

MULCH CORNER

EXPANDED SHALE

By John Ferguson

A question we often get asked is "What is expanded shale?"

The products we call Expanded shale may be produced from several sources (clay, shale or slate), and they have several different names depending on what part of the country one lives in.

To help us understand the materials we call expanded shale, lets review a little basic geology as clay, shale or slate may be used.

Clay - is made up of a number of different rock minerals in varying proportions. It is a fine grained , earthy material that becomes plastic with small amounts of water. Clays are made up dominantly of crystalline substances known as clay minerals and are all essentially hydrous aluminum silicates. Although a clay may be made up of a single clay mineral, there are usually several mixed with other minerals such as feldspars, quartz, carbonates, and micas. When clay is fired in a kiln, permanent physical and chemical changes occur. These reactions, among other changes, cause the clay to be converted into a hard ceramic material (bricks, pottery, etc.).

Shale's are basically very fine grained sedimentary rocks which have been formed by the consolidation of mud made of clay or silt. They often have a thinly laminated structure and their color is commonly some tome of gray although they may be white, yellow, brown, red, or green to black. They are mainly composed of clay minerals occasionally with quartz and mica. Clay is the major constituent of shale. As clay is compacted by pressure, over geologic time it becomes shale.

Slate's are exceedingly fine grained rocks which have the property that permits them to be split into thin , broad sheets. Their color is gray to black but may be green, yellow, red or brown. As shale's are subject to heat and pressure by a geologic process called metamorphism, they become slate.



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When clay, shale or slate is crushed and then exposed to high heat (3,600 OF) and cooked for a period of time, they expand like popcorn into a very hard rock that is very porous and light weight. There are many names used for these products such as Haydite, Buildex, Expanded shale, etc. depending on the source material and where you live.

Originally they were used to make a strong light weight very durable concrete that would crack less and as a result are used in overpasses, building construction, etc. or where ever a high quality concrete was required.

More recently expanded shale products have been used as a light weight component of a growing medium for "green roofs" to quickly improving heavy clays and other horticultural uses.

Expanded shale has good insulating properties, increases soil porosity, absorbs 38% of its weight in water, conservatively last for years (decades) in the soil, does not change pH, is environmentally friendly, is essentially a renewable resource, improves drainage and aeration (retains 30% air space), is non-toxic, odor- less, 100% inert, inorganic so it does not decompose and go away. It also will not compress, degrade or decompose, does not react with chemicals, is light weight and easy to handle, and it is economical and readily available.

As a result it now is used in the higher quality soil mixes for containers as over watering causes more plant death than any other cause. It has been used for a general soil conditioner, soil amendments for turf (lawns, athletic fields, polo fields, horse tracks), and as a decorative ground cover. It is also used for a mud blocker (horse stalls, pens, walkways, walking trails, and running tracts). Additionally, it is used in hydroponics as it has a large amount of surface area for beneficial bacteria.

It is useful in all forms of structural soils and as a backfill and drainage material. It is valuable as filter material and in potting mixes as it does not deteriorate like vermiculite or decompose like peat moss . When used in a soil mix it has been shown that plants have increased roots and root development, hence they grow quicker and are generally healthier.

In the Earth-kind Roses research program led by Dr. Steve George at Texas A&M it has been found to greatly increase the growth and health of roses when tilled into heavy clay soils along with a good quality compost.

101 Sherbrook Circle • Conroe, Texas 77385-7750
(936) 321-6990 Metro • (936) 273-1200 Conroe • Fax (936) 273-1655



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In summary, expanded shale is an economical way of solving many gardening problems and a useful tool (component) for one to have a beautiful and successful garden.

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