



THE PERFECT FIT FOR
YOUR PAPER PROCESS

Additives to treat water
and boost efficiency



Feralco: Made in Germany – at home in Europe

The Feralco Group is one of Europe's largest providers of aluminium and iron-based coagulants for water treatment, with bases in many European countries. As a specialist in aluminium salts, Feralco Deutschland manufactures primary polyaluminium chloride and aluminium sulphate coagulants.

In addition to this, we also produce aluminium, iron and polymer combination products. Aluminium nitrate sulphates are our special innovation for water cycles, while flocculant aids round off our portfolio of chemical products for water treatment.

Our name and logo

The company name, Feralco, is derived from:

fer | al | co

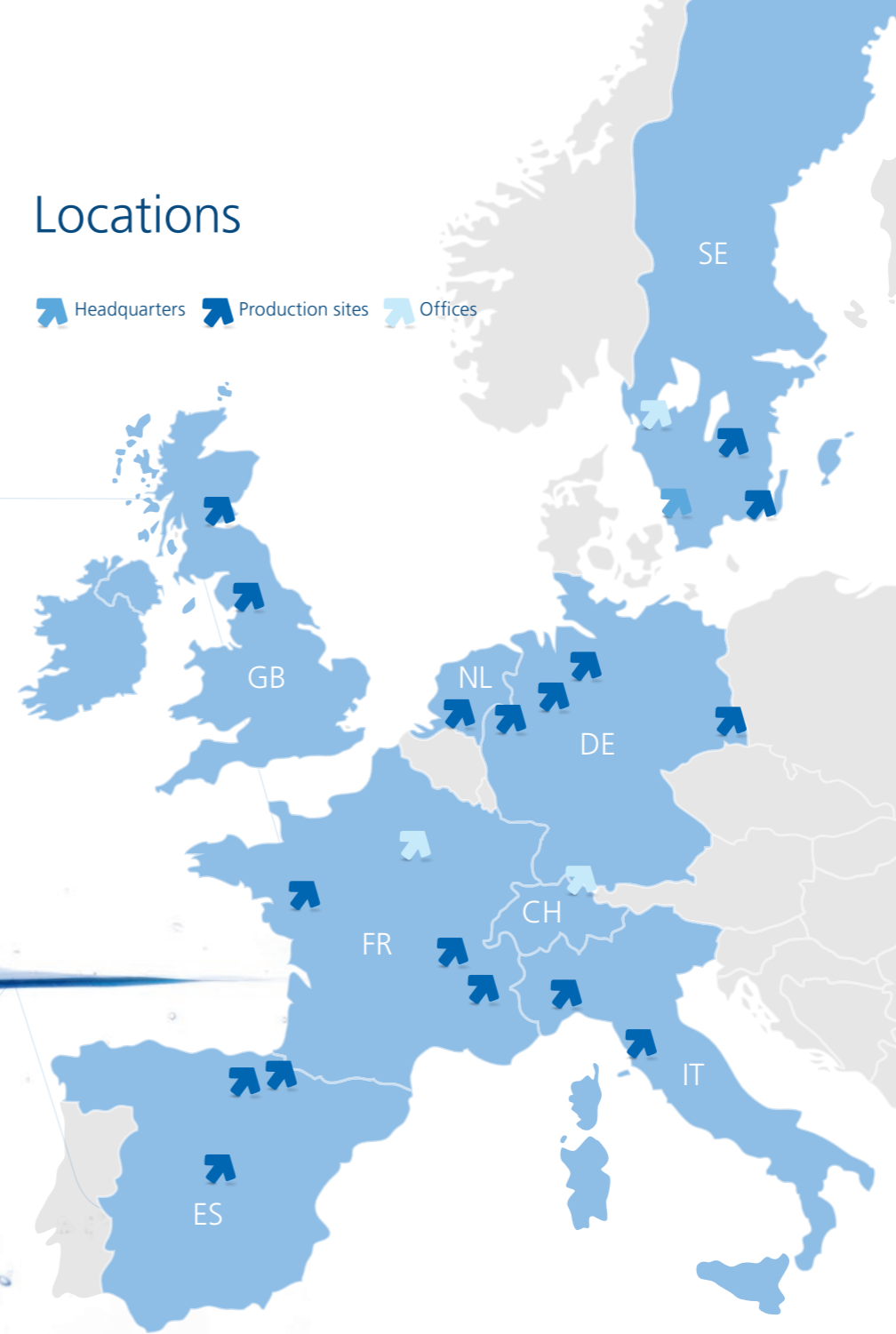
Ferrum (iron) | Alumi-
nium | Com-
pany

Our logo combines the alchemical symbols for iron and aluminium:



Locations

Headquarters Production sites Offices



SWEDEN:
 > Helsingborg
 > Kungälv
 > Sölvesborg
 > Vetlanda

UK:
 > Grangemouth
 > Widnes

GERMANY:
 > Nienburg
 > Duisburg
 > Ibbenbüren
 > Schwarzeide

THE NETHERLANDS:
 > Sas van Gent

FRANCE:
 > Colombes
 > Basse Indre
 > Saint-Clair-du-Rhône
 > Le-Pont-de-Claix

SWITZERLAND:
 > Uster

ITALY:
 > Millesimo
 > Livorno

SPAIN:
 > Leaburu
 > Alegia
 > Valdemoro

We specialise in paper – expertise and a wealth of products

Our chemical additives play a key role in many areas of the paper mill – from fresh water to wastewater treatment, our products are used with great success. Meanwhile, our additives also offer a number of applications when it comes to the actual production of paper and board:

- ▶ Retention aids – fixation of fines and fillers
- ▶ White water treatment
- ▶ Fixation of anionic trash
- ▶ Resin size fixation
- ▶ Support for sizing of alkylketene dimer (AKD) and alkylated succinic anhydride (ASA)
- ▶ Support for starch fixation
- ▶ Improvement of dewatering
- ▶ Support for surface sizing
- ▶ Use in fresh water and wastewater treatment

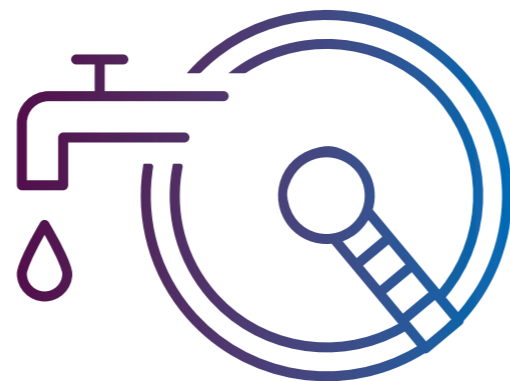
Decades of experience mean that we understand the need for individual solutions specially tailored to the wide variety of demands in these areas, so customer focus is always the most important aspect of our service. The most effective products are only really beneficial when they are deployed in the best way possible. So our employees meet with you on site at the paper mill to analyse your aims and wishes and work out the best solution for your needs.



The key components in the paper process: fresh water and wastewater

Feralco Deutschland makes a crucial contribution to obtaining high purity, potable drinking water from the untreated water in rivers, wells or reservoirs. In the same way, our products are also used for fresh water treatment in the paper mill. Whether dealing with sedimenting solids or colloidal turbidity, we purify your water so it is perfect for use in paper manufacture.

Our team is also ideally positioned to support you with any challenge relating to wastewater treatment. Whether your COD value or sludge volume index is too high, we can help you to adhere to limit values and cut costs.



Products

Fresh water:

- ▶ SACHTOKLAR® series
- ▶ PLUSPAC series
- ▶ Solid or liquid aluminium sulphate

Wastewater:

- ▶ FERRACLAR® series
- ▶ EKOFIX® series
- ▶ BIOTOL® series

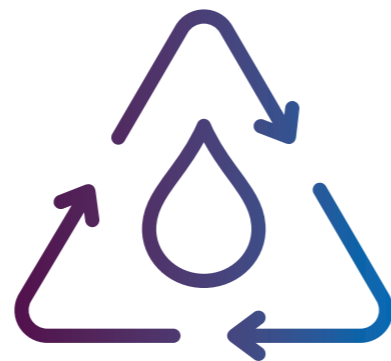


Meet our high performer: Nicasal®. Closing water cycles naturally

One of the greatest challenges for water cycles is the salt input from raw materials and additives, and the subsequent effects on the system's conductivity. In paper and board manufacturing in particular there is a marked sensitivity to high chloride and sulphate contents, since high conductivity has a negative influence on all other chemical additives and leads to higher costs.

In the case of high concentrations of sulphate, it can give rise to the formation of hydrogen sulphide or gypsum sedimentation, whereas high concentrations of chloride present a risk of corrosion. There are hardly any alternatives available on the market that don't either come with these disadvantages or risk causing other issues.

With its products from the NICASAL® and PAPYRUS® ranges, Feralco offers a solution that avoids all these disadvantages while retaining the benefits of the broad-spectrum effect of aluminium. The nitrate breakdown that takes place in the water cycle means that the added nitrate is automatically metabolised by microorganisms and there is no longer any accumulation of salts in the system. In addition, the anaerobic formation of hydrogen sulphide and organic acids is impeded.

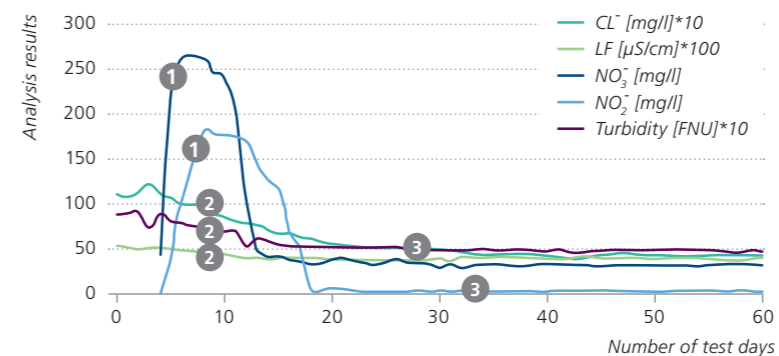


The advantages of NICASAL®:

- ▶ Boosting production – fewer breaks – greater machine uptime
- ▶ Reduction of COD and salt input with chloride
- ▶ Reduction of sludge and lump formation – shorter downtimes for cleaning
- ▶ Cost saving through lower input of biocides and functional additives
- ▶ Prevention of odour nuisance from toxic H₂S and / or organic acids
- ▶ No corrosion of stainless steel components
- ▶ Potential for further closing the water cycle

Paper mill case study:

Replacement of polyaluminium chloride (PAC) with Nicasal®



- 1 Adaptation of microorganisms
- 2 Conductivity, turbidity and chloride concentration falls significantly
- 3 Nitrate degradation by microorganisms

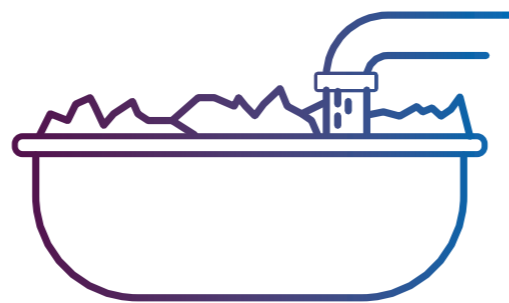
Products

▶ NICASAL® series

▶ PAPYRUS® series

▶ PAPYRUS® FLEX series

Wet-end and stock preparation: invisible helpers in the process



Aluminium compounds fulfil many tasks in the wet-end of paper machines. When it comes to ensuring objectives are met, the type and quantity of product used at each specific dosing point is crucial.

The modification of structures in aluminium salt has a direct impact on the efficiency of these products in their many applications. The polymer structures of aluminium compounds differ depending on the production process and the number of hydroxyl groups per molecule. Polymer aluminium compounds can achieve improved fixation, retention and dewatering, and respond faster, leading to quicker coagulation of colloids.

Our research and development has also identified highly efficient combinations of aluminium products with organic fixatives. For example, products from the POPYRUS® FLEX range have proven extremely efficient and cost-effective for paper manufacture applications. Studies have shown that clear production benefits can be achieved even at extremely low rates of consumption.

Chemical characteristics of aluminium products

PARAMETERS	TYPE	BASICITY	ALUMINIUM	CHLORIDE (NITRATE)	SULPHATE	CHLORIDE/ALUMINIUM	ALUMINIUM STRUCTURES		
							MONO,-	OLIGO,-	POLYMER
Aluminium sulphate	AS	0	4,1	0	22	0	23	73	4
Aluminium chloride	AC	0	6,0	24	0	4,0	26	71	3
Aluminium nitrate	AN	0	4,0	0 (28)	0	0	29	68	3
Standard-PAC 9 %	PAC	41	9,0	21	0	2,5	20	70	10
Standard-PAC 5 %	PAC	25	5,4	16	<1	3,0	26	67	8
PAPER-PAC®-N	PACS	46	5,4	9	3	1,7	15	45	40
SACHTOKLAR® P	hPAC	65	5,2	13	0	2,4	10	32	58
NICASAL®	ANS	46	5,4	0 (16)	3	0	21	36	43

AS: Aluminium sulphate
AC: Aluminium chloride

AN: Aluminium nitrate
PAC: Polyaluminium chloride

PACS: Polyaluminium chloride sulphate
hPAC: High-alkaline PAC

ANS: Aluminium nitrate sulphate

Products

▶ PLUSPAC series

▶ NICASAL® series

▶ POPYRUS® series

▶ PAPER-PAC®-N

▶ SACHTOKLAR® series

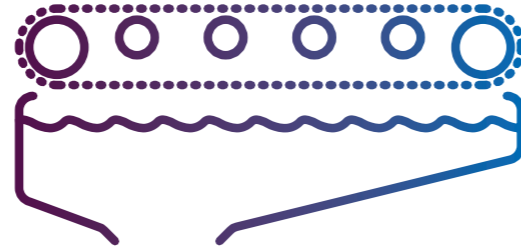


White water cycle: the kidneys of the paper mill

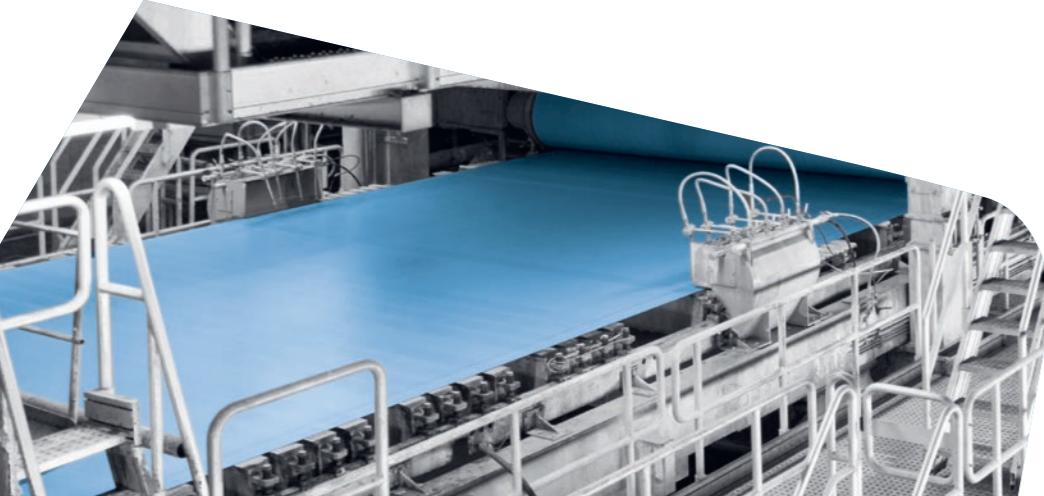
Feralco offers a wide range of solutions that can reduce and potentially even remove the disruptive effects which arise from closing production cycles.

Our solutions build on our extensive experience in the use of aluminium-based additives and combinations with diverse polymers which can optimise paper industry technology. White water treatment functions like the kidneys in our body and is hugely important to the entire water cycle. Our products help you with:

- ▶ Filtration
- ▶ Flotation
- ▶ Sedimentation



This prevents disruptive substances from concentrating and leading to subsequent problems such as breaks or deposits. Fines and fillers are coagulated in a way that retention on the wire is made possible.



Products

- ▶ PAPER-PAC®-N
- ▶ PLUSPAC series
- ▶ NICASAL® series
- ▶ PAPYRUS® series

Clear reasons why Feralco is your ideal partner for paper

Product variety and expertise

Feralco Deutschland is one of the largest German providers of flocculants with the widest range of products. We have over 40 years' experience in paper industry.

Quality and reliable supply

Our four German production sites – with ideal central locations – and numerous Feralco Group production sites across Europe guarantee an outstanding quality and reliable supply for our products, which is unique within the industry.

Logistics and packaging

Regardless whether you are ordering small quantities to test our products or an entire shipping container – we will ensure that you receive the ideal supply and storage solution, e.g. in a big bag, IBC container or tanker.



WATER



SEWAGE



PAPER

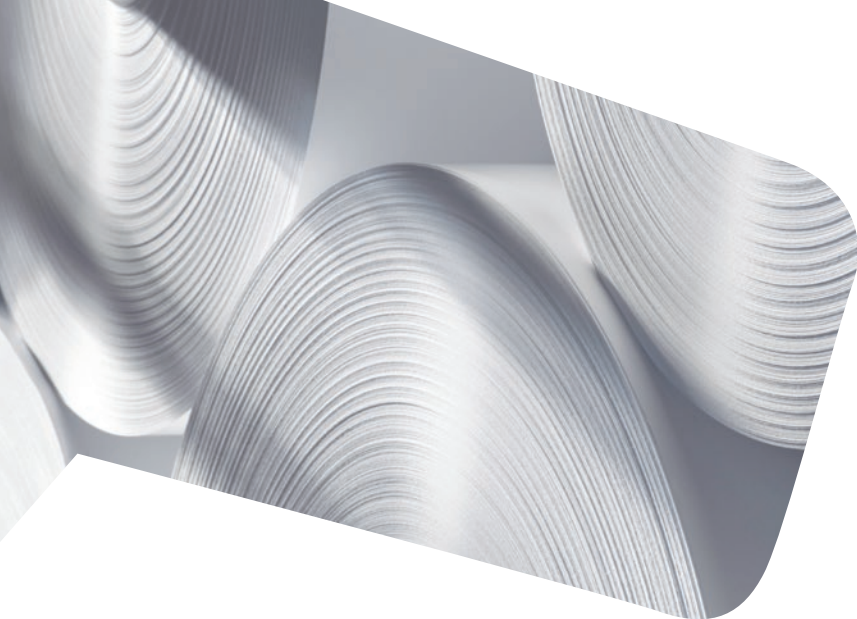


INDUSTRY



EXPORT





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Feralco Deutschland GmbH is a subsidiary of Feralco AB, which is based in Helsingborg in Sweden. The group is one of the leading producers of aluminium and iron-based chemicals in Europe. Its products are used in the drinking and wastewater sectors, in paper and in other industries.

Feralco AB is active across Europe, with sites in Germany, France, Great Britain, Italy, the Netherlands, Sweden, Switzerland and Spain. This guarantees fast delivery times, a personal service and excellent flexibility.