



DIATOMACEOUS EARTH (D.E.)

Diatomaceous earth (often abbreviated D.E.) comes from a soft sedimentary rock deposits called "Diatomite". It is a soft very fine grained rock, rich in silica that is composed of the remains of fossilized diatoms. Deposits of diatomite are found all over the earth and range in color from white (very pure) to buff, grey and occasionally black.

The deposits were formed by the accumulation of microscopic single celled aquatic plants called diatoms, a form of algae. Their external skeleton is composed of amorphous hydrous silica ($\text{SiO}_2 \cdot n\text{H}_2\text{O}$) known as opal. They range in size from one micrometer to one millimeter but most are 10-200 micrometers in diameter and they occur in many shapes.

Diatomite is chalky and very light with high porosity, almost chemically inert hence it is very useful in making cement and for use as a filtration medium. Raw dry D.E. can absorb 1.5 to 3 times its weight in water. Processed D.E. can absorb up to six times its weight in water.

Diatoms are single cell aquatic plants that live in fresh or salt water and use silica (quartz mineral) to form their exoskeleton. When these plants die they settle to the bottom and can form thick layers of sediment that over geologic time becomes diatomite.

The raw rock deposit is refined by crushing, drying, size reduction and calcining depending on the application.

Its name came from its usage as a stabilizing agent for nitroglycerine when making dynamite, hence the name Diatomite. Its two largest uses are as a filtration media for swimming pools and as an insecticide (swimming pool D.E. does not work as an insecticide as it is processed differently).

When processed as a non-toxic insecticide, D.E. absorbs lipids away from the outer waxy layer of an insects exoskeletons causing them to dehydrate. Must be uncalcinated (not heat treated) and be less than 12 microns in size. Spiny diatoms work best for this application. In addition to dehydration D.E. gets caught between their exoskeleton joints and as they move it acts like little razor blades and cuts them up. It must be kept dry to work hence one must reapply after a rain. D.E. is effective on slugs and snails, bed bugs, ants, earwigs, cockroaches, silverfish, crickets, fleas, millipedes, and centipedes.

Other applications include; filtration for beer, wines and greases, absorbents, toothpaste, pet litter, metal polishes, high temperature insulating material, sound insulation, paints, plastic products and cement. Medical grade D.E. is also used for a de-worming in animals and humans.