

**FreiLacke**



## System solutions for **Composites**

Everything from a single source. From the material to the coating.



# Systematic solutions.

Our system coating idea.

## System coating for best results, even in a product mix

**FreiLacke** is deemed a specialist for system coating and system coating competence. Both terms have been essentially characterised by the traditional company from Döggingen.

We develop and produce all common coating systems under the same roof, enabling us to not only offer our customers all important coating technologies, but to also coordinate them for optimal coating structure and appearance. The advantages are best material properties, consistently identical colour results (even with different products and types of coating) as well as configuration of individual coatings to match requirements – all from a single source.

**FreiLacke** distinguishes two types of system coatings:



**Vertical system coatings:** Vertical system coatings combine different coatings into a multi-layered coating structure to produce high-quality and resilient coatings for best protection. They are used, e.g., in radiators, control cabinets, or light metal wheels.



### Complete solutions with composites

From seat shells and vehicle attachments to power distribution boxes and rotor blades – the triumph of GRP and CFRP plastics has continued unabated for decades, and the range of possible applications continues to grow.

This is mainly due to the great advantages of these glass- or carbon-fibre-reinforced composites: They are lightweight, extremely durable, water, cold and heat resistant and can be pressed into almost any shape. In addition to a wide range of coating materials for surfaces, the Black Forest coating manufacturer

**FreiLacke** now also offers components for the manufacture of parts:

- Powder In-Mould Coating (PIMC)
- CM powder for component manufacturing
- Gelcoats and pigment pastes
- In-Mould Coating (IMC)
- Polyurea coating solutions



**Horizontal system coatings:** Horizontal system coatings use different coatings for coating an object's individual components. This creates a homogeneous appearance in spite of heterogeneous substrates. Horizontal applications are of central importance, among other things in machine and vehicle construction, for functional furniture or rail vehicles.

# PIMC

## Powder In-Mould Coating

Composite components usually have to be reworked and painted in a time-consuming and cost-intensive process in order to achieve the desired surface qualities.

With PIMC "Powder In-Mould Coating" powder coatings, these can be significantly reduced and in many cases completely eliminated.

The powder coating of composite components can be easily integrated into the grouting process.

For this, the powder coating is sprayed into the mould either manually or automatically. The highly reactive coating hardens in a few seconds, after which the SMC/PrePreg can be inserted and grouted immediately. During the grouting process, the PIMC coating layer develops a strong chemical bond with the substrate, resulting in excellent adhesion. After the grouting, the component is fully coated and can be demoulded as usual.



Facades



Vehicle construction



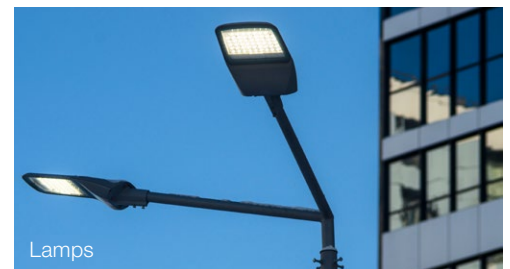
Kitchen sinks



Shower trays



Sports equipment



Lamps

### **PIMC technology comes with many advantages:**

The innovative process allows you to benefit directly from the added value. In many cases, repainting by external partners is no longer required. This eliminates additional expenses for transport and labour. Compared to conventional gelcoats, PIMC coatings are completely styrene-free.

### **Powder In-Mould Coatings are completely free of solvents and VOCs**

#### **SMC/BMC applications**

In combination with SMC or BMC, PIMC is suitable as a colouring and protective topcoat for a wide range of applications and allows for considerable freedom of design in terms of surface structure. The surface structure can be integrated directly into the tool and is reproduced by the PIMC coating in every detail.

The coating is characterised above all by its very high chemical resistance/surface hardness and the associated scratch resistance. In addition, the PIMC serves as an excellent “styrene barrier”. Depending on the application, the PIMC can also be equipped with flame retardant/conductive/abrasion resistant/anti-graffiti and many other finishes.

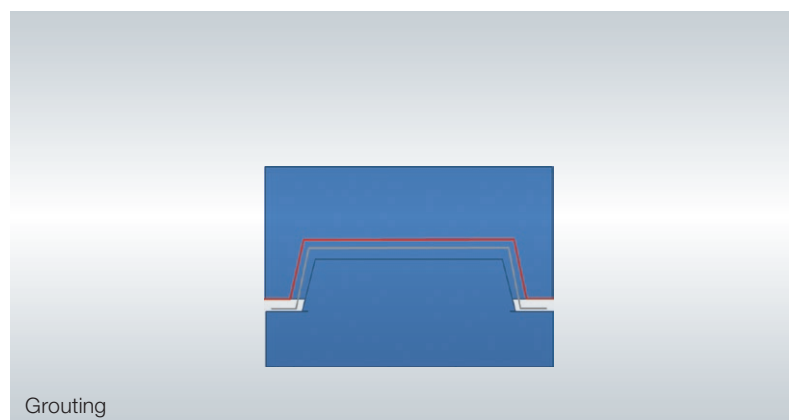
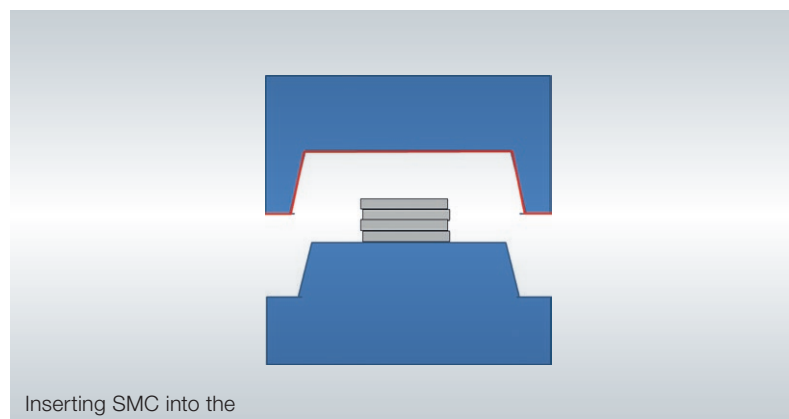
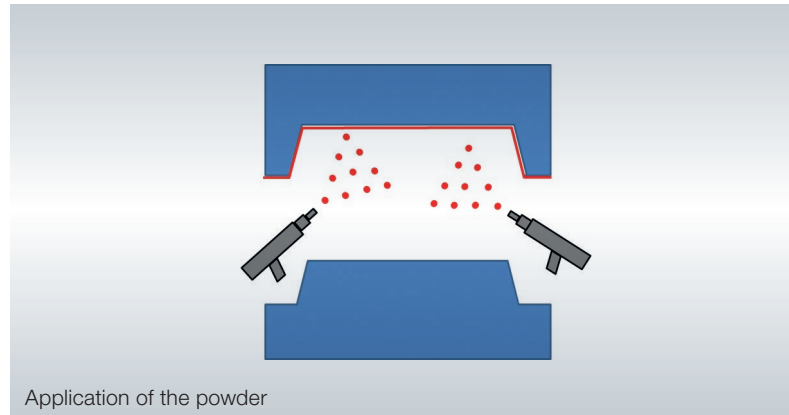
#### **Carbon/Glass PrePreg**

The repainting of carbon components is associated with an enormous amount of work. With a PIMC primer, these work steps can be reduced to a minimum, as the typical fibre marking is completely levelled out by the PIMC process.

#### **The concept (alternative)**

The typical fibre marking is completely levelled out by the PIMC process, the parts obtain a highly resistant and very homogeneous surface.

Thanks to the direct integration into the manufacturing process, it is possible to achieve surfaces that are already Class A-compliant in terms of shape.



# CM Powder

New Composite Powder Resin system for composite fibre materials

For components made of fibre composite plastics such as CFRP, GFRP and other fibre types, **FreiLacke** has launched an innovative product: the composite powder resin system, or CM powder for short. It provides excellent fibre bonding properties for a wide range of glass and carbon fibres as well as natural fibres. Excellent bonding is also achieved when using recycled fibres. The integration of fillers, metals, inserts and core materials is possible as well.

CM powder contains no ingredients that require declaration and is completely free of solvents.



## The procedure

CM powder has excellent processing properties and features a unique two-step principle that sets it apart from conventional resin systems for composite plastics: The CM powder can be fully melted without commencing the curing process. As a result, it can be processed into a PrePreg with complete impregnation, which can then be assembled into multi-layer PreForms. The powder-resin system is excellent to work with and has an almost unlimited storage life at room temperature (>2 y at <25°C).

## Applications

The CM powder was developed for industries that utilise lightweight components – from automotive parts to building reinforcements and industrial components.

This makes it suitable for a wide range of applications, from decorative items to turbine blades.





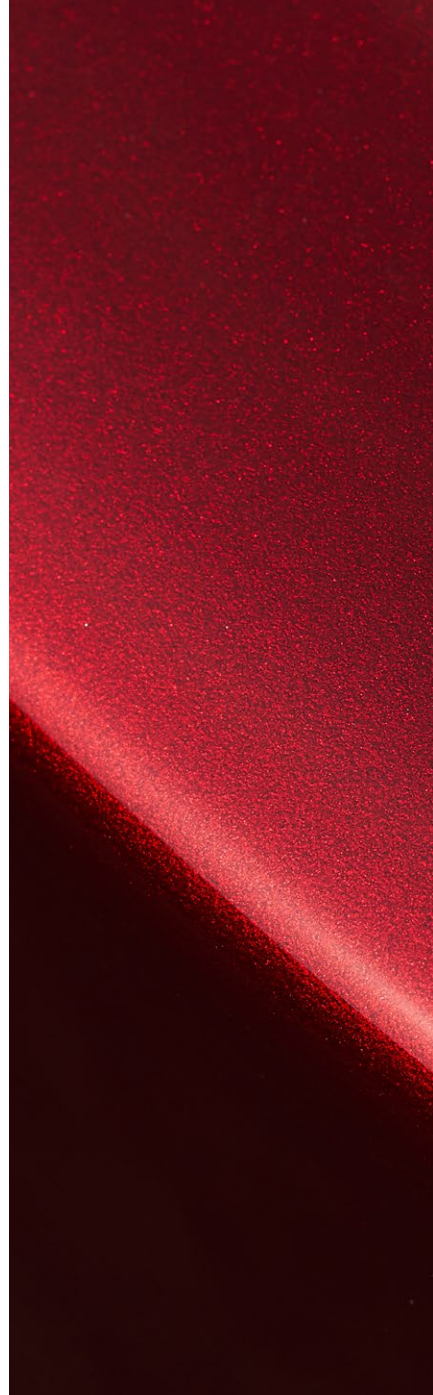
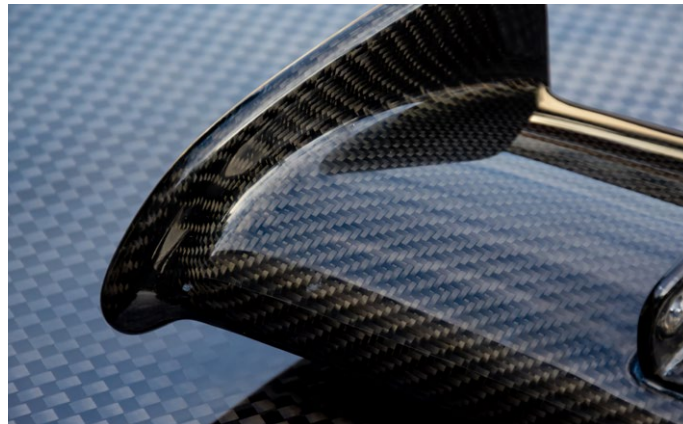
# Gelcoats & Pigment Pastes

The challenge is in resistance

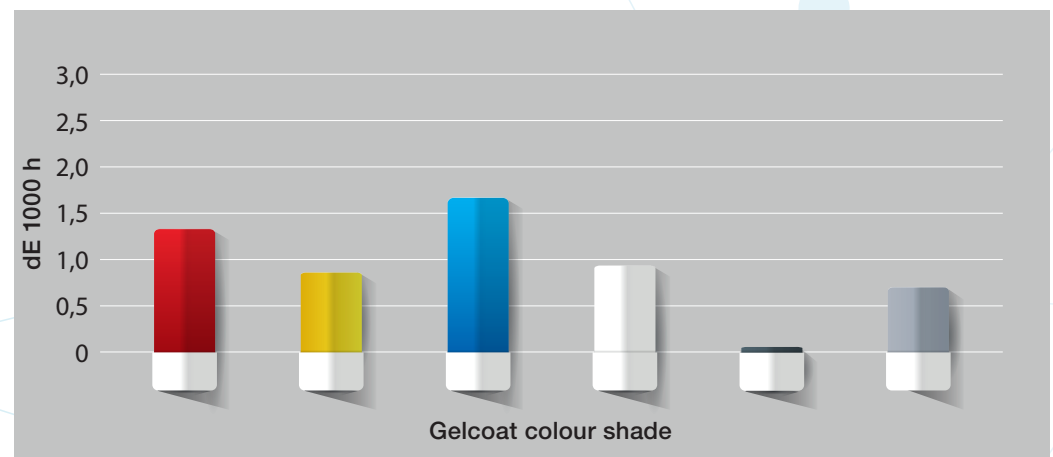
**Gelcoats, the colouring layer in fibre-reinforced mouldings, are the decisive component when it comes to colour fastness, weather resistance and chemical resistance.**

As part of the **FreiLacke** system coating concept, gelcoats are matched in terms of colour and resistance to the requirements of the customer's end application, naturally taking into account the component manufacturer's processing. An almost unlimited range of colours is available thanks to adapted pigmentations coordinated with **FreiLacke's** various coating systems.

**FreiLacke** pigment pastes are ideal for colouring colourless gelcoat systems and for giving colour to laminates. In terms of colour stability and durability, the pigments used meet the highest requirements of the industry and construction components.



**Weather resistance, Xenon test (Weather-o-meter) as per DIN EN ISO 16474-2, method A1**



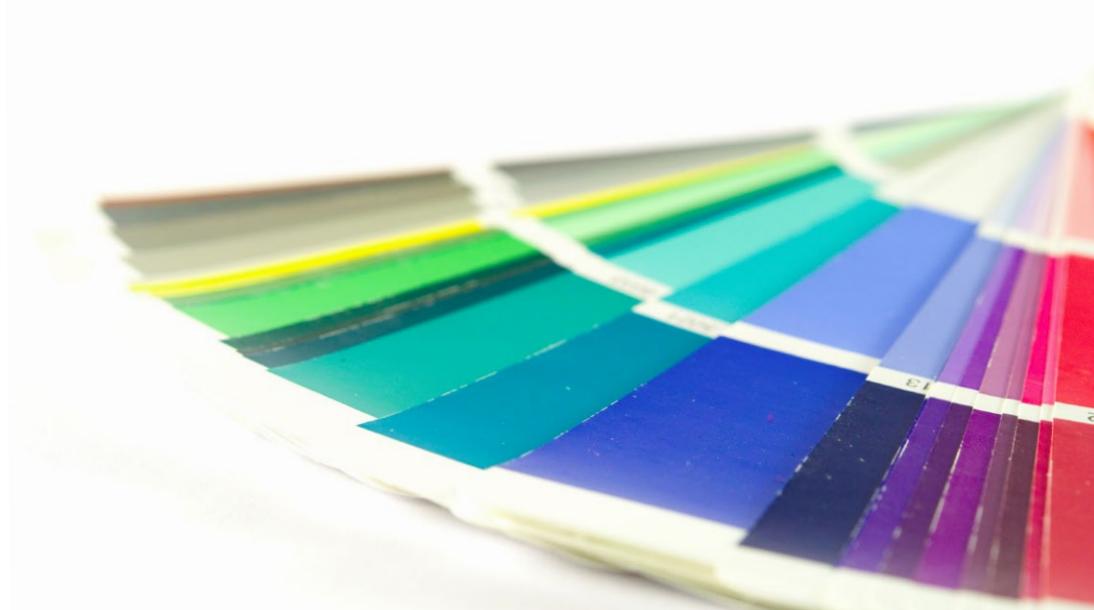




There are almost no limits to the colour variation and well over 300 shades are formulated and available.

The colouring of EP (epoxy resins) or PUR (polyurethane) systems can also be successfully achieved with this standard system.

Due to the high concentration of pigments in the styrene-free resin, the quantity used can be kept to an absolute minimum – and thanks to optimised viscosity, automatic dosing is an option.



# In-Mould

More coating with a single step

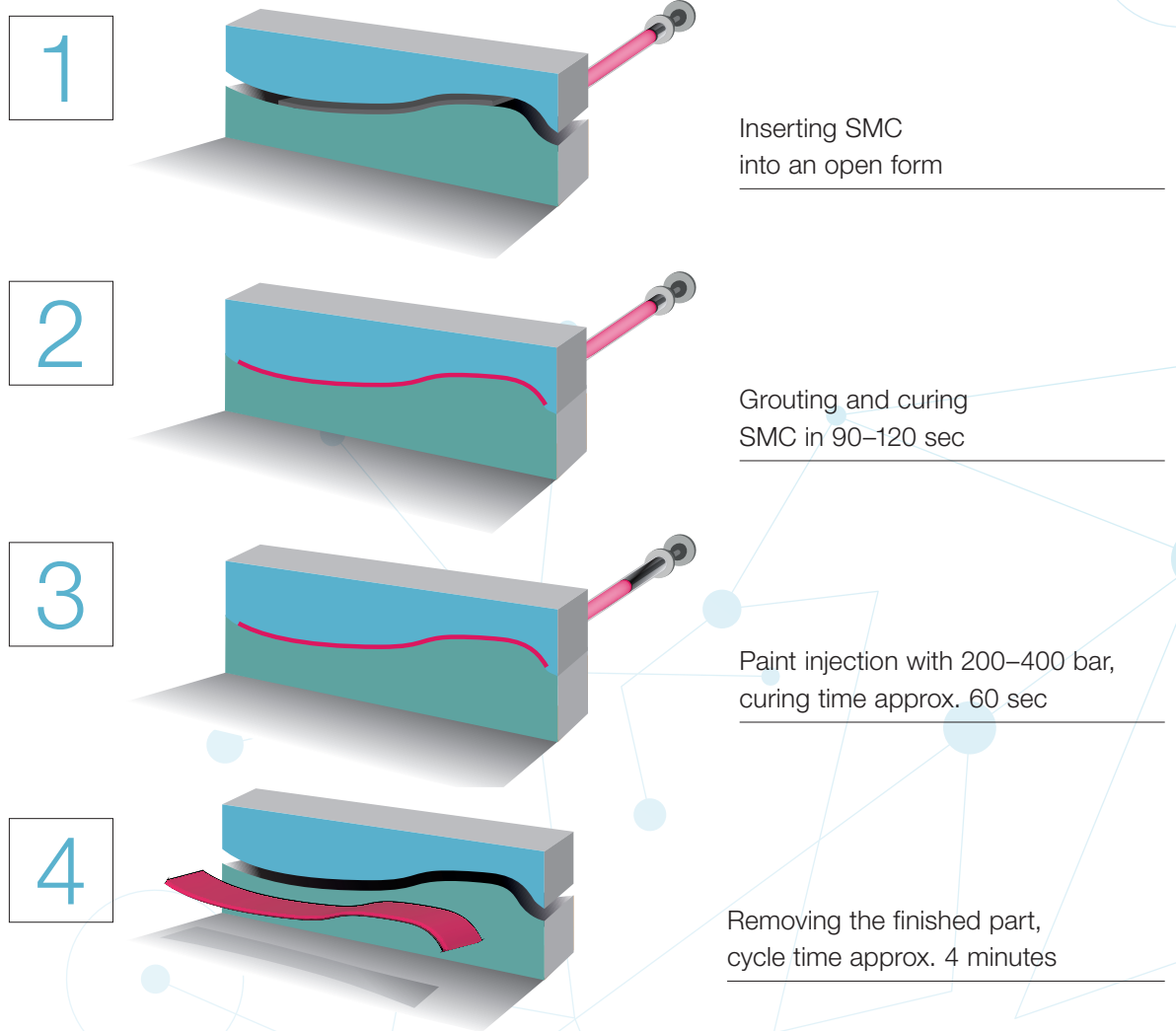
## The In-Mould Coating (IMC) process.

This is a specially developed process in which plastic components are already coated, i.e. varnished, in the mould during production using what are known as negative moulds.

With this process, the time-consuming, cost-intensive and often inconvenient recoating of the manufactured components can be dispensed with.

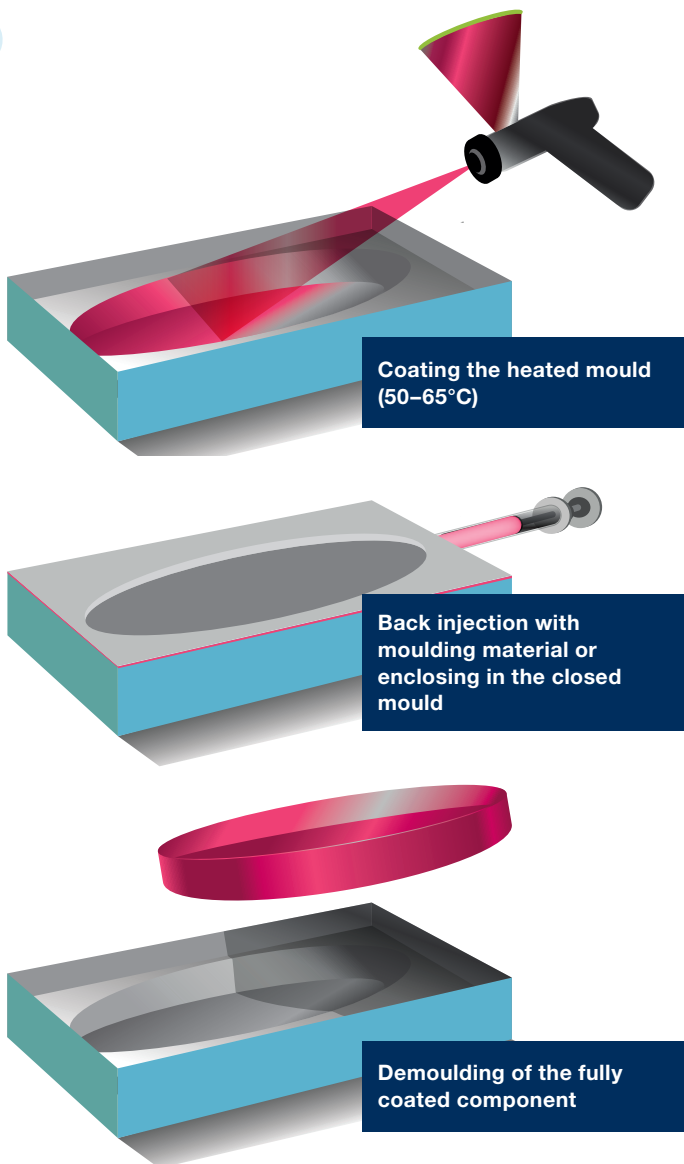


## In Mold Coating – high pressure injection





### Production steps in the IMC process



### The functional principle

In addition to their endless potential in a wide range of applications, IMC coatings have become increasingly popular in vehicle construction.

Specifically, high-quality components for the interior (dashboards, consoles, door panels, armrests) as well as body attachments (bumpers, spoilers, bonnets, boot lids, rear lids) are manufactured with the aid of IMC technology.

# Polyurea coating solutions

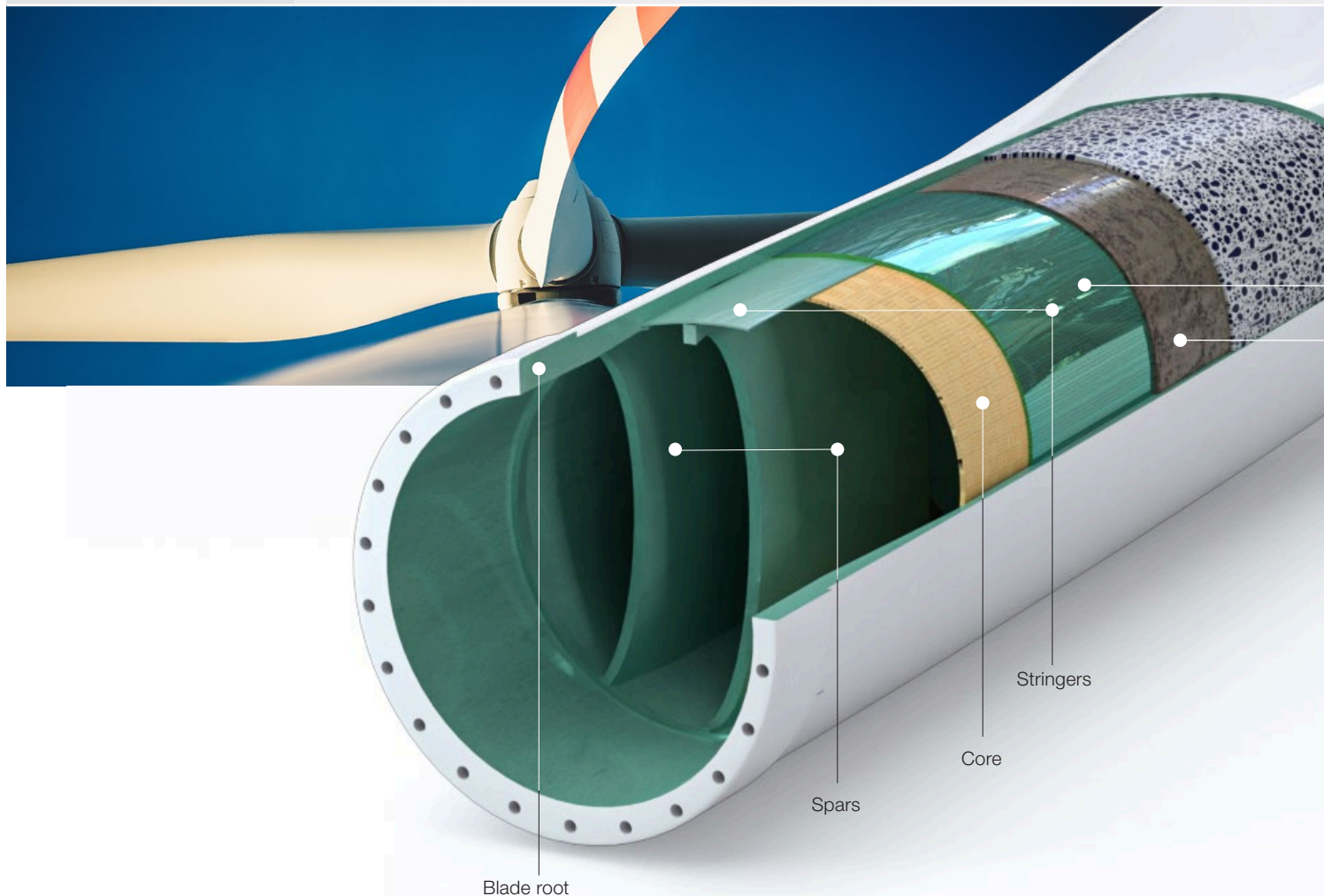
Resistant to wind and weather

## FreoWind® – System solutions brought to blade

Resistance to rain erosion is a key requirement for rotor blade coatings.

The polyurea-based FreoWind® protective coating (LEP) protects the leading edge of the profile from even the highest stresses. As a system coating supplier, **FreiLacke** has harmonised all components of the rotor blade coating structure to maximise the performance of the overall structure.

|                               |  |
|-------------------------------|--|
| FreoWind® Gelcoat transparent | Short process times   Excellent adhesion to the matrix resin<br>Temporary light and weather protection   |
| FreoWind® Putty               | Variable processing time   Efficient grindability, low abrasiveness<br>Low-porosity finish   Excellent rainfall erosion resistance   |
| FreoWind® Primer sealer       | Easy to process   High area performance<br>Excellent filling power   |
| FreoWind® Topcoat             | Water-based system, almost VOC-free   Excellent covering power, striation-free finish<br>Homogeneous matt degree (independent of layer thickness)   Best fastness to light and weather |
| FreoWind® LEP                 | Efficient, manual processing properties   Very good rainfall erosion resistance<br>Reproducible surface finish   Wide application window   VOC content <60 g/L                         |





Local repair or reinforcement  
Reinforcement Patches

FreoWind® LEP

FreoWind® topcoat

FreoWind® putty  
and primer sealer

Fibre laminate

FreoWind® Gelcoat



With the 2-component Ultra High Solid topcoat, various customer requirements can be realised. **The low-odour coating material can be effortlessly applied both by spraying and by roller.**

The system features excellent early water resistance and offers optimum mechanical strength after only a short time, allowing shorter occupancy times in the production halls. Due to the high alkali resistance, the surface quality is maintained even in contact with concrete slurry. Elastic variants are optionally available for applications requiring increased crack bridging properties.

## Quality – outdoors and indoors



**FREOPAS Gelcoat**  
**2-component polyurea,**  
**VOC-free.**

**For build-up applica-  
tions with EP-RTM,  
PrePreg and hand lay-up  
laminates.**

Easy to process (brush, roll,  
spray). Excellent fastness to  
light and weather.

For transport drones, fins  
on kite boards, bicycle  
racks, and more.

**FREOPAS Gelcoat**  
**2-component polyurea,**  
**VOC-free.**

**For sanitary applica-  
tions such as shower trays.**  
**Highly reactive for short  
cycle times.**

Processible with simple  
2-component system  
technology.

Can be reinforced with PUR  
and UP, no bonding agents  
required. High chemical/  
water resistance and  
scratch resistance.



# Applications

Constructing



# Applications

Industry





# Applications

## Vehicles



# Whichever way the wind is blowing

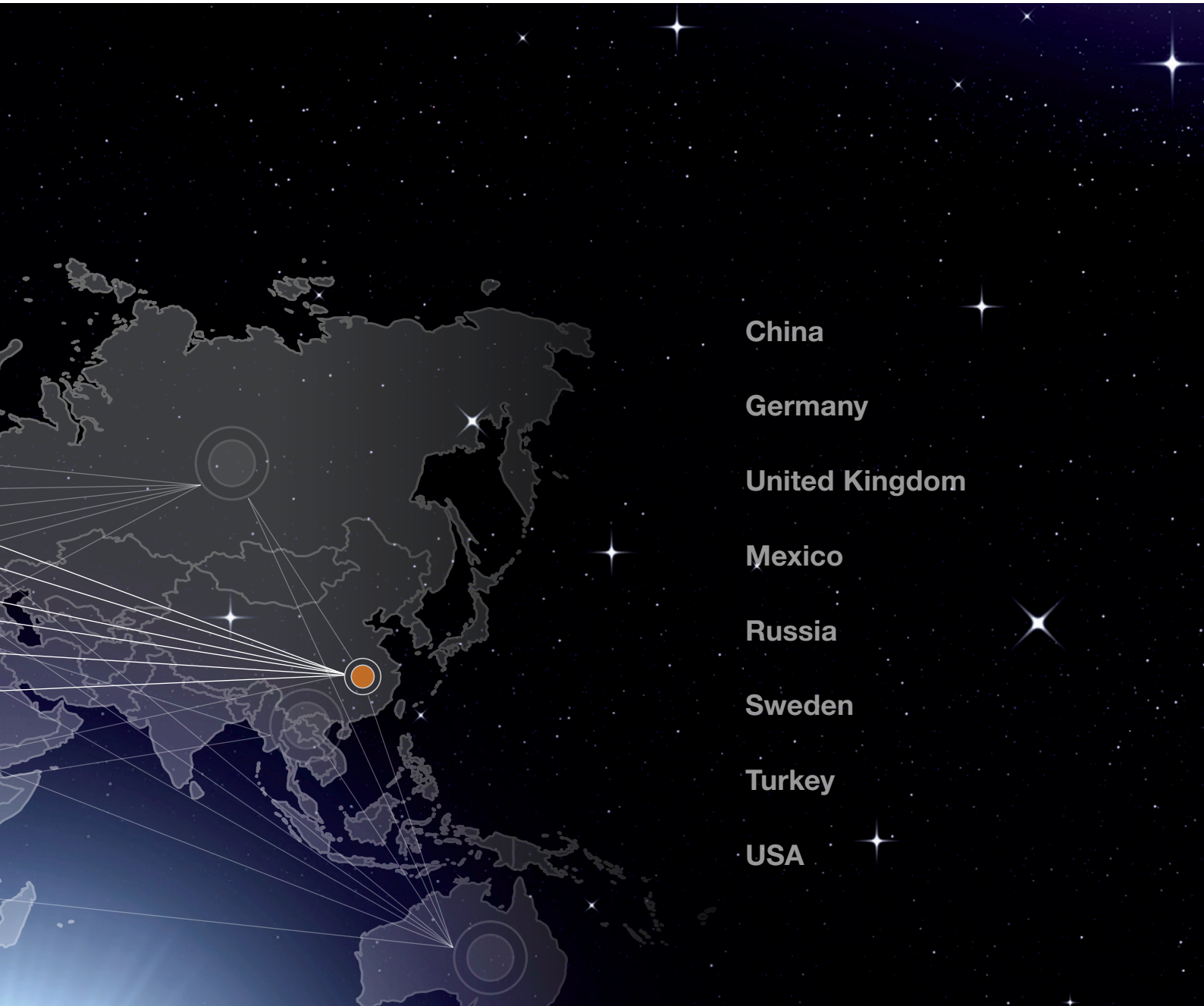
Worldwide on the market – always close to you



## **Systematic solutions.**

**FreiLacke** has represented innovative paints and coatings since 1926. The family-owned company has reached its third generation. It develops customised solutions for customers in the areas of wheels, vehicle construction, mechanical engineering, job coating, rail vehicles, wind power, functional furniture, storage technology, construction, and sanitation with 600 employees at its Döggingen site in the Black Forest.

As a modern family-owned enterprise in its third generation, securing our headquarters is just as important to us as are worldwide distribution and proximity to customers via international subsidiaries and partners.



China

Germany

United Kingdom

Mexico

Russia

Sweden

Turkey

USA

Europe's leading system coatings supplier has a product range covering anything from industrial coatings; powder coatings, and electrodeposition coatings to composites solutions.

International distribution is processed by a global network of subsidiaries and partners around the world. Since environmental protection has always been a central matter at **FreiLacke**, the company does all that it can to develop environmentally comparable products, to reduce emissions, packaging materials, and waste, and to use resources sparingly. For current **FreiLacke** certifications (EMAS, IATF 16949, ISO 9001...), visit [www.freilacke.de](http://www.freilacke.de)

**FreiLacke** was counted among the top 100 employers in Germany in the "Great Place to Work Competition" in 2019. It assigns high value to training and has a trainee ratio of 10%.



- Räder  
Wheels
- Fahrzeugbau  
Vehicle construction
- Maschinen- und Apparatebau  
Mechanical engineering
- Lohnbeschichter  
Job coaters
- Funktionsmöbel und Lagertechnik  
Functional furniture and storage technology
- Bau und Sanitär  
Construction and sanitary



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