Paper Bentonites
Product Range
BENTONITE

Bentonite is a clay being mainly formed by alteration of volcanic glass and ash. It predominantly consists of swellable clay minerals of the smectite group. The prevalent smectite clay mineral is montmorillonite. There are numerous bentonite deposits worldwide. Composition and properties of the different bentonites can show great variability, and so is their technical application area.

Electron microscopes display that smectite clay minerals can form surfaces of several µm². However, under higher resolution it can be observed that these flexible layers possess a thickness of only a few nm.

Smectites are layer silicates with a crystal structure consisting of two tetrahedrally coordinated layers and one octahedral layer (TOT).

Due to substitution of ions with higher valence by ions with lower charge both in the tetrahedral and in the octahedral layers, the silicate layers of the montmorillonite possess a weak negative charge. This is compensated by adsorption of positive counter ions (interlayer cations) that electrostatically link single TOT-layers to others, thus forming layer stacks (see illustration).

However, the layer charge of the silicate layers is so weak that interlayer cations, under natural conditions predominantly Ca²⁺-, Mg²⁺- or Na⁺-ions, are easily exchangeable. The weak layer charge facilitates expansion of the interlayer space so that counter ions with their hydration shell can be adsorbed (inner-cristalline swelling).

With increasing adsorption of water a gradual expansion of the interlayer space can be observed. This can even lead to an entire delamination into isolated silica layers or thin stacks of only a few layers which consequently forms a colloidal dispersion. When dispersed in water, montmorillonite provides a specific surface of up to 800m²/g.

Depending on the type of processing and the composition of exchangeable cations in the smectite interlayer, the following types of bentonites can be distinguished:
- Ca-bentonite
- activated bentonite (alcaline activation)
- natural Na-bentonite
- organic bentonite
- bleaching earth (acid activated bentonite)

Paper and board

Bentonite has become well established in the paper market. Many producers of paper and board trust in our bentonite products. Due to its enormous surface and high cation exchange capacity, bentonite forms a highly effective adsorbant. Our ALTONIT and AQUAMONT products can be utilized during all phases of paper production. They support the adsorption of contaminants during waste paper recycling and help to avoid agglomerations of sticky constituents. Optimal flocculation behaviour and high adsorptive abilities improve fibre and filler retention and optimize the dewatering behaviour during sheet forming. Furthermore they are often used in microfloation during the de-inking processes, for treatment of internal and external water currents as well as for sludge conditioning. In this way our bentonite products improve process security, help to reduce paper machine downtime and directly contribute to save costs.

Water treatment/adsorbents

The high adsorption capacity of bentonite also is an important property when it comes to treatment and purification of process water, wastewater and effluents. Operating in concert with flocculation agents, bentonite agglomerates filler materials and colloidal constituents into stable flocs that can easily be skinned after microfloation or sedimentation. This not only benefits our environment but also promotes a cost reduction for our customers. AQUAMONT forms colloidal dispersions which, due to their high specific surface area and layer charge, possess strong adsorptive power. When combined with suitable polymers, our bentonite products also perform as a flotation agent.
Market to Mine

“Market-to-mine” is S&B’s approach to bringing its “Purpose” to life. The deep understanding of how our products can be applied in industrial processes and how they can add value to our customers’ needs, is the key in developing and transforming natural resources into value creating industrial solutions. Our commercial teams continuously build knowledge on the production processes in a multitude of end products. They possess the required skills to identify problems and to design and propose solutions. By using our product range they add new value to an existing customer product and/or manufacturing process. We aim to be the preferred supplier to over 1,500 customers by offering customized solutions to various industrial applications.

Comprehensive and target oriented service for your needs!

Careful raw material selection and most versatile properties of our bentonites enable us to offer most individual products for your requirements. Bentonite, as a natural clay mineral in a refined form, is beneficially applied in many industries since long. To the paper industry we sell our ALTONIT product range. Our AQUAMONT products are very efficient in treatment of industrial waste waters. With our IKOMONT product line we offer a choice of bentonites for most diverse applications in the chemical industry. KERAMONT-bentonites are effectively applied in ceramic masses and manufacturers of paints and coatings use our rheological additives of the RHEOMONT product group to improve flowability and settling behavior of their products. Additionally we offer you advice for optimal application of our products. Just ask us!
Global Presence
26 mines | 50 plants & processing units | 29 distribution centers
in more than 20 countries in 5 continents | more than 2,000 customized industrial solutions
sales in 69 countries