





### **NBK®** - Natural Kelp Binder is a Natural Seaweed Binder.

**NBK**<sup>®</sup> is a concentrated 100 % seaweed powder that due to its natural biochemical composition is a rich source of minerals and oligosaccharides. Is an advanced-generation, organic, long thermo-reactive pellet binder that forms durable feed pellets with exceptional water stability at low inclusion levels.

### **NBK®** IS MELAMINE FREE

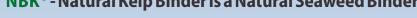
**NBK® COMPOSITION:** The main characteristic of **NBK®** is that it contains a high percentage of oligosaccharides (alginates, laminaran, mannitol and fucoidan) which are the reserve sugars of the seaweed, and also free minerals.

**ALGINATE** contained in **NBK**<sup>®</sup> is a natural binder because it is present in its soluble form with high viscosity. This is one of the main characteristics of NBK®, which gives an excellent binder in shrimp and fish balanced diets and it allows obtaining pellets or extruders with good binding force although with a smooth texture.

> In other animal feed like Pigs, Chicken and Cattle, avoid the losses of dust in pellet and provides advantage to the feed manufacturer by offering opportunities for greater formulation flexibility, cost reduction per unit binding capacity, and consistent quality pellets.







**MANNITOL** has the capacity to improve the digestibility in the animals that consume it obtaining better assimilation of nutrients and optimizing protein consumption. The health in pets is greatly improved by their digestion. NBK® improves digestibility allowing the animal to take better benefits of the feed.

**NBK® EXTRA BENEFITS** 

**LAMINARAN** works as an anticoagulant allowing a better blood flow in the animals. In addition, it is very important in the formation of the bones and carapaces for animals and crustaceans. Sulfated laminaran in salmons functions as a viruses inhibitors (Dalmo et al 1996).

**FUCOIDAN** works also as a viruses inhibitors, fortifying the immunological system of the animals who consume it. Fucoidan is a complex molecule that has two fractions:

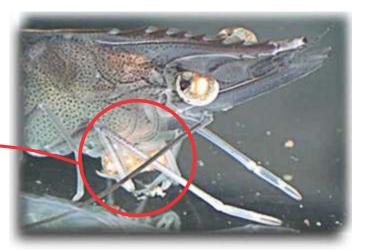
**U-FUCOIDAN** composed of sulfated sodium, xylose and guluronic acid (alginates), and L-fucoidan composed of fucose.

NBK® is obtained in a process that uses the fresh seaweed immediately after harvest, conserving by this method, the U-fucoidan in the concentrated powder. This fraction of fucoidan is of great value, since it has been proven as an effective viruses inhibitors for the animals, as it is the case of shrimp farming against the white spot syndrome virus (WSSV) (Takahashi et al 1998) and in dogs, helping to reduce the problems of intestinal parasites.













**RECOMMENDATION** Fish and Shrimp feed: 5 to 7 kilos per ton of feed as **BINDER**.

**OF USE** Other animals: 0.5 to 1 kilo per ton of feed to AVOID the losses of dust in feed.

**APPLICATIONS NBK**<sup>®</sup> is recommended to be added directly into the Mixer. For best results, ensure accurate

addition and thorough mixing of the product.

**APPEARANCE** NBK® is a brown/green light high hygroscopic powder with seaweed odor. Any change in

color of the product does not affect its performance.

**STABILITY NBK**<sup>®</sup> is stable for one year from the date of manufacture.

**STORAGE** NBK® should be stored in a cool, dry place away from sunlight. Keep the container closed

when not in use. Is highly hygroscopic in nature and hence proper

storage precautions are necessary.

**PACKING** NBK® is available in 25 kg (55lb) polypropylene cloth bags.

**COMPATIBILITY** NBK® is compatible for use with all commonly used feed ingredients and premixes.

Garanteed analysis and Biochemical composition pH: 7.0-8.5 Protein: 14-16 % Carbohydrates: 18-25 % Moisture: 10 % max Particle size: 200 mesh

Viscosity: 2,000-3,000 cps Soluble Alginates: 40 - 44 %



is a 100 % natural product. The typical analysis will vary due to naturally occurring fluctuations in the seaweed.





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BIBLIOGRAPHY: Dalmo, R.A.; Bogwald, J.; Ingerbrigsen, K. and Selijelid, R.; 1996. The inmunomodulatory effect of laminaran (1,3)-D-glucan on Atlantic salmon, Salmo salar L., anterior kidney leucocytes after intraperitoneal, peroral and peranal administration. Journal of Fish Diseases 1996, 19,449-457.

Takahashi, et al. 1998. Efficacy of oral administration of fucoidan, a sulfated polysaccharide, in controlling white spot syndrome in kuruma shrimp in Japan. In Flegel, T.W. (ed). Advances in shrimp biotechnology. National Centerfor Genetic Engineering and Biotechnology, Bangkok, Thailand.