Seed Coatings

Navajo Brand® Pumice is employed in many seed coating applications, and provides several benefits.

Coating plant seeds prior to planting is a common practice in modern agriculture. Seed is coated when growers need a precision-sown crop and the non-coated ("raw") seed is too small, too light, or too variable in size or shape to be sown accurately with existing equipment. The objective of coating is to deliver the seed in a form that is larger, rounder, smoother, heavier and more uniform than the original seed. Precision sowing is desirable when growers need singulation, e.g., for cell-tray plant production in a greenhouse or strict control of spacing or depth of placement. For example, onion spacing is critical to achieve desired bulb size at harvest. Singulation and controlled spacing are also vital for crops that are direct sown and then thinned back to the desired population. The field thinning operation is faster, cheaper and more accurate when coated seeds are used. A further advantage to coating seeds is the additional weight the coating adds to each seed. The additional weight renders the seeds more resistant to water and wind erosion.

As crop protection, seed coatings can also be a carrier of fungicides, bactericides, and insecticides that protect the seed and emerging seedling. Seed coating offers many benefits in comparison to traditional methods that require the use of expensive and complex chemical application equipment. Seed coatings also may consist of polymer coatings to delay germination, pH modifiers and various nutrients. Additionally, coatings can contain a coloring agent which provides visibility during seed placement, identification of grade or variety as well as differentiation between sellers. Because of its high level of porosity, pumice serves as an excellent chemical carrier in seed coating. Seed coating relies on technology developed by the pharmaceutical industry to make medicinal pills. Commercial seed coating operations put seed in a rotating pan, mist with water or other liquid, and gradually add a fine inert powder such as pumice to the coating pan. Each misted seed becomes the center of an agglomeration of powder that gradually increases in size. The pills are rounded and smoothed by the tumbling action in the pan, similar to pebbles on the beach. The coating powder is compacted compression from the weight of material in the pan.

Binders such as polymers and hemicelluloses often are incorporated near the end of the coating process to harden the outer layer of the pill. Binders can also reduce the amount of dust produced by the finished product in handling, shipping and sowing.

Pumices is often used as an excipient, providing body, viscosity and coating integrity to complex seed coating formulations.

Seed coatings produced with an inert powder such as pumice can be of two types:

1. They can absorb water, transfer this water to the seed, and split exposing the germinating seed ("split coats").

2. The seed coating can dissolve when wet and gradually wash away from the seed freeing the seed ("melt coats").t

Split coats initially retain their shape when wet and, by capillary action, pass moisture through the pill to be imbibed by the seed. The seed swells and cracks the pill by internal turgor pressure. The split coat often permits germination with less water, as the coating splits, allows uniform, rapid oxygen access to the surface of the seed. The moisture retention properties of pumice make it an excellent inert powder in split coat applications.
The melt coats dissolve when wet and gradually wash away from around the seed. The melt coats often require more water to wash the coating material away from the seed, and more time for the oxygen to reach the seed through the saturated coating material. The porosity of pumice allows it to both release water and oxygen to assist in germination of melt coated seeds.

In the United States, the major high-volume vegetable crop being using seed coatings is lettuce. Carrot, celery, endive, escarole, onion, pepper, and tomato also are coated to a significant extent. Begonia is the flower crop most frequently sown in coated form. Impatiens, marigolds and petunias are also coated commercially and the market for coating these and other species is growing. Alfalfa and tobacco are two agronomic crops that are coated. Pumice can be used as a seed coating to protect against insects. The pumice coating prevents insect damage and will eventually desiccate any insects.

Navajo Brand® Pumice is a preferred by many seed coaters because it is all natural and contains no artificial ingredients or chemical additives. This allows Navajo Brand® Pumice to be used in organic cultivation. Many seed coaters also prefer Navajo Brand® Pumice to other inert powders such as calcined diatomaceous earth because of its lower crystalline silica content and because it contains no deleterious clay.

Navajo Brand® pumice has several products for this application.

Recommended Products

FFFF	90% Finer than 44 microns (325 Mesh)
FFFF	80% Finer than 44 microns (325 Mesh)
FF	75% Finer than 44 microns (325 Mesh)
F	70% Finer than 44 microns (325 Mesh)
#0	50 % Finer than 44 Microns (325 Mesh)

Additional Information at www.CRMinerals.com

To place an order or obtain additional information, please contact CR Minerals at 505-428-2940, or contact your local distributor.

CR Minerals is a worldwide supplier of pumice products to many diverse markets. It operates a state of the art processing facility in Ohkay Owingeh, New Mexico.