

einBLICK²²

INFORMATION FOR CUSTOMERS – ENVIRONMENTAL PROTECTION, PRODUCTS & FIELD REPORTS



INNOVATIONSPREIS
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SCHAEFER
kalk

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WELCOME



SUSTAINABILITY COUNTS

SCHAEFER KALK is a successful family-run business that has been operating for over 160 years. Every day, we draw on this vast experience to deliver innovative products and processes that can meet the demands of the future.

Shaping excellence in sustainability. This and nothing less is our stated aim! We are implementing sustainable solutions in our production operations, our business relations with partners and customers, and in how we treat our staff and workforce.

We believe that sustainable action is most effective when applied across all areas of a business. Our sustainability initiatives range from developing and launching innovative products such as SCHAEFER PRECAphos® to promoting and fostering cultural and regional projects. Sustainability runs through everything we do at SCHAEFER KALK – and that's why we have been awarded a silver medal for the second time by the sustainability rating platform EcoVadis.



Dr. Ing. Kai Schaefer	Dr. Andreas Kinnen	Heike Horn
President; Technical Services, Operations and Research	President; Sales and Marketing	President; Finance, Administration and HR

DEAR READERS

It has been four eventful years since the last "live" IFAT trade fair. Despite the huge challenges posed for businesses and private individuals alike, those four years have also brought about many changes and developments. At SCHAEFER KALK, we have used this time to develop innovative ideas and to conduct research on our wastewater treatment products. Our product development activities have been guided by the motto: "Rethinking phosphate precipitation". The result of this work is our SCHAEFER PRECAphos® product that we first introduced to you in the 2020 edition of einBLICK – but sadly not in person at IFAT.

SCHAEFER PRECAphos® is a product innovation in powder form that combines effective phosphate precipitation with optimized biological wastewater treatment. Using SCHAEFER PRECAphos® actively contributes to protecting the environment and our natural resources and helps to improve process safety. To find out more about SCHAEFER PRECAphos® and how it works, keep reading this edition of einBLICK. It's worth it, as we have a very special character in this edition waiting to introduce himself to you.

Sustainability is SCHAEFER KALK's stated corporate objective and the foundation of our business operations. And we know that we're on the right path: In 2021, and for the second year in succession, we were awarded a silver medal by the sustainability rating platform EcoVadis. Read on to learn more about this and other important topics at SCHAEFER KALK.

We looking forward to meeting you personally and to sharing our ideas. For additional information, please visit our website www.schaeferkalk.de

RETHINKING PHOSPHATE PRECIPITATION

We set ourselves the goal of making phosphate precipitation more efficient and more environmentally friendly. Rather than using the harmful acids or alkalis typically found in conventional liquid precipitants, we use high-purity calcium compounds in combination with special iron salts. This makes SCHAEFER PRECAphos® a completely new kind of phosphate precipitant – and one that also optimizes biological wastewater treatment. As it is supplied as a non-hazardous powder, SCHAEFER PRECAphos® is easy to transport. For small wastewater treatment plants, we can supply the product in bags for direct addition to the wastewater. When larger quantities are required, we can offer bulk storage silos for rent, with delivery of SCHAEFER PRECAphos® in silo trucks.

Efficient and environmentally friendly phosphate precipitation? No problem – if you choose SCHAEFER PRECAphos®

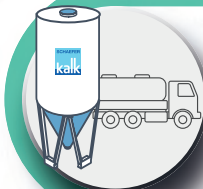
PRACTICAL POWDER FORM

Precise dosing – up to 30% more efficient than liquid precipitants.
> Protecting the environment and our natural resources



EASY TO TRANSPORT

No matter whether it's delivered as bagged goods or by truck to a bulk storage silo, its hazardous classification makes transport much simpler – even to smaller wastewater treatment plants.
> Non-hazardous product during transport



NEUTRALIZES ACIDS

Improves bacterial growth and stabilizes activated sludge flocs
> Active acid neutralization



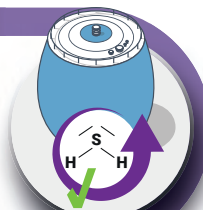
OPTIMIZES WASTEWATER TREATMENT

Positive impact on the entire wastewater treatment process. Improves denitrification and prevents sludge washout.
> Clean water



BINDS HYDROGEN SULFIDE

Acts in the digestion tower and binds harmful hydrogen sulfide.
> Optimized anaerobic digestion and sludge dewatering



SCHAEFER PRECAphos®



Highly efficient:

SCHAEFER PRECAphos® is more than 30% more effective than conventional liquid precipitants such as iron chloride or aluminum chloride. Practical applications have shown that SCHAEFER PRECAphos® has a sustained effect on phosphate precipitation. This means that in smaller wastewater treatment plants there is no need to keep adding SCHAEFER PRECAphos® around the clock and that several doses spread throughout the week are enough. In larger sewage treatment plants, continuous uniform addition of the product to the influent has been shown to be able to deal with phosphate spikes.

Maximizing effectiveness through stabilization:

SCHAEFER PRECAphos® has a positive effect on the sludge volume index, it keeps the water pH within the optimum range and it actively raises the acid buffering capacity. This in turn improves the stability of the activated sludge flocs and optimizes the biological wastewater treatment process, preventing pollutants and suspended solids from entering streams and rivers.

Particularly relevant for sewage treatment plants with anaerobic digestion towers:

SCHAEFER PRECAphos® is also effective inside digestion towers, where it acts to bind harmful hydrogen sulfide. The resulting biogas can then be converted into valuable energy. The sludge from the settling tank and the digestion tower is also more effectively dewatered, which helps to conserve resources and protect the environment.

SCHAEFER PRECAphos® – Patented technology from SCHAEFER KALK. On the next few pages you can find out in detail how SCHAEFER PRECAphos® does what it does – but it's probably best if we let our new product do the talking.

SCHAEFER PRECAphos® – Keeping activated sludge flocs happy!

A slightly different version of the typical
“Who I am and what I do” story

I first saw the light of day in 2019 at SCHAEFER KALK where I – a highly concentrated powder – was given the name

SCHAEFER PRECAphos®


I am made from high-purity calcium compounds in combination with special iron salts. That sounds complicated, but it's actually quite simple, especially when I explain to you who needs me, where I am allowed to travel everyday and who my closest friends are.

Since I was created I've been helping out in wastewater treatment facilities and sewage treatment plants, because I'm good at removing phosphorus from wastewater – in fact I'm better at it than all the others!

I can help to prevent...

> overfertilization of rivers, lakes and oceans

Unlike the iron and aluminum salt solutions previously used to remove phosphorus, I – and I need to get a little technical here – am able to stabilize the pH of the water as well as actively boost the acid buffering capacity. That's not something the others can do and that makes me pretty unique!



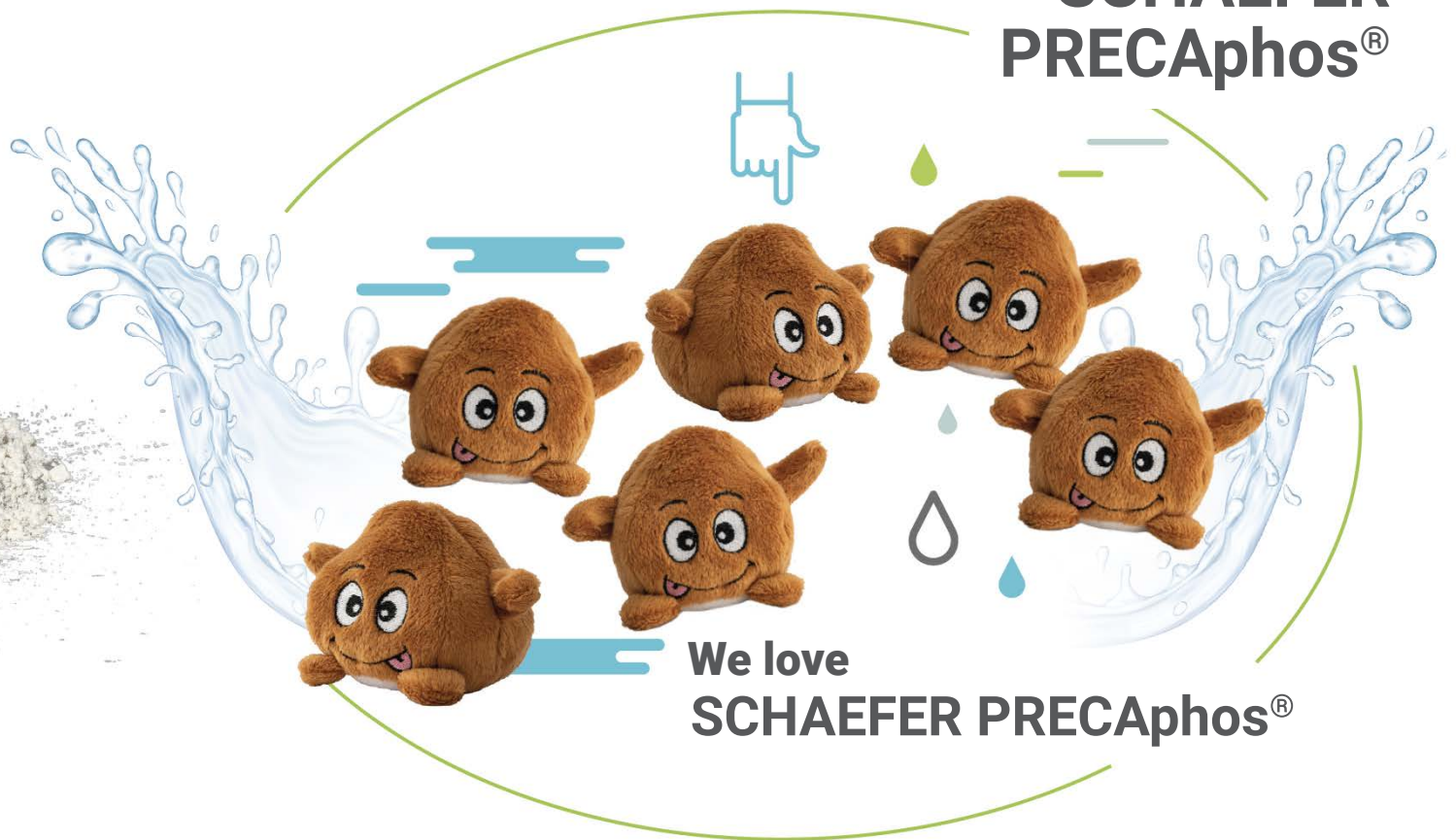
When I'm around, the bacteria that purify our wastewater and sewage and that love to live in activated sludge flocs feel right at home and are able to work much more effectively. For example, human urine (urea) in the wastewater gets converted into harmless nitrogen. And nitrogen, as you all know, is one of the main gases in the air that we breathe. And human fecal matter, food residues and fats are all taken up, converted and digested by the floc bacteria. Large-scale sewage treatment plants often have a digestion tower, where the activated sludge can generate large amounts of energy. Saving the plant operating company time, energy and money.

But that's not all.

I can also help to stabilize my friends, the activated sludge flocs, so that they are better able to settle to the bottom of the secondary clarifier. This ensures that suspended solids and pollutants don't enter the clarified water that is discharged from the treatment plant into the streams and rivers. When I'm around, my activated sludge floc friends are at their happiest.

And even when my presence in the plant begins to wane, I'm still of some use, as I can still bind the toxic and harmful gas hydrogen sulfide in the digestion tower. The biogas produced by sludge digestion can

SCHAEFER PRECaphos®



be converted into energy in local gas-fired power plants. I can also help to dewater the residual sludge from the digestion tower or settling tank, thus reducing sludge weight and volume – another money-saving step that also lowers the overall environmental burden.

One of my big advantages is that I'm a solid powder, so I can be dosed precisely without a lot of extra preparation. There's no need for pumps or collecting trays. And I am easy to transport, too, as I'm not classified as a hazardous material under existing transportation rules.

When I travel, I'm either packed up beforehand into 25-kg bags or I'm chauffeur driven in a silo truck operated by the Edgar Graß road freight company to one of SCHAEFER KALK's rental storage silos that are located on-site at a sewage water treatment plant.

After a lengthy period of testing and initial field trials in treatment plants and clarifier tanks in the Taunusstein region of Germany, I rose to fame pretty quickly – you could say that I've become something of a celebrity among wastewater operations managers.

I can now be found in over fifty sewage treatment plants in Germany where I spend my days removing phosphates from wastewater.

This year, SCHAEFER KALK is treating me to a trip to Munich!

I'm going to IFAT 2022 – the world's leading trade fair for environmental technologies – where I plan to introduce myself to the international community. I'll be showcasing my skills on this major platform and I hope to get an enthusiastic reaction from the IFAT crowd. At IFAT, visitors from around the world meet to discuss issues in the fields of water, sewage, waste and raw materials management. What a stage! And IFAT visitors can finally meet up again in person – the trade fair was postponed once because of the pandemic and last year's event had to be canceled completely.

But I won't be on my own at IFAT. My friends, the activated sludge flocs, will be traveling to Munich with me. So I'll be able to show everyone just how well we work together.

Any who knows, if things go well, I may soon be swimming around in the wastewater treatment plants in other countries.

All the best, SCHAEFER PRECaphos®

RENTAL SILOS & TRANSPORTATION

Bulk storage rental silos from SCHAEFER KALK

SCHAEFER KALK has developed bulk material silos that provide precision dosing of our powder products SCHAEFER KLAROLIT® and SCHAEFER PRECAphos®. These tried and trusted silos have been operating successfully at our customers' sites for many years.

The compact silo unit is perfect for customers who do not have their own silo storage facilities. The silo is set up on a paved area (approx. 3 m x 3 m) located directly at the dosing point. The required daily quantity of product is then dispensed directly into the activated sludge via an automated screw conveyor.

The control unit includes an easy-to-read display that allows you to enter the required dosing times and to check the product level in the silo.

The feedback from our customers has been extremely good, as our bulk storage silos work reliably all year round without any major operational disruptions. Our silos are also partially full when delivered and installed. Commissioning is very straightforward and the first product doses can be dispensed on that same day. We are of course happy to provide assistance and support with the commissioning process.

The rental silo remains at your treatment site and can be refilled on-site and on demand with product delivered by our contract freight carrier Edgar Graß. No need for time-consuming handling of bagged goods or big-bags.

Rental silos are only available in Germany.



Like to learn more? We would be pleased to provide a quote based on the quantities of SCHAEFER KLAROLIT® or SCHAEFER PRECAphos® that you consume per month. Feel free to get in touch, we'd be pleased to advise.



Optimize your biological wastewater treatment process with:

SCHAEFER KLAROLIT®

Many wastewater treatment plant operators have experienced the following problems:

- > Floc breakup
- > Sludge washout
- > Filamentous bacteria
- > Large quantities of precipitants
- > pH below 7

SCHAEFER KLAROLIT® is the solution to all these problems and the product of choice when it comes to optimizing biological sewage processing.

It creates conditions in which floc-forming bacteria thrive and increases the acid buffering capacity within the activated sludge flocs. SCHAEFER KLAROLIT® can deliver this kind of targeted improvement because product uptake by the activated sludge flocs is excellent.

The high purity and powder morphology of SCHAEFER KLAROLIT® ensure safe, reliable use that delivers successful wastewater treatment results. And our non-hazardous product couldn't be easier to use.

Floc-forming bacteria are key workers in sewage treatment plants and creating the conditions in which they can thrive has other benefits, too. Optimized floc structure reduces the proliferation of filamentous bacteria, which greatly improves activated sludge settlement in the secondary clarifier. This in turn can help to prevent sludge washout from the clarifier during heavy rain.

SCHAEFER KLAROLIT® is a natural product that in many cases can keep the concentration of filamentous bacteria at low levels over extended periods – without requiring the use of chemical additives.

Using SCHAEFER KLAROLIT® also has a positive impact on sludge dewatering. Higher dry matter content improves sludge dewatering, which helps to keep disposal costs down.

Numerous satisfied customers have told us that when using SCHAEFER KLAROLIT® they see improved conditions for floc-forming bacteria, an increase in acid buffering capacity, a lower sludge volume index and improved dewatering behavior.

**Try SCHAEFER KLAROLIT® for yourself!
Contact our team for more information and advice.**



MILK OF LIME

SCHAEFER PRECAL® milk of lime – When quality matters



Product details:

PRECAL® 72	20% w/w; highly reactive milk of lime; particularly stable and high-purity formulation for applications ranging from drinking-water purification plants to pH neutralization of industrial wastewater.
PRECAL® 74	40% w/w; highly concentrated milk of lime for all technical applications. Characterized by low levels of minor constituents, a very stable formulation and excellent flowability.
Supplied as	Bulk liquid product via tank truck; or in an IBC tote when ordered from a chemical supply company.
Advantages	<ul style="list-style-type: none"> > Excellent neutralization capacity; small quantities have a large effect. > Minimal settlement and excellent shelf life. > Prevents deposits and incrustations. > Helps to protect plant and pump equipment. > No scum formation in storage container.

Turning EXPERIENCE into PRACTICAL BENEFITS

The benefits of SCHAEFER PRECAL® milk of lime: Economical to use and does not form deposits

Our customers appreciate the high quality and purity of our SCHAEFER PRECAL® milk of lime product. For one major industrial company, switching to SCHAEFER PRECAL® milk of lime (SCHAEFER PRECAL® 74) has yielded significant improvements in its wastewater treatment process.

When compared with a competitor's product (45% w/w milk of lime) the customer found that, contrary to initial expectations, dosage amounts were actually reduced when using SCHAEFER PRECAL® milk of lime. Why? Because SCHAEFER PRECAL® milk of lime is manufactured from high-purity and highly reactive calcium compounds – a fact that has convinced many of our customers to switch to our product.

The crucial factor here is that when we state "40% by weight", we're referring to the Ca(OH)_2 content and not to the total solid content, which is often the case with other products. This makes SCHAEFER PRECAL® 74 much more economical in consumption.

Thanks to its high purity, SCHAEFER PRECAL® milk of lime also prevents the formation of deposits and incrustations. In this particular plant, the use of SCHAEFER PRECAL® 74 actually had the effect of dissolving the deposits that the previous product had left behind in the tank. By switching to SCHAEFER PRECAL® 74, the customer was spared the time, effort and cost of cleaning the tank. This sort of cost reduction is a further benefit from using our product.

Customers who use SCHAEFER PRECAL® milk of lime for the first time are often surprised and delighted with the impressive results achievable with our premium quality milk of lime products.

Try it for yourself and see what SCHAEFER PRECAL® milk of lime can do for your wastewater treatment process. Contact us for technical information and advice.

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