



MotherEarth™ D

Pest Control Dust

TECH NOTES

Diatomaceous Earth

Diatomaceous earth is a natural substance derived from the fossilized remains of aquatic algae referred to as diatoms. There are many sources of diatomaceous earth, each with physical characteristics that may be useful to different industries based on the size, shape and structure of the diatoms. Diatomaceous earth can originate from fresh water or salty seas and the physical properties of DE vary with its origins.

MotherEarth D is very different from other diatomaceous earth (DE) products. Its source, the structure of its diatoms and the absorptive properties all set this product apart from the others and shows that not all diatomaceous earth products are the same.



Salt Water Diatomaceous Earth: Used for Pool Filters, Not Pest Management

Many people are familiar with diatomaceous earth used as a filtering agent for swimming pools. This variety of diatomaceous earth is usually comprised of salt water diatoms that have been crushed and compacted in their deposits and, after being mined, heated to high temperatures, glassifying the material to improve its filtration characteristics. This product contains high percentages of crystalline silica formed during the heating process. Although very useful for filtering impurities out of water, this material is not appropriate for pest management due to inhalation hazards associated with the crystalline silica and its lack of effectiveness in killing insects.

Freshwater Diatomaceous Earth: Used as a Desiccant for Pest Management

Freshwater sources of diatomaceous earth have been used for pest management for many years to control beetles and moths in stored food commodities, and in structural pest management to control fleas, beetles, bed bugs, cockroaches, termites, ants and

many other insects. Under a scanning electron microscope, freshwater DE looks like a carpet of hollow porous cylinders that are riddled with holes. Most of the individual diatom shells survive compaction during deposition and the impact of mining, drying and milling. As a result, freshwater diatomaceous earth products contain a high percentage of intact shells with both an interior void space and interior and exterior surfaces, making it very absorptive.

PRODUCT SPECIFICATIONS

- Active ingredient: 100% DE
 - Non- calcined
 - < 0.1 % crystalline silica
- Signal word: CAUTION
- Mode of action: Desiccant
- OMRI® Listed
- Sizes: 8 oz. bottle and 10 lb. pail



Photo courtesy of www.epa.gov

Live phytoplankton algae, Melosira Spp.



MotherEarth D after millions of years fossilized.

MotherEarth D: A Special Variety of Freshwater Diatoms

MotherEarth D features a special variety of freshwater diatomaceous earth taken from a deposit rich in fossilized diatoms from the genus *Melosira*. Many similar species of diatoms still exist today in various parts of the world, but it's their ancestors which died and accumulated on a glacial lake bed and fossilized over a million years ago that are the real stars of this product. This special variety has been determined ideal for structural pest management due to its high porosity and its ability to quickly desiccate insects and arthropod pests. In fact, it has twice the surface area of other typical diatomaceous earth and a larger pore-volume weight ratio, giving it much greater absorbent properties – perfect for professional pest management use.

Benefit: Safety

NO respiratory protection required when used according to label directions

MotherEarth D doesn't come with the inhalation hazards sometimes associated with other varieties of diatomaceous earth. It is not heated or calcined (glassified) when processed and contains less than 0.1% crystalline silica (OSHA concentration limit).

NO ingestion hazard when used according to label directions

Ingestion of diatomaceous earth is not toxic to mammals. The FDA has exempted diatomaceous earth from requirements of fixed residue levels when added to stored grain. Diatomaceous earth is significantly less toxic when ingested than other low risk products such as boric acid.

Benefit: Efficacy

How does it work? Desiccation.

Diatoms cling to an insect as it passes through a treated zone. The diatoms absorb the waxy layer of the cuticle compromising the insect's ability to retain adequate moisture level, killing the insect by dehydration. No ingestion is required. Unlike boric acid which requires ingestion, MotherEarth D begins working as soon as the insect contacts the diatoms.

How long does DE remain active in voids? Indefinitely.

MotherEarth D contains no volatile chemicals, so degradation is not an issue. It remains active indefinitely for as long as the product remains dry. If it becomes wet its absorbency is reduced; however, when it dries it becomes effective again.

Where should it be applied? Great for voids, cracks and crevices.

MotherEarth D renders treated cracks, crevices and voids uninhabitable to insects. It kills insects currently residing in these places and prevents future invaders from taking up residence in areas treated. It works best in dry voids, cracks and crevices where insect desiccation occurs more rapidly.



Benefit: Versatility

What pests does MotherEarth D control? Ants, Cockroaches, Earwigs, Fleas, Mites, Spiders and other crawling insects.

MotherEarth D can be used effectively on a wide variety of pests due to its mode of action. All insects need to maintain a sensitive internal water balance in order to live. The cuticle has a waxy, oily outer surface which helps regulate internal moisture levels. MotherEarth D quickly absorbs and scratches through the moisture-protecting cuticle, leading to dehydration and death. It is especially effective against small insects such as bed bugs (they have a large surface area to volume ratio). It is also very effective on insects which have a cuticular covering consisting of low melting grease such as cockroaches (which gets more easily scratched and absorbed). Both of these factors make insects more vulnerable to desiccation.

Spiders

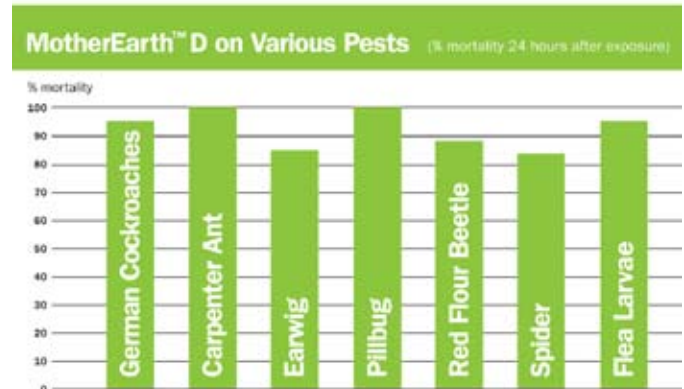
Control spiders in residential and commercial accounts. Apply MotherEarth D into cracks, crevices and voids where spiders or spider webs are present.

Fleas

Control fleas with MotherEarth D. Apply to pet bedding and flooring and treat nearby cracks, crevices and furniture. Vacuum in 3-4 days and repeat applications as necessary for effective control.

Bed Bugs

Use MotherEarth D to treat for bed bugs in states where the pest is not required to be specifically listed on the label. Apply into all cracks, crevices and voids around the sleeping area.



MotherEarth D Pest Control Dust is labeled for ants, cockroaches, earwigs, fleas, mites, spiders and other crawling insects.

In which accounts should MotherEarth D be used? Accounts interested in alternatives to conventional pesticides such as organic facilities, commercial accounts, homes, animal facilities, pet stores...

Label allows for use in and around: Businesses, Commercial Areas, Food/Feed Handling Establishments, Homes and other Residential Areas, Institutional Areas and Schools.

Organic Facilities: OMRI® Listed

MotherEarth D is OMRI Listed (Organic Material Review Institute). It is a great choice for customers seeking organic approved materials or natural products. This represents a growing number of clients to our industry. OMRI provides professional, independent and transparent review of materials allowed to produce, process and handle organic food and fiber. The OMRI product list is a directory of trade name products suitable for use in organic production, processing and handling.

Commercial Accounts

Use MotherEarth D in commercial accounts including food handling and other sensitive areas for control of general crawling insects. Apply into cracks, crevices and voids around cabinets, ceilings, entry ways, storage areas and pipe chases. An excellent choice for animal facilities, pet stores and other accounts that may have fish, reptiles, birds and other pets.

Homes

Looking for an alternative solution for general crawling insect control? Apply MotherEarth D into cracks, crevices and voids around baseboards, cabinets, entryways, pipe chases, stairwells and windows. MotherEarth D will kill insects that are already hiding in these locations and provide long-term protection.



Apply MotherEarth D in cracks, crevice and voids around outlets, pipe chases, cabinets, baseboards and wherever else insects may be hiding.