

Research

ADVANCING THE SCIENCE OF EQUINE CARE™

ZeQUINE™ ODOR•LOC™

Comparison of Moisture Holding Capacity And Cation Exchange in Horse-Stall Odor Absorbent Products

Several mineral absorbents sold as horse-stall odor absorbents were compared for moisture holding capacity and cation exchange capacity.

Moisture holding capacity is an important feature of any product used in horse stall bedding applications. Dry stalls result in fewer odors, less staining of the animal's coat, fewer flies, and a reduction of hoof problems. Dirty and damp stalls are unhealthy for the animal and cause respiratory problems and performance impairment. Humans are likewise affected by dirty stalls. Fortunately, humans do not live in the stalls like their equine friends.

Horse urine is broken down rapidly by bacteria in the stall to form volatile, free-ammonia. Ammonia gas is toxic to mucus membranes and is an irritant to skin. A high-quality odor absorbent for stalls is like a micro-porous sponge. It wicks up urine and stall moisture. Furthermore, by a process called cation exchange (CEC), it binds ammonia to its mineral lattice, locking it up and making it unavailable to the atmosphere. CEC can be measured by commercial soil laboratories. The ammonia is removed with the absorbent when the stall is cleaned. The resulting manure or compost will contain higher ammonia nitrogen that is beneficial for growing plants.

In summary, products with high moisture holding capacity and high CEC are the best products for reducing harmful wetness and odor in stalls. *ZeQuine™ Odor Loc™* as shown in the tables below is far superior to any other products in the marketplace.

<u>Commercial Stall Product</u>	<u>Cation Exchange Capacity*</u>
Dry Stall™	12.8 meq. per 100 grams
Sweet PDZ™	45.1 “ “ “
Stall Dry™	46.0 “ “ “
<i>ZeQuine™ Odor Loc™</i>	85.4 “ “ “

*Cation Exchange Capacity was analyzed by A&L Plains Agricultural Laboratory, Inc. using the Ammonium Acetate Saturation Soil Test Method.

Commercial Stall Product

Dry Stall™

Sweet PDZ™

Stall Dry™

Zequine™ Odor Loc™

Total Moisture Holding Capacity*

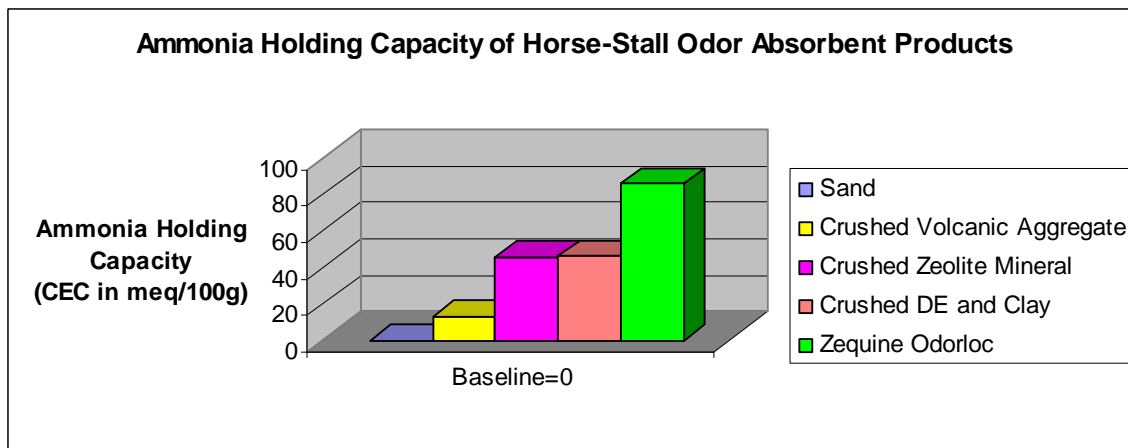
45% Moisture Absorption

54 % “ “

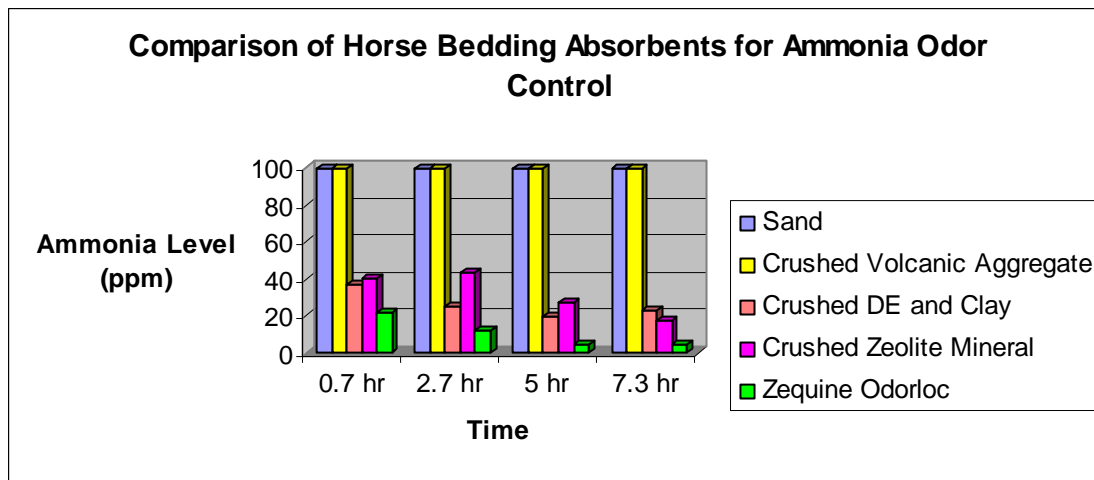
90% “ “

65% “ “

*Total Moisture Holding Capacity was measured by water flooding 100 grams of product for 5 minutes then draining the excess water. The amount of water retained in the stall product was calculated in weight percent.



*CEC (Cation-Exchange-Capacity) is used to measure the ammonia holding capacity of a mineral product. Test Data performed by the **Ammonia Acetate Exchange Soil Test Method** at A&L Plains Agricultural Laboratories, Inc.



*Respiratory illness is a common problem in horses. **Ammonia** build-up in stalls and barns can affect both horses and humans when breathed in. **Ammonia** can irritate and burn the skin and eyes, leading to permanent damage. Exposure to **Ammonia** can irritate the nose, mouth and throat causing coughing and wheezing. Breathing **Ammonia** can irritate the lungs causing coughing and/or shortness of breath. Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema) in horses and humans, a medical emergency, with severe shortness of breath.*