



ANTIFOAMS

TECHNICAL APPLICATIONS

struktol

SOLUTIONS | TAILORMADE | WORLDWIDE

FROM HUMBLE ROOTS IN LEATHER
PROCESSING CHEMICALS ...



SCHILL+SEILACHER'S STORY BEGAN IN 1877, WHEN KARL SCHILL
AND CHRISTOPH SEILACHER STARTED MANUFACTURING CHEMICALS
FOR LEATHER PROCESSING IN HEILBRONN, GERMANY.

IN 1925 SCHILL+SEILACHER OPENED A SECOND PRODUCTION SITE

1877

Following the Second World War, Schill+Seilacher moved its Heilbronn operation to Böblingen, a suburb of Stuttgart. Although both locations Hamburg and Böblingen are sharing the same name, they are serving different industries and working independently of each other. Schill+Seilacher ventured into the North American market in 1979 with the establishment of Struktol® Company of America. SCA is located at the heart of the American tire industry, just outside Akron, Ohio, and majorly supplies the plastic, rubber and tire industries. Schill+Seilacher Chemie GmbH, situated on the banks of the Elbe just south of Dresden was acquired in the early 1990s and serves as both a production and research facility for silicone based chemistry.

SNS Nanotech in Hudson, Ohio, specializes in developing complex nanofiber matrices and is the youngest member of the Schill+Seilacher Group. Their proprietary technology enables the fabrication of self-supporting mats that can entrap particles within a nanofiber matrix or encapsulate them within individual nanofibers.

WORLDWIDE

... TO A GLOBAL PLAYER IN THE PRODUCTION OF
INDUSTRIAL PROCESS ADDITIVES.

IN HAMBURG TO CATER TO THE EXPANDING NEEDS OF ITS GROWING
CUSTOMER BASE AND SECURE BETTER ACCESS TO INTERNATIONAL
MARKETS THROUGH THE CITY'S BUSTLING PORT.

DIN EN ISO 9001: Our quality guarantee

The high quality standard of our products is guaranteed by our certified quality management system (ISO 9001), which integrates our highly qualified application experts, state of the art laboratories and testing equipment, and modern production methods into an effective and continually improving team.

DIN EN ISO 14001, DIN EN ISO 50001:

Our commitment to the environment

Our commitment to reducing waste and managing energy consumption efficiently has been at the core of our business for many years. By helping us work more efficiently and cost effective, our ISO 14001 and ISO 50001 certification promise better products through environmental responsibility.

Specific information of site certifications can be found on page 22.

SCHILL+SEILACHER "STRUKTOL" GMBH AT A GLANCE

RUBBER ADDITIVES

ANTIFOAMS

EPOXY PREPOLYMERS
AND FLAME RETARDANTS

LATEX ADDITIVES

SILICONES

RELEASE AGENTS

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PERFECT SOLUTIONS FOR EFFICIENT OPERATIONS

In the food and non-food processing industries, there are a diverse set of causes that lead to foam formation. The common consequence is a breakdown in production and a significant material loss.

The intelligent antifoam agents from Schill+Seilacher "Struktol" GmbH work both preventively, blocking foam's initial formation, or prescriptively, eliminating it once it appears. Our antifoam agents meet a wide range of requirements and applications while having a negligible effect on the production cycle itself. They support process stability, optimize final product quality and prevent contamination and other similar side effects. In addition, our innovative Schill+Seilacher "Struktol" GmbH designed dosing system ensures optimal dosing.

As an established and proven industry partner, we are able to offer high quality, advanced and dependable antifoam agents worldwide with short lead times and competent and capable customer service. The antifoam agents from Schill+Seilacher "Struktol" GmbH are already common in the construction materials industry (e.g. mortar and concrete manufacturing), water treatment, paper industry, food processing (e.g. potato and sugar beet processing) and fermentation applications (e.g. biofuels).



The increase of living standards and consumption of goods has resulted in a growth of waste products. In the field of water supply and sewage treatment this situation has led to a higher direct and indirect water consumption and therefore to an increase of waste water quantities. The amount of industrial sewage produced has considerably increased more than communal sewage. Simultaneously the percentage of purified industrial sewage has increased because of stronger environmental awareness, laws and restrictions. Communal sewage is often mixed with industrial waste water to achieve a better blend of substances contained.

Sewage entering purification plants is often a variety of very different components, particularly the foam active ingredients i.e. detergents, proteins etc. Due to this, the degree of foam generation is very different in sewage treatment plants. Pure communal sewage tends to foam less than industrial sewage. However, communal sewage can also cause foam formation when the detergent content is higher.

The method of sewage treatment has the major influence on foam development. Foam occurs when gas escapes from liquids containing foam active substances. This especially applies to aerobic sewage treatment according to the activated sludge process. All other chemical, mechanical or biological sewage treatment processes are considerably less foam active due to their structure.





FOAM PREVENTION AND FOAM DESTRUCTION WITH STRUKTOL® ANTIFOAM AGENTS

The foam active substances in sewage are very different, therefore antifoam agents have to be adapted to the medium to be defoamed. A careful choice is necessary in order to achieve effective defoaming without any negative influence on the sewage system. Lab pre-trials are recommendable in order to select the most appropriate materials. These trials should only be carried out with fresh sewage i.e. in the purification plant. However, due to international experience we provide recommendations in many cases.

Apart from good defoaming properties the antifoam used should not have a negative impact on the sewage treatment itself. In the case of aerobic sewage treatment, microorganisms have to be supplied with sufficient oxygen for an optimum of contaminants digestion.

If the percentage of dissolved oxygen decreases the digestion will deteriorate. Therefore it is essential that the antifoam agent does not influence the oxygen transfer as far as possible.

Struktol® antifoam agents have a remarkably low effect on the oxygen transfer. They are low viscosity materials and therefore easy to apply. All Struktol® antifoam agents for sewage treatment listed hereafter – with the exception of Struktol® SB 2077 – are free from mineral oils or other paraffinic hydrocarbons and conform to OECD recommendations. With the exception of Struktol® SB 2077 all Struktol® products stated in the following tables are almost completely degradable. Struktol® SB 2077 is a silicone based antifoam agent and therefore not biodegradable.

The dosing quantities of antifoam agents depend on many conditions e.g. the concentration of foam active substances. In pure communal purification plants the dosing quantity is usually less than 1 ppm calculated on total sewage amount. Industrial sewage treatment plants often have a higher percentage of foam active substances so dosing quantities of 10 ppm or more can be required. Therefore it is essential to find out the necessary quantity in each case.

Furthermore the choice of the best possible dosing point is also important. The dosing point depends on the defoaming procedure i.e. whether already existing foam has to be destroyed or foam generation has to be avoided. Struktol® antifoam agents can be used for foam prevention as well as for foam destruction. However, foam prevention is most advantageous. Experience has shown that in this case dosage should be introduced at the inlet to the biological stage.

REDUCTION OF SCUM

In many purification plants the undesired effect of scum during final sedimentation occurs. It is caused by gas bubbles (air, nitrogen or methane) entrapped in the sludge agglomerates, that floats them to the surface. Some Struktol® types reduce the linkage force between gas bubbles and sludge agglomerates settle again.

To optimize the performance of these scum reducers the choice of the right dosing point is essential. Dosage has to be carried out in that way that sufficient distribution of the scum reducers is achieved.

In many cases the activated sludge stage is the best dosing point. An additional dosage of an antifoam agent is normally not necessary.



APPLICATIONS

| | J 673-1 Alkoxylated fatty acid ester on vegetable base | SB 2032 Modified fatty alcohols | SB 2076 Combination of modified fatty alcohols and special fatty alcohols | SB 2077 Combination of polydimethylsiloxanes and hydrocarbons | SB 2080 Derivates of natural fatty acids | SB 543 Modified fatty alcohols |
|--|---|------------------------------------|--|--|---|-----------------------------------|
| Sewage with mainly communal content | ● | + | ● | ● | ● | + |
| Communal sewage with relatively high content of detergents | | ● | | + | + | ● |
| Industrial sewage consisting of a balanced mixture of different foam active substances | | + | | ● | + | + |
| Industrial sewage with relatively high content of detergents | | | | + | + | |
| Industrial sewage with relatively high content of cellulose derivates | + | ● | ● | | | ● |
| Industrial sewage with relatively high content of proteins | ● | ● | ● | | | ● |
| Cooling water with high content of foam active biocides | | ● | | | + | ● |
| Scum degassing | | ● | + | | | ● |

➕ VERY GOOD ● GOOD

Struktol® SB 2030 N

· Modified fatty alcohols

Struktol® SB 2032

· Modified fatty alcohols

Struktol® SB 2077

· Combination of polydimethylsiloxanes and hydrocarbons

Struktol® SB 2080

· Derivates of natural fatty acids

Struktol® SB 2177

· Combination of polydimethylsiloxanes and hydrocarbons

Struktol® SB 2289

· Non-ionogenic alkylene oxide addition compound

Struktol® SB 2320

· Combination of fatty acid addition products, polyalkylene glycols and alkane hydrocarbons

■ Plastic recycling PET, HDPE, LDPE, PP, PS

Struktol® J 650

- Polyalcohols on basis of polyoxyethylene-polyoxypropylene-blockcopolymers

Struktol® SB 1110 B

- Combination of fatty acid esters, alkoxyates, alkanes, soap and surface active additives

Struktol® SB 2052

- Fatty alcohol alkoxyate

Struktol® SB 2059

- Combination of fatty acid esters and alkoxyates

Struktol® SB 2077

- Combination of polydimethylsiloxanes and hydrocarbons

Struktol® SB 2080

- Derivates of natural fatty acids

Struktol® SB 2320

- Combination of fatty acid addition products, polyalkylene glycols and alkane hydrocarbons

Struktol® SB 377

- Combination of alkylene oxides adducts, fatty alcohol alkoxyate and special alcohols

- Construction chemistry and fiber cement production





Struktol® SB 2094

- Combination of fatty acid esters and special fatty alcohols

Struktol® SB 2192

- Combination of fatty acid esters and special fatty alcohols

Struktol® SB 2195

- Combination of vegetable esters

- Phosphoric acid and fertilizer production

Struktol® SB 1110 B

- Combination of fatty acid esters, alkoxyates, alkanes, soap and surface active additives

Struktol® SB 252

- Combination of fatty acid esters, alkoxyates, alkanes, soap and surface active additives

Struktol® SB 253

- Combination of fatty acid addition products and alkane hydrocarbons

Struktol® SB 254

- Combination of fatty acid addition products, polyalkylene glycols and alkane hydrocarbons

- Adhesives and glue

Struktol® SB 2077

- Combination of polydimethylsiloxanes and hydrocarbons

- Animal glue

PRODUCTS FOR PAINTS AND VARNISHES

Struktol® SB 252

- Combination of fatty acid esters, alkoxyates, alkanes, soap and surface active additives

Struktol® SB 253

- Combination of fatty acid addition products and alkane hydrocarbons

- Paints and varnishes

THIN STOCK PREPARATION AND WHITE WATER SYSTEMS:

HIGH-EFFICIENCY, WATERFREE CONCENTRATES

Due to the fact that the consumption of water-based dispersion defoamers/deaerators in the paper and paperboard production has been increased rapidly during the past few decades (water system closure, higher machine speed rates and therefore high white water temperatures, application of waste paper as a significant raw material source, etc.) the usage of high-efficiency, waterfree concentrates becomes more and more interesting.

Consisting of 100 % active components only (no water, no emulsifiers which tend to decrease the defoaming activity) these concentrates can offer both, more effective defoaming/deaeration and a significant reduction in costs and handling.

The most important properties are mentioned:

- **VERY EFFECTIVE DOSAGE LEVELS FROM 1/2 UP TO 1/3 COMPARED TO THE WELL-KNOWN WATER-BASED DISPERSION ANTIFOAM AGENTS**
- **VERY EFFECTIVE COMBINATION OF BOTH DEAERATION AND SURFACE-DEFOAMING: DUE TO THE UNIQUE COMBINATION OF ACTIVE COMPONENTS, WE CAN OFFER THE MOST BALANCED COMBINATION OF A.M. PROPERTIES FOR EACH SPECIFIC APPLICATION**
- **APPLICABLE AT ALL PH-LEVELS AND TEMPERATURE RANGES FROM 30 °C TO 80 °C**
- **INDIFFERENT AGAINST HYDROPHOBING AGENTS AND WET STRENGTH RESINS**
- **DUE TO THE NON-IONIC CHARACTER NO EFFECT ON CATIONIC/ANIONIC ADDITIVES**
- **APPLICATION AT THE USUAL DOSAGE POINTS: WHITE WATER, PRIOR TO THE DILUTION PUMP, THIN STOCK CLEANERS ETC., IT IS RECOMMENDED TO USE THE MENTIONED PRODUCTS UNDILUTED**
- **CLEAR HOMOGENEOUS PRODUCTS, NO MIXING IN STORAGE TANK IS NECESSARY, NO SEPARATION**
- **LOW VISCOSITY MEDIUM, WITHOUT NON-NEWTONIAN VISCOSITY EFFECTS, I.E. EASILY PUMPABLE**
- **AT LEAST 12 MONTHS SHELF LIFE, NO DANGER OF FREEZE**

Dosage rates depend on the kind of paper/paperboard produced, the nature of the raw materials used, machine speed rates etc. Our technical personal is prepared to support our customer with application optimization.



SIZE-PRESS AND COATING:

NORMAL AND HIGHLY FILLED COATINGS:

Until recently, foam build-up and air entrainment during the preparation and the application of coating formulations could quite easily be prevented with defoamers using tri-N-butylphosphate or simple esters as active components. However, in the last few years, due to increased machine speeds and the development of coating formulations with higher solid contents (> 68 % dry substance), these defoamers are not sufficient anymore. During the preparation of these so-called highly filled coatings air is entrained quite often and, due to the high viscosity of the formulation, the entrained air causes surface failures during the coating application.

As our special high solid coating defoamers are added already during the first phase of the coating preparation, they prevent the coating substance from air entrapment during the complete preparation process, thus avoiding the formation of dispersed air particles in the coating. As the products have proven to have outstanding long-lasting defoaming capabilities, the necessity of further defoamer addition during the coating application can most often be avoided.

In general, the properties of the mentioned products are:

- **ADDITION DURING THE PREPARATION OF THE COATING**
- **DUE TO THE COMPATIBILITY WITH THE OTHER COATING COMPONENTS SPOT-BUILDING DOES NOT OCCUR**
- **OUTSTANDING LONG-TERM DEFOAMING PROPERTIES, AVOIDING ADDITIONAL DOSAGES**
- **100 % ACTIVE COMPONENTS ONLY, DO NOT CONTAIN SILICONES**
- **LOW DOSAGE RATES ARE SUFFICIENT IN MOST SITUATIONS (0,01-0,2 PARTS ON 100 PARTS PIGMENT). EXACT DOSAGE LEVELS SHOULD BE DETERMINED DURING EVALUATIONS IN PRACTICE**

ANTIFOAM AGENTS/DEAERATORS FOR THE PAPER INDUSTRY

Struktol® antifoam products/deaerators for the paper industry covering all specific application areas, from raw material treatment to product finishing.



THIN STOCK PREPARATION AND WHITE WATER SYSTEMS

Struktol® SB 2052 / Struktol® SB 2251

- Waterfree concentrates
- Fatty alcohol alkoxyates with low viscosity

- High-efficiency defoamer and deaerator for overall application e.g. newsprint, sack kraft paper, boxboard, magazine and graphic paper

Struktol® SB 2250 / Struktol® SB 2289

- Waterfree concentrates
- Non-ionogenic alkylene oxide addition compound/fatty alcohol alkoxyate

- Defoamer/deaerator for sanitary papers, graphic papers, coreboard, laminating papers

Struktol® J 650

- Waterfree concentrate
- Polyalcohols on basis EO/PO-blockcopolymer

- Specifically designed for sanitary papers

Struktol® SB 2025 VK 4

- Waterfree concentrate
- Combination of alkylene oxide copolymers and fatty alcohols

- Deaerator/defoamer for solid-board, wrapping papers



Struktol® SB 2022 / Struktol® SB 2289

- Aliphatic alcohol-alkoxyate/Non-ionogenic alkylene oxide addition compound

- For the size press, specifically designed for size-press formulations based on starch, starch-derivatives and/or synthetic sizing agents

Struktol® SB 2059

- Low viscosity combination of fatty acid esters and alkoxyates

- For the size press for normal and high-solids acrylate- and SBR-coatings and synthetic size-press formulations with excellent long-term effectiveness

COATING – PRECOAT/TOPCOAT

Struktol® SB 252

- Combination of fatty acid esters, alkoxyates, alkanes, soap and surface active additives

- For acrylic and SBR coatings for graphic papers and boards

Struktol® SB 253

- Combination of fatty acid addition products and alkane hydrocarbons

- For low-solids latex-based coatings with limited mechanical shear during preparation of acrylic and SBR coatings

DEINKING PLANTS

Struktol® SB 2184

· Fatty acid esters on vegetable base in combination with fatty acid-derivates and fatty alcohols

- Effective, spontaneous defoamer for excessive foam formation in deinking plants

WASTE WATER TREATMENT

Struktol® SB 2076

· Combination of modified fatty alcohols and special alcohols

- Scum reducer, foam prevention in aerobic and anaerobic waste water treatment plants

Struktol® SB 2052

· Fatty alcohol alkoxylates with low viscosity

Struktol® SB 2080

· Derivates of natural fatty acids

- Foam prevention in aerobic and anaerobic waste water treatment plants

Struktol® SB 2184

· Fatty acid esters on vegetable base in combination with fatty acid-derivates and fatty alcohols



SCHILL+SEILACHER AT A GLANCE

→ HAMBURG SPECIALITY CHEMICALS FOR:

RUBBER ADDITIVES
ANTIFOAMS
EPOXY PREPOLYMERS
AND FLAME RETARDANTS
LATEX ADDITIVES
SILICONES
RELEASE AGENTS

DIN EN ISO 9001:2015
DIN EN ISO 14001:2015
DIN EN ISO 50001:2011



→ STOW / OHIO / USA VILLA RICA / GEORGIA / USA SPECIALITY CHEMICALS FOR:

PLASTICS
WOOD COMPOSITES
RUBBER
LEATHER

DIN EN ISO 9001:2008



→ BOEBLINGEN SPECIALITY CHEMICALS FOR:

FIBRES
TEXTILES
LEATHER
PAPER
COSMETICS
FINE CHEMICALS

DIN EN ISO 9001:2015
DIN EN ISO 14001:2015
DIN EN ISO 50001:2011
RSPO CERTIFICATION MASS BALANCE



→ PIRNA SPECIALITY CHEMICALS FOR:

SILICONES
PU INDUSTRY
PAPER
TEXTILES
COSMETICS
FIBRES
LEATHER

DIN EN ISO 9001:2015
(ONLY FOR BOEBLINGEN PRODUCTS)



→ HUDSON / OHIO / USA PRODUCER OF:

NANOFIBRE MATRICES

DIN EN ISO 9001:2015
DIN EN ISO 13485:2003



We at Schill+Seilacher "Struktol" GmbH have met all our REACH registration obligations for 2010 and 2013.

We are still active in our consortia and have finished the registration process for the 2018 deadline.

We also work closely with our suppliers to make sure that all our new raw materials are also

REACH compliant.

For further information, please contact our Regulatory Affairs Department at REACH@struktol.de

WWW.STRUKTOL.DE

Disclaimer:

Above mentioned technical specifications rely on an analysis as of: 06.2018.

The mentioned attributes and application proposals are only non-binding application possibilities and application proposals for our products. Our advice and recommendations whether verbal, in writing or by way of tests do not excuse the customer from his or her own examination regarding the applicability for the intended procedures and purposes. The mentioned attributes and application proposals are no assurance for a certain further processing. Any assurances must be agreed upon explicitly and in writing between the customer and us.

We also advise you, that any further processing and the distribution of the further processed products is part of the customers sole scope of responsibilities as the producer of the new product.

Schill+Seilacher

Any Questions?

Our service team will be pleased to answer any questions and to assist you with advice and information at all times. We can also advise you of the contact data of our local offices and agencies. Data sheets and samples of our products are available upon request.

For more information please contact:

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