

IN A NEW  
DESIGN

EDITION 2022

# THE ALUSTRIERTE

Everything around the 50th  
anniversary of Alufinish





## Dear partners, customers, employees and friends of Alufinish,

50 years - what a time! 50 years full of experiences, ups, downs and most of all: full of trust and partnership. Building on trust is more than just a slogan for Alufinish. For 50 years, Alufinish has built on trust in its partners, employees and customers. And that pays off.

Today, the Alufinish family is an international network that is successful worldwide with its products for surface finishing of aluminum, zinc and steel. And in 50 years there are many memories of the time together. Starting with the foundation in 1972 in Mülheim-Kärlich, going through the first international orders up to the expansion of the international network as we know it today. And in the meantime, we have always been accompanied by technological change: the first writing computer, the first cell phones, more modern analytical equipment - Alufinish has always moved with the times. And this is how we want to continue to act

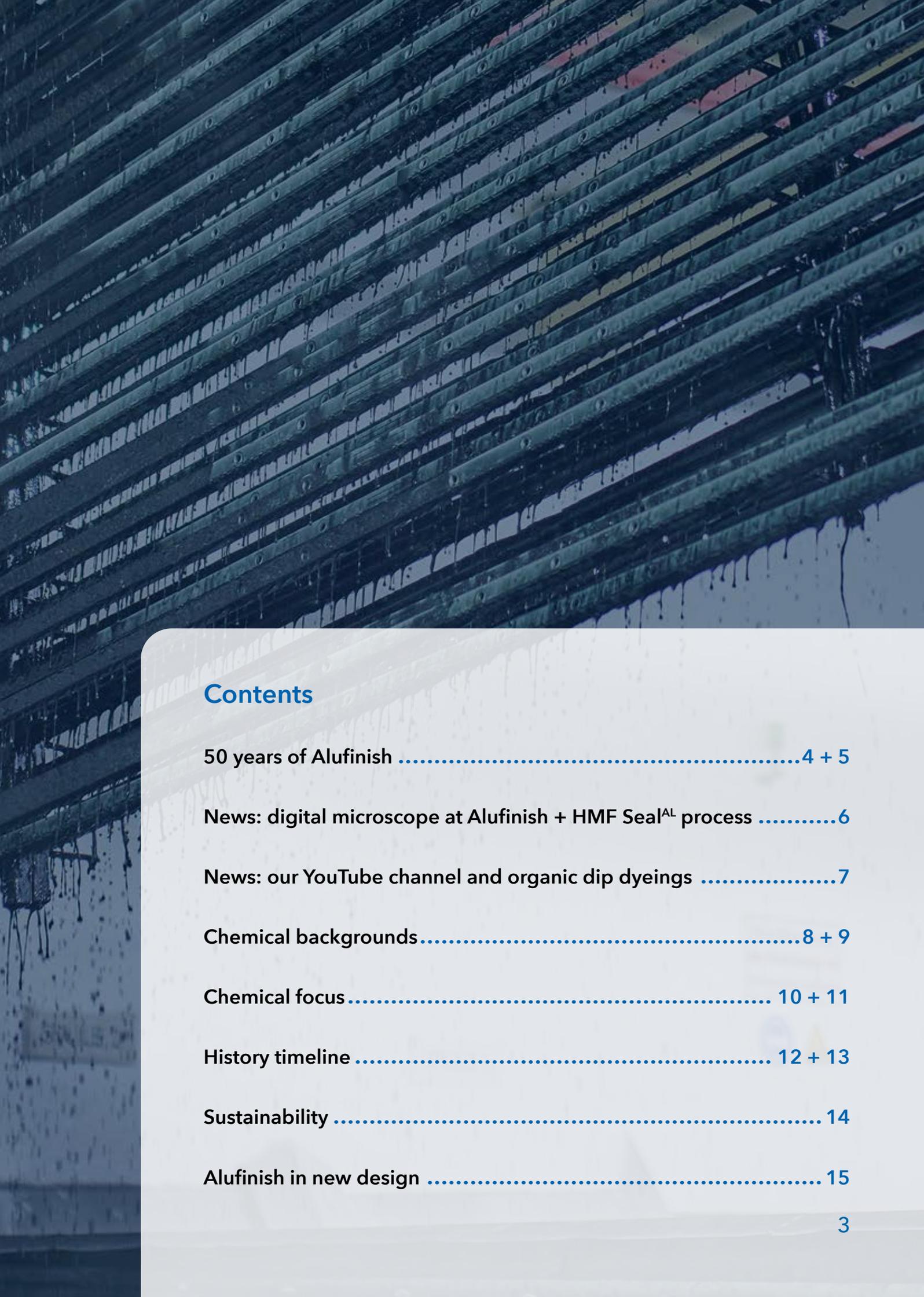
together in the future: in partnership, with our eyes focused on the future. The sustainability of the industry and increasing networking are important topics for us, which we have already embedded in our actions at an early stage. This is where we want to continue and grow together. We are also building on trust in the years to come!

We would like to take this opportunity to thank all Alufinish partners, customers, employees and friends for the 50 years of partnership and for the good cooperation in the future. We hope you enjoy reading our Alustrierte!

Let's build the future on trust,

Yours

**Stephan Zegers & Dr. Nils Monreal**



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# Alufinish building on trust since 50 years



Trust is the foundation of a functioning economy. Alufinish from Andernach also knows this and has been building its network on trust for 50 years. With its fiftieth anniversary, the company is now looking back on a time that was characterised by growth, international relations and many technical changes.

Founded on August 09, 1972, Alufinish started as a supplier of products for chemical surface finishing of metals in Mülheim-Kärlich in Rhineland-Palatinate. In the warehou-

able to deliver to the first customers by bicycle," Otmar Monreal, co-founder of Alufinish Andernach, remembers this time with pleasure. In the beginning, Alufinish focused primarily on products for the anodising process.

The Alufinish network grew fast and independent deliveries were no longer possible. While the first international partners joined the Alufinish network, the warehouse in Mülheim-Kärlich also became too small. This was followed by the move to Andernach, into a larger hall. Even today, „Alufinish Andernach“ is still known for its location. As the international network became larger and larger, the rules and laws for the supply of process chemicals became more and more complex.



se there was enough space for a storage and some offices. With 6 employees, the company coordinated, processed and shipped according to the order situation. Quickly many customers were acquired and in a time when there were much less requirements for logistics, many orders were also delivered independently with a trailer. „We were also still





And the technology also changed so rapidly during this time. While orders were initially processed on a typewriter, the first typing computer followed in 1985. At international meetings and events, Alufinish met many friends and partners who are still important partners of the international Alufinish network. Navigation systems and cell phones were still a rarity here, so people helped each other with carefully drawn directions and walking to the nearest phone booth. „ With the many trips to international customers and partners, some of the vehicles broke down along the way,“ Otmar Monreal remembers.

As the Alufinish network continued to grow, more technical innovations moved into Alufinish. For example, 1998 was the year in which - in addition to the delivery of the chemicals for the first chrome-free facade - Alufinish found its way onto the Internet. The first website presented the products and the company itself and, of course, also offered a printable map of how to get to Alufinish Andernach.

From the millennium onwards, numerous partners followed, from Ukraine to Spain and Mexico, and gave Alufinish the strength it enjoys today. And even with the change of management in 2020, this orientation will be continued by Dr. Nils Monreal and Stephan Zegers, in order to continue to work for the best patent of the company in the future, as it has now for 50 years: Building on trust.

**Want to learn more about the history of Alufinish?  
On page 12 you can follow us on our journey through 50 years of Build on Trust.**

## New digital microscope at Alufinish

For Alufinish, digital microscopy is an important tool in daily work. With the new digital microscope, Alufinish has many new possibilities to support their customers in the evaluation of error patterns.

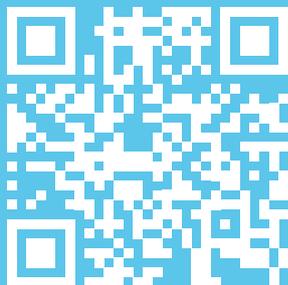
For example a defect pattern, that is a shiny, anodised pattern on which clearly recognisable spots can be seen. Under the digital microscope, these can now be examined more closely. In a second sample, tiny dark marks can be seen on the anodised surface. The task here is to determine whether these are holes in the material or elevations. All these tasks can be solved with the new microscope.

Compared to the previous equipment with a maximum of 80 times magnification, we can now look at surfaces with up to 200 times magnification.



Watch our video of the new microscope now on YouTube:

<https://youtu.be/c6xaS-PrbKg>



## Goodbye nickel and cobalt

Cold sealing processes based on nickel and if necessary cobalt salts are currently still state of the art and are often used as an alternative to hot sealing processes. Advantages result from shorter sealing times and energy savings. On the waste water side, however, there are disadvantages, as nickel and cobalt have to be removed again. This is where the new development of the HMF - Seal<sup>AL</sup> - process comes in. HMF stands for „heavy - metal - free“. The new process is therefore free of heavy metals and otherwise fulfils the properties of a conventional cold seal system. An uncoloured aluminium oxide layer sealed in this way is, of course, also free of heavy metals. Both colourless and electrolytically coloured surfaces can be sealed. The treatment is completed by an ageing stage in warm water, in which Alfiseal 997 is added. Approval of the process according to Qualanod has been applied for. The approval of the process according to Qualanod is in progress.

## What advantages does the process offer?

- Completely free of heavy metals, low waste water pollution
- Application at temperatures below 32°C
- Short sealing times, total sealing time is 1.5 minutes/ $\mu\text{m}$
- Applicable on natural and electrolytically coloured surfaces
- Good filterability and analysable products
- Fulfils the usual sealing test quality demands (weight loss test DIN EN ISO 3210)



## Alufinish takes a look behind the scenes of surface finishing:

### Alufinish now on YouTube:

Since 2021, Alufinish has set itself the goal of expanding its own communication to numerous platforms in order to enter into an exchange with partners, customers and industry experts. In addition to LinkedIn and Facebook, the company now also uses YouTube for this purpose.

In short, but technically in-depth videos, Thomas Sondermann, technical manager at Alufinish, and his team explain contexts, typical error patterns and chemical backgrounds. In this way, Alufinish encourages further exchange. First videos of the channel focused for example on the colouring of anodised surfaces, the correct cleaning of aluminum surfaces or the new microscope of Alufinish.



Take a look for yourself:  
[https://www.youtube.com/channel/UCQUA\\_UBOtE5\\_c7wx4C4av-w/videos](https://www.youtube.com/channel/UCQUA_UBOtE5_c7wx4C4av-w/videos)



## Are there any news in organic dip dyeings? -

### Yes! Organic Alumino-dyes

Also new dyes for adsorptive dyeing (dip dyeing) of anodised aluminium surfaces are available. Alufinish offers you 28 different Alumino dyes from their partner MDP, which are available worldwide.

The colour spectrum ranges from black, grey, brown, blue, green, red, orange and yellow to various intermediate tones.

They are suitable for both indoor and outdoor use, depending on the light fastness of the chosen dye.



### Microorganisms in the pretreatment

Environmental protection and the search for more compatible processes have also had a strong influence on pretreatment. In the past, chromium VI compounds were used to provide good corrosion protection and, due to the chemical composition of these baths (chromium(VI), conductivity values of about 8000  $\mu\text{S}/\text{cm}$  and a strongly acidic pH value), a low-germ background was ensured; today, more environmentally friendly processes are used. However, due to today's mostly chromium-free pretreatment, their low conductivity values and combination with cascaded rinsing technology for reduced water consumption, the overall system has also become more susceptible to germ growth.

### How does the formation of microorganisms occur?

In principle, microorganisms form wherever the general conditions are right. Accordingly, germs such as bacteria, fungi, algae and yeasts develop very well in the pretreatment, as more environmentally friendly processes are used for reasons of environmental protection and fresh water is saved.

For example, chromium-free baths have conductivity values of just about 100 to 500  $\mu\text{S}/\text{cm}$ , so they look more like saline process water.

What is interesting here, however, is that the contamination occurs mainly in the rinses before and after the actual process

bath. Here, the pH value, salt load, temperature and conductivity are often at their best and thus promote germ growth.

### Approaches

In order to be able to act against contamination, the weak points must be known. This shows that the susceptibility is mainly influenced by the system itself. Increased contamination tends to occur in the so-called "dead zones" of the system, where the exchange of substances is at its lowest. The susceptibility to microorganisms varies depending on how often the rinse water is changed, how high the water quality and temperature are, and which contaminated media are introduced into the bath. However, germs can already enter the bath with the water, for example when using well water or feeding from a germ-free ion exchanger system.

Accordingly, it makes particular sense to rely on preventive measures. In case of suspicion, the degree of contamination can be easily checked by means of test sticks containing a nutrient medium. If significant contamination is detected, the bath should be drained immediately and any visible biofilm should first be removed mechanically - as far as possible.

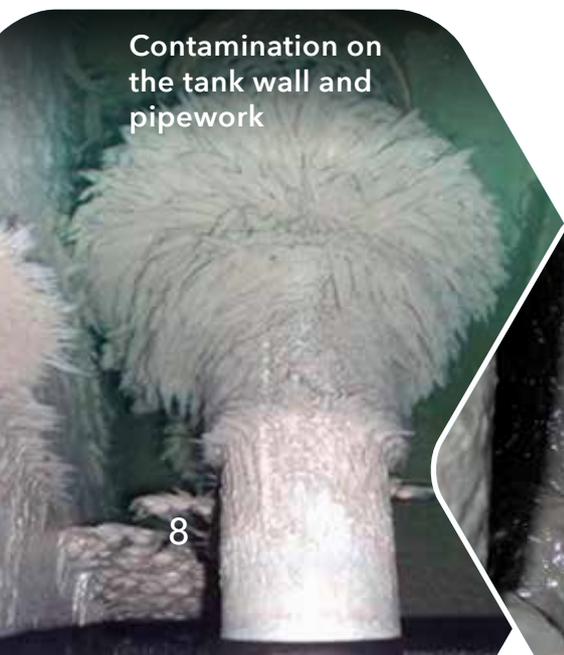
This is followed by an initial disinfection with a suitable system cleaner. After thoroughly rinsing and refilling the bath, it is then recommended to check again for microbiology. If microbial contamination has been successfully reduced to a minimum, continuous chemical disinfection of the bath with suitable biocides is then recommended. These can be added to the bath, e.g. by automatic dosing. Afterwards, the appearance of the bath solution should be monitored at regular intervals and, if necessary, checked with test sticks.

The disinfection of the water by means of UV radiation is also frequently used. This prevents possible resistance of the microorganisms.

Which method is most suitable must be decided depending on the local conditions.

In principle, all hygiene parameters should be monitored regularly to enable rapid intervention and countermeasures. In this context, the

Contamination on the tank wall and pipework



Slime-like contamination on the container wall



process water and the deionised water must also be monitored. If these parameters are observed regularly and measures against contamination are taken at an early stage, the problem can often be brought under control again. Otherwise, there is a risk that the quality of the pretreated goods will be negatively affected by remaining dead biomass on the surface.

### Pre-corrosion and its effects on anodising processes

When aluminium reacts with its environment, this often causes pre-corrosion. Different, mostly barely visible changes on the surface of the aluminium are the result. But what are the effects of pre-corrosion?

If pre-corrosion occurs on the material, this often leads to unsaleable goods. This is because the pre-corrosion on the raw material is usually only noticed after pickling, as the structure of the pre-corrosion remains as a visible relief.

### What causes pre-corrosion?

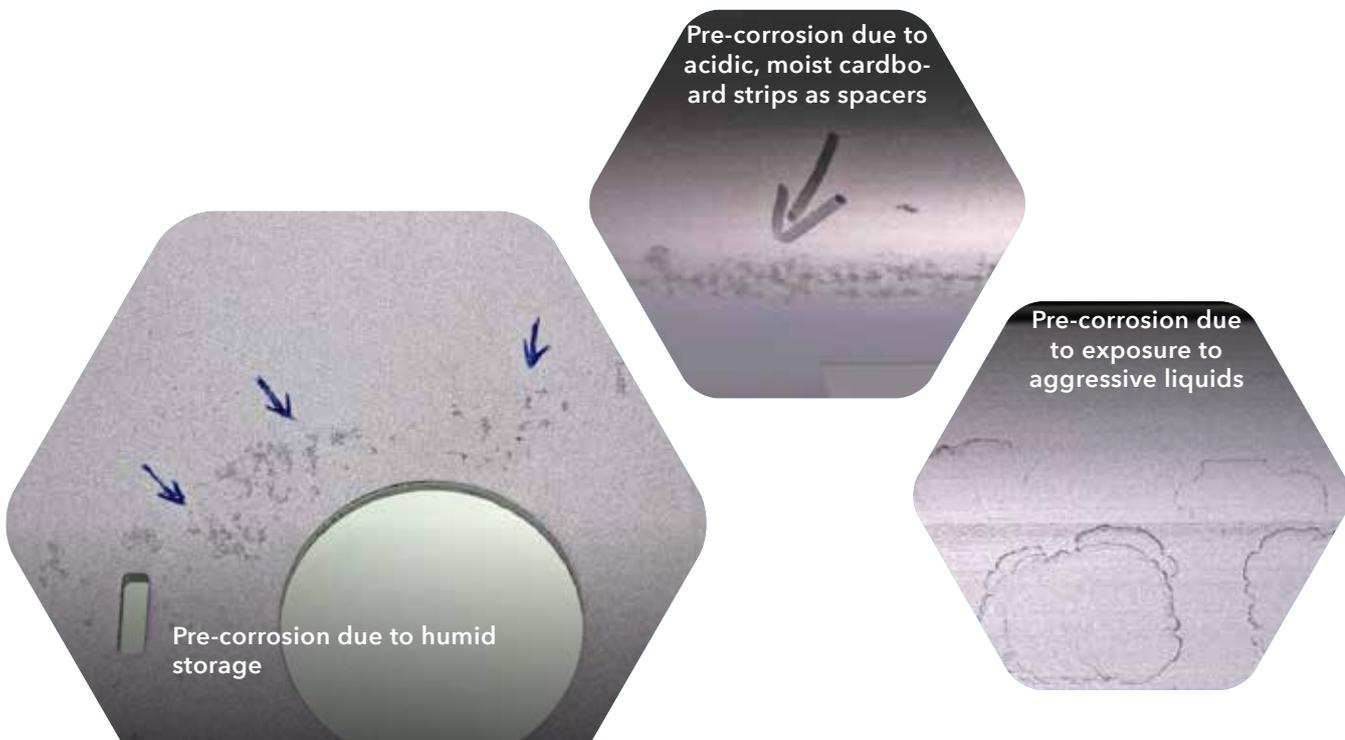
The most common cause of pre-corrosion is incorrect storage. For example, if the raw material is exposed to a very corrosive atmosphere or is stored in a room with too much humidity, this enhances pre-corrosion. Pre-corrosion can also occur if condensation occurs under the foil in the case of foiled raw profiles. Further examples are:

- Exposure of the aluminium surface to aggressive substances,
- Touching aluminium without gloves (hand perspiration = corrosion),
- Use of corrosive additives when sawing and cutting,
- Unsuitable spacers used between aluminium profiles (e.g. acid containing or humid cardboard strips),
- Storage of aluminium raw material close to marine climates (humid, salty).

### How can pre-corrosion be avoided?

To avoid pre-corrosion and the resulting unsaleable goods, some rules should be observed when handling the raw material. For example, the aluminium should be stored in a dry place and contact with aggressive liquids should be avoided. The right packaging also prevents the formation of condensation. When transporting the raw material, gloves should also be worn to avoid corrosion through hand perspiration.

In most cases of pre-corrosion, however, only mechanical treatment can help. This can be done by grinding, of the pre-corroded raw material for example. Pickling alone is not always sufficient to avoid the visible consequences of pre-corrosion in anodising operations.



## What happens during hot sealing?

After anodising and colouring aluminium surfaces, it is particularly important to seal the created porous aluminium oxide layer well. This process can be carried out using various seal methods. One possibility is the hot sealing. For this, fully demineralised water is used at a temperature of at least 96°C, to which a sealing additive is added. In principle, sealing in this water bath also works without a sealing additive, but this results in a visible deposit on coloured surfaces, which greatly reduces the decorative appearance of the final product. Sealing additives from the Alfiseal product group (e.g. Alfiseal 942, Alfiseal 959 or Alfiseal 975) avoid these problems.

## Which chemical processes occur during hot sealing process?

The high temperature and the aqueous medium cause hydration of the aluminium oxide layer in the water bath. Here, the aluminium oxide formed during anodising swells and gradually transforms on top into so called boehmite (AlO(OH) - aluminium oxide hydroxide).

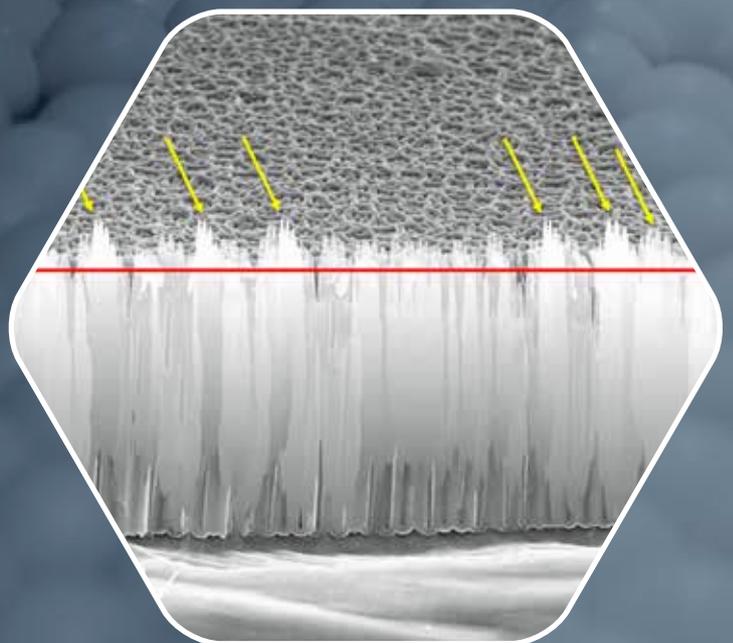


Through this swelling process within the pore, it is finally closed (sealed) and existing colourations are fixed as well. In a figurative sense, the process can be compared to the calcification of a pipe. However, the swelling process also takes place above the pores, which then becomes visible as a deposit on coloured surfaces if no sealing additive is used. This hot sealing process usually takes 3 minutes/µm anodised layer thickness. A 20 µm thick anodised layer, as it is usual for architectural aluminium, therefore requires a total hot seal time of 60 minutes in the anodising plant. With special additives (e.g. Alfiseal 938) it is also possible to reduce the sealing time. Here is the schematic sequence (side view of anodised layer) of a hot sealing process:



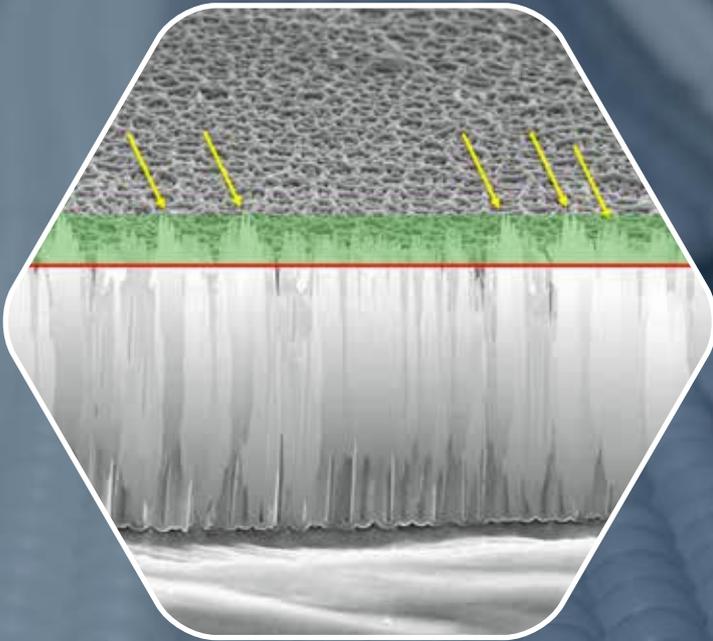
### Alufinish simulation 1:

A sealing in fully demineralised water without sealing additive. Visible smut above the red line due to boehmite formation. The pores are closed. The sealing quality values are fine.



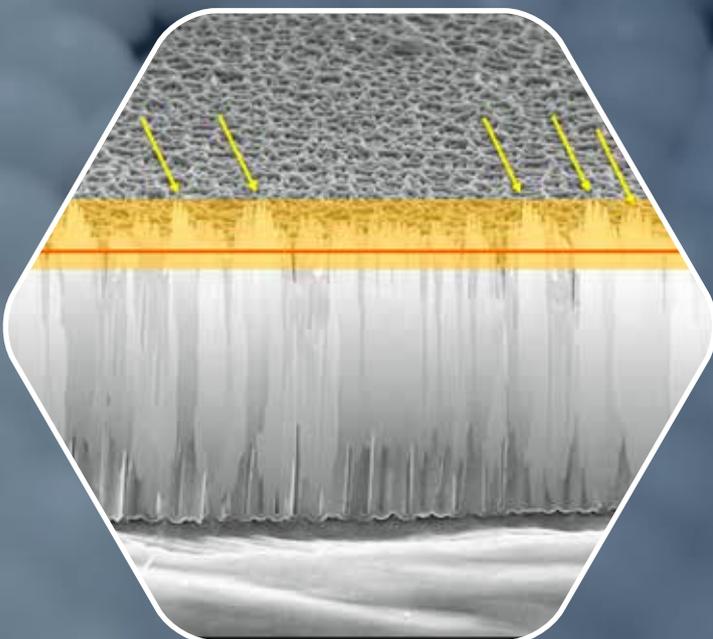
### Alufinish simulation 2:

A sealing with correctly adjusted sealing additive. Only the visible deposit/smut above the red line is removed (green area). The surface is free of residues and the pores are closed. The sealing quality values are excellent



### Alufinish simulation 3:

A sealing with incorrectly adjusted sealing additive. The visible smut/deposit above the red line is removed but also a part inside the pores (orange area below red line) is removed. The surface is free of residues, but the pores are no longer completely closed. The sealing quality values deteriorate.



### The following points are therefore important for good sealing of decoratively anodised aluminium surfaces:

- The correct choice of sealing additive enables a clean and deposit-free surface with good sealing quality at the same time
- pH-value and concentration have to be correct in order to avoid layer attack (see Alufinish simulation 3).
- The correct sealing times and bath temperature have to be maintained to enable complete sealing.
- The best sealing additive is of no use if the pores of the anodised layer have not been rinsed sufficiently beforehand. Intensive rinsing in demineralised water (conductivity: <math>< 30 \mu\text{S}/\text{cm}</math> is recommended) is therefore strongly advised. Through intensive mass exchange, any remaining sulphuric acid and salts (aluminium, tin...) are removed from the pores and replaced by water.
- Correct rinsing before hot sealing also reduces the entry of harmful ions into the bath and thus increases its service life.
- The entry of sealing poisons (fluorides, phosphates, silicates...) have to be prevented so that a good sealing quality can be achieved at all. Silicates are not detected by the conductivity value. Therefore, it has to be checked whether the fully demineralised water is also free of silicates after regeneration.



1972 - 1976

1977 - 1981

1992 - 1996

1997 - 2001

2002 - 2006



### Foundation of Alufinish

Alufinish was founded on August 09, 1972 at its first location in Mülheim-Kärlich. This first production hall quickly became too small and we were able to move to Andernach in 1983 into a new, larger place of business. With this location, the „Alufinish Andernach“ has become internationally known.

### Growth by building on trust

Otmar Monreal always liked to tell us that „the first customers could still be delivered by bicycle“. But the radius of action grew steadily. The national borders were quickly reached and after the neighbouring countries in Western Europe, we were also able to establish ourselves in Eastern Europe with the support of our partners.



▶ 1982 - 1986 ▶

▶ 1987 - 1991 ▶

▶ 2007 - 2011 ▶

▶ 2012 - 2016 ▶

▶ 2017 - 2022 ▶



### Partner - All over the world

Since then, the network of our partners has been continuously expanded and today we deliver to countries that would have been unthinkable at the time of our foundation. Our team of employees is organised in such a way that we can supply almost any region in the world with the process chemicals it requires. If ingredients cannot be exported or imported for legal reasons, we find others that are permissible for that region.

### 50 years of Alufinish

The structures that have grown over the years have been constantly expanded and optimised. With production in Germany, on-site technical service for our customers and partners nationally and internationally, as well as the comprehensive product portfolio for the surface finishing of aluminium, we are unique in the world. We will continue to expand and consolidate this position.

### Sustainability in the aluminium industry – but why?

In the economy, aluminium is treated as an important material for the future. This is because it has many advantages: The formability, the low weight and especially the corrosion resistance are some of these criteria. And therefore aluminium is an important part for a climate-neutral future!

### But why is aluminium so important in this?

Due to its durability, aluminium ensures that the material remains in the economic cycle for longer. This avoids more frequent recycling, which would otherwise require energy. Moreover, thanks to its weight, aluminium in lightweight construction ensures lower CO<sub>2</sub> emissions in the automotive industry. And one advantage is of particular importance: aluminium can be recycled very well and almost endlessly. This makes aluminium a pioneer for a circular economy without the constant consumption of new resources.

### Aluminium recycling as an important element

This is because, according to the German Aluminium Association, 75 percent of the aluminium ever produced is still in the economic cycle. If the aluminium is returned to the cycle after all, recycling saves about 95 percent of the energy it would otherwise take to produce new primary aluminium. Recycling aluminium therefore ensures sustainable aluminium use. This method of use not only saves massive amounts of energy, but also leads to a lower demand for new aluminium in the long term due to its durability.

Alufinish is also proactive in promoting a sustainable economy and the careful use of energy and resources. For example, the company tries to save energy and to rely on sustainable energy sources where possible. In the interests of sustainable development, Alufinish also actively and continuously strives to develop environmental protection in both production and products, in order to further reduce environmental impact.

With the introduction and maintenance of a validated environmental management system certified according to DIN EN ISO 14001, environmental protection has been organisationally anchored in the company.





## A new look for Alufinish

A lot of changes in 50 years. The question of a good design has also been answered differently over the years. Therefore, we have created a more modern, uniform design for the anniversary year.

Instead of making major changes, however, we want to maintain the recognition value of the Alufinish brand. The design was primarily adapted for our appearance on the social media channels. You will now find new topics regularly on social media and our website. In addition to news from the aluminium industry and from Alufinish, we report there on error patterns, applications and chemical backgrounds. Also new: our YouTube channel, where you will regularly find new videos on topics related to aluminium surface finishing.

### Follow us now on our channels:

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