

cal stability and ability to provide non-capillary pore space in a mix. Perlite has little water holding capacity since the internal pore structure is closed. It has extremely low cation exchange capacity, no nutritive value of its own, and no notable influence on pH of mixes in which it is employed.

The bulk density of perlite is approximately 6 to 8 pounds per cubic foot (0.1 g/m³). The fine dust associated with handling dry perlite is irritating when airborne and inhaled. The percentage of such small particles in perlite should be minimized by only obtaining a horticulture grade of perlite. An effort should be made to minimize the physical movement of loose dry perlite until it can be moistened or incorporated with moist peat or other amendments. Individuals involved with considerable perlite handling should wear a breathing mask or respirator and goggles while performing that task. A fine spray of water on perlite as it is being poured from the bag and the use of properly placed exhaust fans in an enclosed media blending area will greatly reduce the perlite dust problem.

Vermiculite. Vermiculite, an aluminum-iron-magnesium silicate, is a mica-like mineral which, when heated above 1400°F, expands to an open-flake structure that provides spaces for air and water. Vermiculite has been used increasingly as a potting mix amendment since peat-lite mixes were introduced in the 1960s.

Vermiculite particle size is determined by the particle size of the ore, prior to heating. Due to the range of pore spaces of processed vermiculite, it retains considerable moisture upon wetting. The pH of most of the vermiculite used in horticulture falls within a range of 6.0 to 8.9. Although vermiculite contains measurable amounts of

potassium, calcium and magnesium available to plants, it should not be regarded as a fertilizer. Vermiculite also has good buffering and cation exchange capacity.

One of the major shortcomings of vermiculite is its poor physical stability after wetting. Particles which have been mixed, wetted and compressed do not recover physically. Compression of moist vermiculite causes the expanded particle to collapse and frequently slip apart. This is particularly a problem when the mix is handled wet, when vermiculite containing mixes are used in large containers where the pressure is great toward the bottom of the container, and in situations where mixes are used on a second crop such as in a propagation bed or recycled mix.

There are several grades or particle sizes of vermiculite used by horticulturists. Each manufacturer of vermiculite has its own system of grades. The finer grades are generally used in mixes formulated for small pots and plug tray applications, while coarser grades are usually found in mixes designed for larger containers.

Polystyrene foam. Polystyrene foam is a plastic product manufactured from resin beads which are subjected to heat and pressure. The polystyrene foam used in peat-like mixes is usually derived from scrap generated during the manufacturing of polystyrene bead-foam such as sheet insulation. The scrap pieces are shredded by mechanical means into small particles suitable for blending with peat, bark, vermiculite and other components. Styrofoam[®] is one trademarked brand of polystyrene foam. Extruded polystyrene foam is much denser than the bead-foam and is generally not used in potting medium.

Polystyrene foam is utilized in potting mixes to improve drainage,

reduce water holding capacity, reduce bulk density and serve as a cost effective alternative to perlite. The closed pore structure of the foam makes it one of the least water retentive components in use. The foam has no appreciable cation exchange capacity, and contains no plant nutrients.

A desirable particle size range of polystyrene beads for potting mixes is 1/8 to 3/16-inch diameter and 1/8 to 1/2-inch (0.3 to 1.3 cm) for flakes: Due to the extremely low bulk density of the foam beads or chips (0.75-1.0 lbs/ft³; 12 to 16 g/l) it presents some handling problems. It should be handled in areas where there is little air turbulence to prevent particle drift. The drift problem is compounded by the static charge of the foam particles which causes them to stick to objects and surfaces in the media handling area. A small amount of water plus a wetting agent applied to the foam will reduce both handling problems.

The light weight and durable nature of polystyrene foam make it an attractive alternative medium component for crops in hanging baskets and a variety of interior plants which must be packaged and shipped long distance.

Rockwool. Rockwool is manufactured from a mineral called basalt through a heating and fiber extrusion process. Although rockwool is utilized primarily for insulation, it can be utilized as a rooting medium by itself or in combination with other ingredients, such as peat, bark, and perlite to make a soilless growth medium.

Rockwool formulated into blocks, cubes and slabs has been used extensively in the production of hydroponically-grown vegetables and flowers in Europe. Only a limited amount of rockwool blocks are used in the United States for ornamental production.