



Waste Water Treatment optimized

SUDFLOC®-products – an
economical and ecological
intelligent solution



SUDFLOC®-powder products for waste water treatment processes

Use of SUDFLOC®

SUDFLOC®-powder products are able to optimize waste water treatment processes. On the one hand it is possible to keep legal binding values on the other hand costs can be reduced.

SUDFLOC®-powder products ensure optimum efficiency at each stage, i.e. adsorption of pollutants, formation of flocs, separation (sedimentation or flotation) and also filtration abilities.

SUDFLOC®-powder products can be added to waste water to reduce:

- ▶ Organic content (COD, BOD₅, TOC)
- ▶ Oils
- ▶ Fats, fatty acids
- ▶ Colour
- ▶ AOX
- ▶ Phenols
- ▶ Turbidity, colloidal and solid matter
- ▶ Paint, e.g. coagulated paint overspray
- ▶ dissolved and undissolved heavy metals and heavy-metal compounds, chromium (VI)

These products are for instance used in the following sectors.

- ▶ Food industry
- ▶ Metal, electronics and semiconductor industries
- ▶ Printing and dyeing works
- ▶ Automotive industry and overspray paint coagulation
- ▶ Washing facilities for cars and railway carriages
- ▶ Leather and textile industry
- ▶ Treatment of waste water from chipboard manufacture
- ▶ Municipal waste water treatment plants

Products of this kind are even used in biological purification plants, i.e. in both municipal and industrial waste water treatment plants.

As a rule, treatment times of approx. 20 – 30 minutes are adequate for the phases involved, namely dosing, agitation and sedimentation or flotation.

Application example

One example is the treatment of photoresist waste water which previously involved the use of numerous chemicals and a total of six processing stages (flocculation, adsorption, binding the flocs by adding polymer, neutralisation using a lime slurry, sedimentation and filtration). The new process entails the addition of a combination product, followed by sedimentation and filtration.

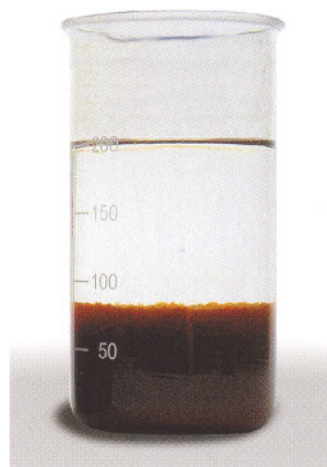
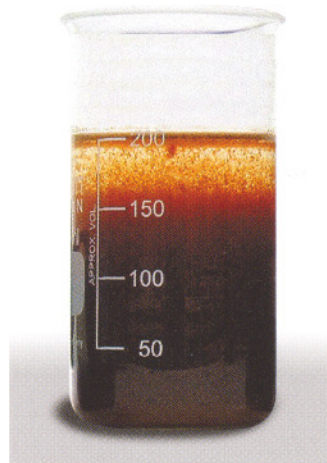
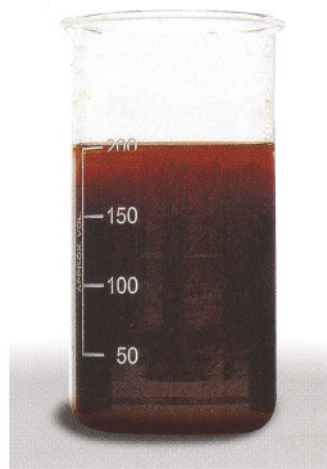
This application was tested in a glass beaker in the laboratory, during which the flocculation process was evaluated. Filtration tests

based on a simulation of the existing process using the combination product also showed an increase in the speed and degree of dewatering. Finally, an analysis of the filtrate confirmed that the quality of the treated waste water was comparable with the method previously used.

Laboratory test, first stage of application

An optimal combination product can be identified by way of laboratory tests which compare different applications based on a simulation of the relevant process technology. It is also possible to determine the quantities needed in each case by pre-testing in the laboratory, whereby these should be further optimized during on-site application.

It is important to evaluate all process steps: elimination of pollutants by adsorption, decolorization, ion-exchange and also separation and filtration.





Bentonite – The base material

Bentonite, a natural clay mineral has arisen from the decomposition of volcanic ashes. Its properties are



determined by the layered silicate mineral montmorillonite. The particles with their lamellar structure have specific surface areas of 60 m²/g and more.

Acidic activation can increase this to over 300 m²/g. The high adsorption capacity resulting from this large surface area is coupled with efficient cation-exchanging

properties. The lamellate structure of the bentonite creates a supporting framework in the sludge, which allows quicker and better dewatering than can be achieved using conventional flocculants.

Süd-Chemie is mining bentonites in deposits all around the world. Besides mechanically processed natural bentonites, alkaline activated bentonites are being produced.

Süd-Chemie's products

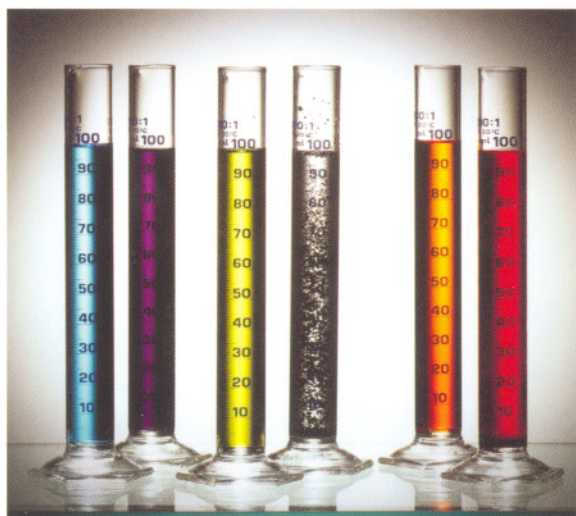
Combination products have been optimized on the basis of the knowledge about bentonites and the specialized knowledge of the waste water engineering with the objective to achieve effective and economic applications.

Combination Products

An intelligent and economic solution

Combination products are finely-regulated mixtures of various pulverized components which have been developed to bundle several stages of the waste-water treatment process. The elements are carefully synchronized to react in such a way that pollutants are

eliminated by way of adsorption, decolouring, ion exchange or by binding solids before flocculation occurs. The components are also intended to optimize the flocculation process, while at the same time causing the resultant sludge to dewater more effectively. Ideally, these products adjust the pH value of the waste water to a level that is optimal or acceptable for each type of treatment.



Compared with conventional methods, the use of innovative combination products significantly simplifies the treatment process. By intelligently mixing the components and adding one substance at a single dosing point, the following three steps can usually be replaced:

- ▶ Flocculation using FeCl₃,
- ▶ Neutralization (using lime slurry or caustic soda)
- ▶ Addition of polymer

Furthermore, the dewatering properties of the sludge are improved. In addition to reducing the complexity of the processing technology with control technique, the usage of combination products can be expected to result in considerably lower volumes of sludge.

The addition of conventional chemicals leads to substantial salinization of the waste water, whereas in the case of combination products, it is limited to the required minimum.

Besides to the economic and operational advantages of a compact construction and simple control system, the operating costs, comprising product costs, maintenance work, consumables and disposal costs are usually significantly lower.