



CHARACTERISTICS AND COMMERCIAL APPLICATIONS OF ZEOTECH'S ZEOLITE MINERAL ORE

The *Zeobrite® Filter Granule* trade name applies to a natural zeolite mineral ore that is mined, crushed and screened from a naturally occurring deposit of the zeolite mineral clinoptilolite for use in water treatment applications. Clinoptilolite is a framework aluminosilicate mineral and has been used in industrial, household and animal feed supplement applications for over 30 years. Clinoptilolite is one of over 30 natural zeolite minerals. Zeolite minerals are a framework aluminosilicate with an infinitely extending three-dimensional network of AlO_4 and SiO_4 tetrahedral linked to each other by the sharing of all the oxygen atoms. This forms a molecular structure with numerous apertures and channel ways. Common elements such as calcium, sodium, magnesium and potassium are bonded to the aluminosilicate framework. The porous zeolite structure is well suited for ion exchange, molecular sieving, absorption, adsorption and filtration of water streams. It is chemically and physically stable through a wide range of temperature and pH. Zeotech's water filtration granules are **ANSI/NSF Certified** to Standard 50 (Pool & Spa) and Standard 61 (Municipal Drinking Water) for filtration media.

Zeolite mineral products have been used as an ion exchange media in wastewater filtration to remove ammonium ions from sewage effluent water for over 20 years. In 1978 clinoptilolite zeolite filtration/ion exchange was installed at the Tahoe-Truckee Sewage Treatment Facility at Truckee, California. The zeolite has been used in a continuous application at the site to remove ammonia nitrogen from the wastewater effluent before discharge into the Truckee River and Lake Tahoe.

Zeolites are natural, inert and **non-toxic** substances. Zeolite powder products are sold as a feed conditioner and mycotoxin binder in animal feed supplement products. The animal feed products are approved under GRAS (Generally Recognized As Safe) status and approved for use in feed rations up to 2% under 21 CFR, Part 182.2729.

Clinoptilolite zeolite mineral ores are classified as a natural product under the Toxic Substances Control Act, and their use does not require reporting. When used as absorbent granules to carry or encapsulate chemicals such as pesticides or herbicides, the zeolite minerals are exempted from a tolerance as a solid diluent or carrier by 40 CFR, Part 180.1001, "when used in accordance with good agricultural practices".

Zeotech's zeolite is **USDA approved** as an absorbent in food processing applications and is in **EPA compliance**. No fibrous silicates have been detected, and crystalline silica is present in quantities of less than 0.01%. Additional information can be obtained by referencing our MSDS Sheet (product CAS No. 12173-10-3).

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