NATURE'S WAY RESOURCES
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JOHN'S CORNER

SOIL AMENDMENTS - PERLITE

By John Ferguson

Recently we have had a couple of our customers ask us to create lightweight special versions of a couple of our specialty soils. They wanted something finer than expanded shale but just as durable and free of toxic chemicals. So, how does one do this? The answer is perlite.

Perlite is made from a volcanic glass that occurs naturally by adding water to obsidian. The obsidian can range from two to six percent water in its structure depending on it source. Obsidian is a shiny black volcanic glass made up of mainly silicon (Si) and oxygen (O) which are the primary ingredients in regular glass, quartz and many other minerals and products. The type of obsidian used to make perlite has a lot of water in its structure (the hydration of obsidian) forming what is known as a amorphous volcanic glass. The obsidian to make perlite is found all over the world with the largest production in and around Turkey. In the United States, New Mexico produces the largest amounts of perlite.

The trapped water causes the obsidian to expand 7-20 times its original volume depending on the source of rock and when it is heated in a certain way. As it is quickly heated to over 1,600 degrees Fahrenheit (671 degrees Celsius), the water expands forming tiny trapped bubbles in the perlite.

Note: If heated slowly, the water will escape and not expand the silicate minerals. This changes the way light is reflected and gives it a whitish color (originally before it was expanded it was black or gray but can also be green, brown, blue or red). Since perlite is a form of natural glass, it is chemically inert, has a neutral pH and is weed free.

Perlite is used in many commercial, industrial and horticultural applications. In industry it is used as an insulator due to its resistance to high heat, in commercial applications it is often used as a filter

medium and as an ingredient to make light weight masonry products. It also increase the fire resistance of these products.

Perlite after expansion is screened into various sizes for use in different applications. A medium to coarse screening works best in horticulture.

For horticulture it is used as a soil amendment due to its high permeability (air and water moves through it easily) and low water holding properties (only 3-4 times its weight in water). Hence it is often used to root cuttings and in hydroponics. It has been used in all forms of lightweight planting media from potting mixes to soils for green roofs.

Perlite improves aeration and drainage, and it helps make moisture and nutrients more available to plants. Its porous structure is a home to beneficial microbes, it does not deteriorate, and it is sterile and free of weed seeds and disease. It is also lightweight, odorless and safe to handle.

Perlite should not be used in very acidic soils as the low pH may cause the release of aluminum (Al) which can be toxic to many plants. The only negative from a sustainability point of view is that it requires energy to mine, crush, heat and transport it to various markets, and it is not a renewable resource. However it is much more environmentally friendly than other light weight media like peat moss or coir.

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