter aids. Perlite filter aid dry density ranges from 100 to 200 kg/m<sup>3</sup> (6 to 12 lb/ft<sup>3</sup>), and the filter cake density range is 100 to 270 kg/m<sup>3</sup> (7 to 17 lb/ft<sup>3</sup>). In contrast, other filtration materials produce equal performance filter cakes in the range of 230 to 420 kg/m<sup>3</sup> (15 to 25 lb/ft<sup>3</sup>).

Expanded perlite provides larger volumes with low bulk density compared to other filter aids. Experience in a variety of applications has shown that most filter aid users can economically switch to perlite from other pre-coat filter aids without sacrificing performance.

## ***Inert Nature of Perlite***

Perlite filter aids are both sterile and inert and are used for filtering liquids in the beverage, food and pharmaceutical industries. No tastes, colors or odors are imparted, and, subject to meeting the standards listed in the Food Chemicals Codex (published by the United States' National Academy of Sciences), are deemed safe for their intended use. Note: The Food Chemicals Codex is regarded as a source of information on the quality and purity of food grade substances, and is regarded as authoritative by many government agencies throughout the world. *(continues)*

# Perlite for Filtration

(continued)

Approval for the use of perlite as an additive in animal feeds was recently extended in the European Union. Generally, spent filter aid cakes from wineries, breweries or other food-related industries may be added to animal feed. Such practices reduce the environmental footprint of those industries as well as reducing disposal costs for the used material. Approval for this application in the United States comes from the Association of American Feed Control Officials (AAFCO).

## Usable With Standard Equipment

Perlite filter aids can be used with either pressure or vacuum filtration equipment. Perlite generally replaces other filter aids on a one-to-one volume basis - for example; a cubic measure of perlite will replace the same volume of other filter aids. Selection of the optimum grade and dosage may require plant or laboratory filtration tests.

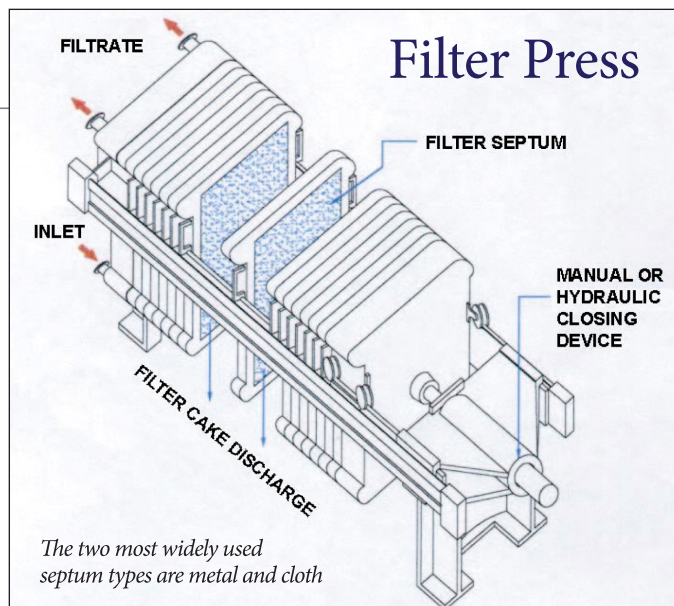
## Flow Rates of Grades

Perlite filter aid grades from various manufacturers range from 0.2 – 6 Darcies. (The Darcy is a common unit of flow rate for filter aids.) A material with a permeability of one Darcy passes 1 milliliter per second per square centimeter of a liquid of 1 centipoise viscosity (approximately that of water) through a cake 1 centimeter thick at a differential pressure of 1 atmosphere.

The higher flow grades are especially applicable to use with highly viscous liquids such as syrup, resins or gelatinous slurries. Productivity, clarity and flow rates may be increased through the use of perlite filter aid grades. These traits are accomplished during the liquid's path through the channels created by the jagged, interlocking particles.

## Easy Cake Release

Additional benefits of perlite filter aids come at the end of the filter cycle. Perlite filter cakes remain porous and do not compact. Filter cakes built up



under pressure release easier when perlite is used. This release facilitates cleaning, potentially reduces manpower requirements, and increases productivity. The lower weight of perlite filter cakes may also reduce disposal costs.

## Use by Industry

Perlite filter aids have gained acceptance in almost every industry concerned with the separation of liquids and solids, and even gasses and solids. The following list, although not all-inclusive, gives an indication of the many applications where perlite filter aids are being utilized due to their low density, availability, performance, economy and environmental footprint.

- **Food Processing:** juices, beers, wines, sweeteners, vegetable oils, wastewater treatment
- **Pharmaceuticals:** enzymes, antibiotics, Epsom salt
- **Industrial:** water treatment, sizings, oil & solvent recovery, greases
- **Chemicals:** inorganic & organic chemicals, resins, polymers, brine, adhesives, fertilizers, waste disposal
- **Paint and Coatings:** waxes, oils, varnish, gums, shellac, wastewater treatment
- **Environmental:** stormwater filtration, ecology embankments, media filter drains