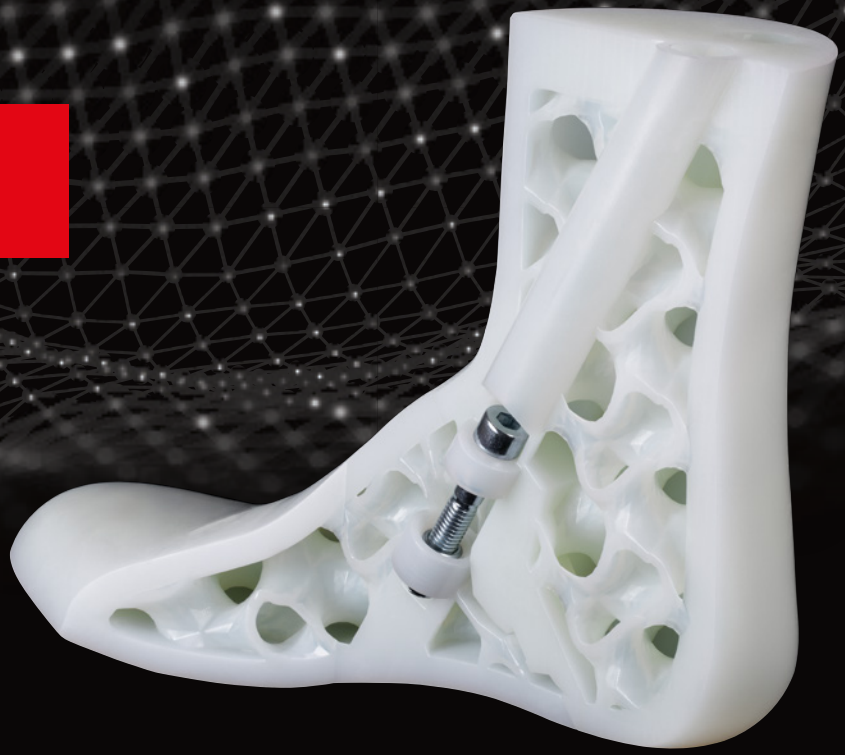
Dreve

# That‘s the way to make a shoe!

# The 3D printed last

**Record time production**



ortho.dreve.de

# The 3D printed last

# For orthopedics and custom shoes

**The fastest way to your custom last is through Dreve!**

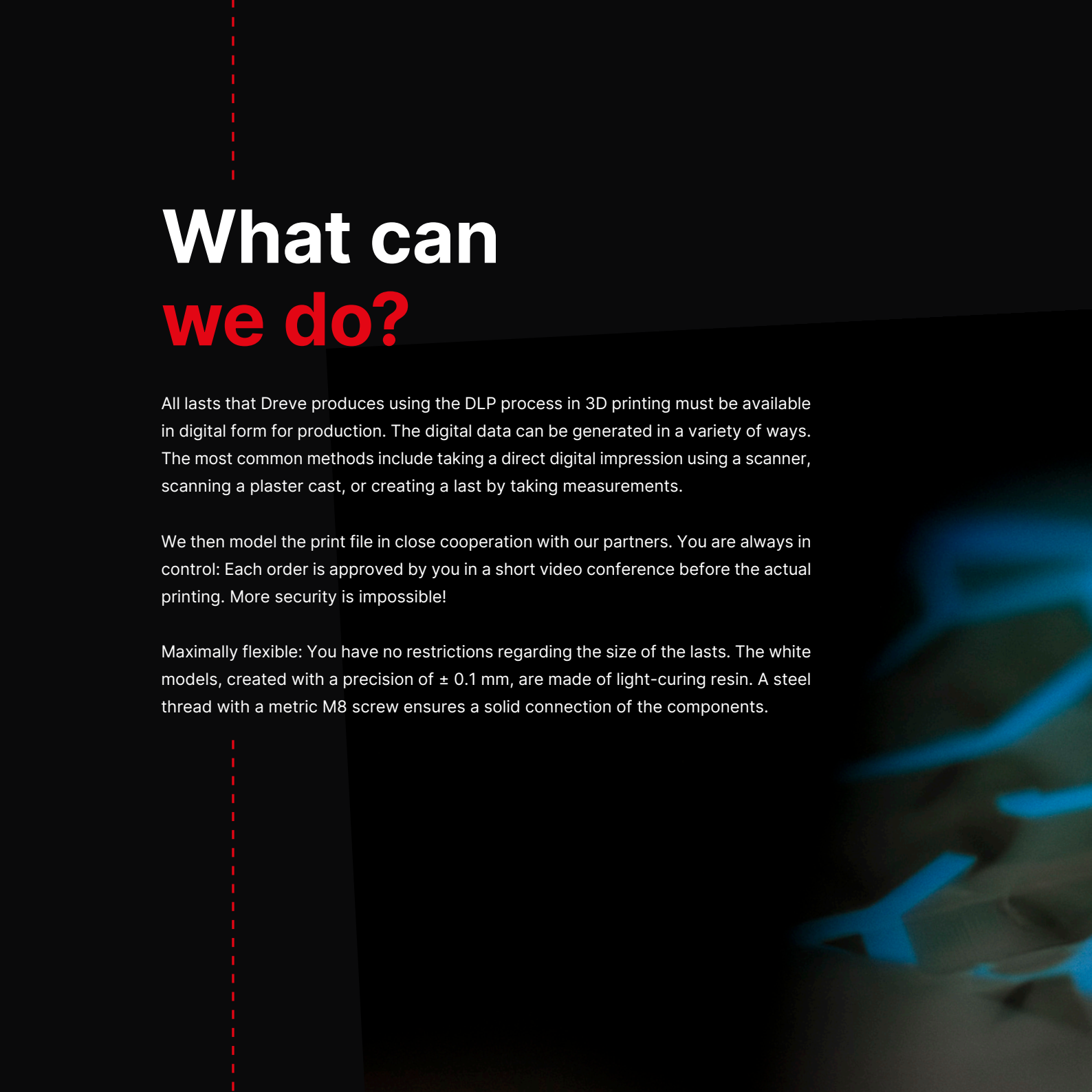
Digital manufacturing on our high-performance printing machines enables industry standard precision, build volume, material, and process flexibility throughout. Lasts made of resin reach you faster than those made of wood and are in no way inferior to them in terms of further processing.

# What can we do?

All lasts that Dreve produces using the DLP process in 3D printing must be available in digital form for production. The digital data can be generated in a variety of ways. The most common methods include taking a direct digital impression using a scanner, scanning a plaster cast, or creating a last by taking measurements.

We then model the print file in close cooperation with our partners. You are always in control: Each order is approved by you in a short video conference before the actual printing. More security is impossible!

Maximally flexible: You have no restrictions regarding the size of the lasts. The white models, created with a precision of ± 0.1 mm, are made of light-curing resin. A steel thread with a metric M8 screw ensures a solid connection of the components.



# Our technology

The 3D-printed last from Dreve offers outstanding properties for the production of custom shoes. It is available for you on short notice without long delivery times and is manufactured by us in an energy- and resource-saving way. At the same time, it is in no way inferior to traditionally crafted lasts. Thanks to the digital workflow, you always receive a highly accurate product that can be reproduced at any time.

**Shoe sizes**
without restriction

**Precision**
± 0.1 mm

**Connection**
Steel thread M8

**Weight**
approx. 750 g

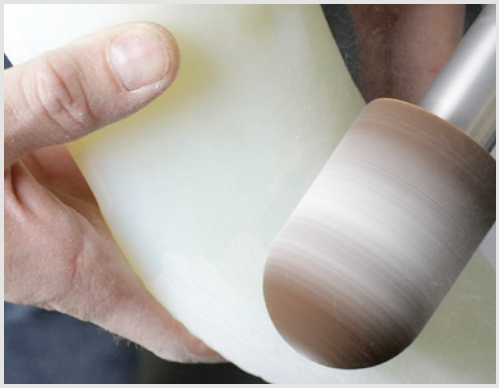
**Color**
Seashell

## Resilience

An important requirement for the shoe last is its resistance to a mechanical load, which is particularly enormous when molding the sole. In this respect, the 3D-printed last by Dreve convinces with maximum stability even under punctual load. The internal honeycomb structure ensures that stability is provided and the last remains pleasantly light.

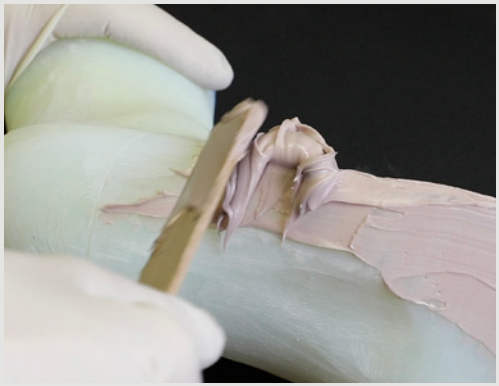
## Sanding

Milling removes material and generates heat: our 3D-printed last has also been optimized for subsequent grinding. The material has very low thermoplastic properties, allows grinding without lubrication, without rapid clogging of the abrasives. Sufficient wall thickness prevents exposure of the internal structure during grinding.



## Filling and bonding

With the help of putty or cork strips, the last is built up and shaped. These materials are fully compatible with Dreve‘s 3D-printed lasts. Both, putty and cork strips, adhere flawlessly to the resin, allowing for precision machining and sanding to create an imperceptible, smooth transition to the initial last.

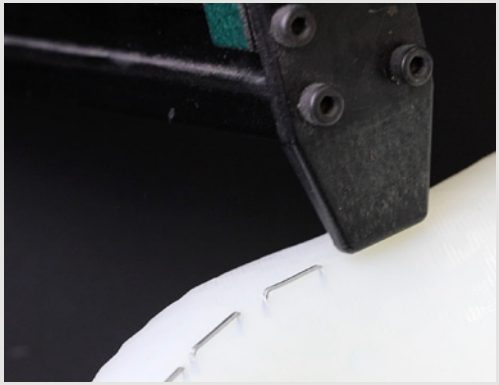


## Thermoforming

Even with the production of a transparent trial shoe using the thermoforming process our 3D-printed last works without any problems. The heat transferred into the last by the heated foil during thermoforming is absorbed and dissipated. After the foil has cooled down, the last can easily be demolded and can be used directly for further shoe production.

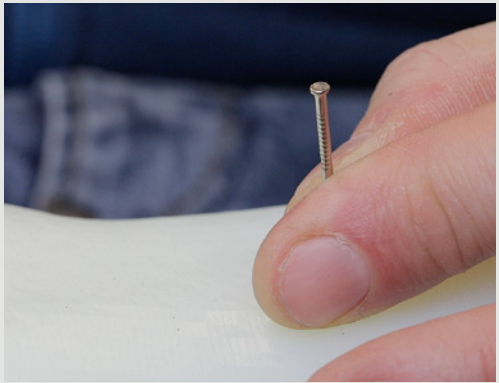
## Tacking

The optimized material properties, combined with a standard wall thickness of 8 mm, guarantee an ideal grip for the needles in the last at all times. This means that the tacking needles can be optimally inserted into the component and at the same time removed again without too much effort.



## Nailing

When attaching the shoe upper material with nails to the underside of the last, these nails must be easy to insert and remove, but hold the upper material securely in place. The adapted wall thickness of our 3D-printed last ensures that the nails always find enough hold in the last. Optimized material parameters additionally support uncomplicated removal of the nails.



## Highly resilient connection

To ensure that the multi-part last remains absolutely stable at its connection points, the 3D-printed last from Dreve is equipped with a heavy-duty connection mechanism that ensures a positive, stable connection for shorter and longer lasts. Nothing stands in the way of wear-free opening and closing of the connection thanks to the stainless steel design.

## Absolutely stable

Our 3D-printed last made of light-curing resin is just as resilient and dimensionally stable after years as it was on the first day. Unlike wood, which is subject to environmental fluctuations due to temperature and humidity, or 3D-printed lasts from other manufacturing processes, which tend to absorb water, resulting in reduced mechanical characteristics, the Dreve last is absolutely stable and durable over the long term.

## Reproduction and new printing

The advantages of the digital last are obvious: problem-free storage over decades without having to store the last in physical form, immediate reproduction or new printing in the event of loss, damage or necessary major changes to the last, or the simple adaption of individual areas. All this speaks for the digital last and simplifies and streamlines the handling of the large amount of patient data.

# Why
# DLP Printing?

Waste and sustainability are increasingly significant and crucial issues in today´s world. Wood moldings fit ideally into this profile of requirements, but are manufactured through subtractive methods, leading to a considerable amount of unused wood waste. Additive manufacturing meshes precisely with this approach. In the manufacturing process generally referred to as 3D printing, the component is built up layer by layer, i.e. material is gradually layered on top of one another, and only in the area that will later constitute the component. The material used is therefore incorporated into the final component almost completely and without waste.

In the FDM printing process, the material used is heated and recorded layer by layer with a nozzle in the form of a melted plastic strand. Two things in particular are disadvantageous here: Firstly, the nozzle has to approach each individual point within a layer once, which means high production times for large components. Secondly, the material cools after deposition, which means that the next layer, again hot and molten when extruded from the nozzle, is deposited on a cold layer. Stresses and a less than ideal layer bond, leading to mechanical weak points, are the result.

In 3D printing with light-curing resins, material is cured by means of UV light and thus chemically shaped by molecular bonds. The bond between the layers is also based on cross-linking of the molecules, which makes the layer bond very stable and gives the finished component almost isotropic properties – the component can be loaded equally in all directions.

The benefits of these advantages are consolidated in 3D-printed lasts by Dreve.

# From scan to last

1. Registration at ortho.dreve.de

2. Scan

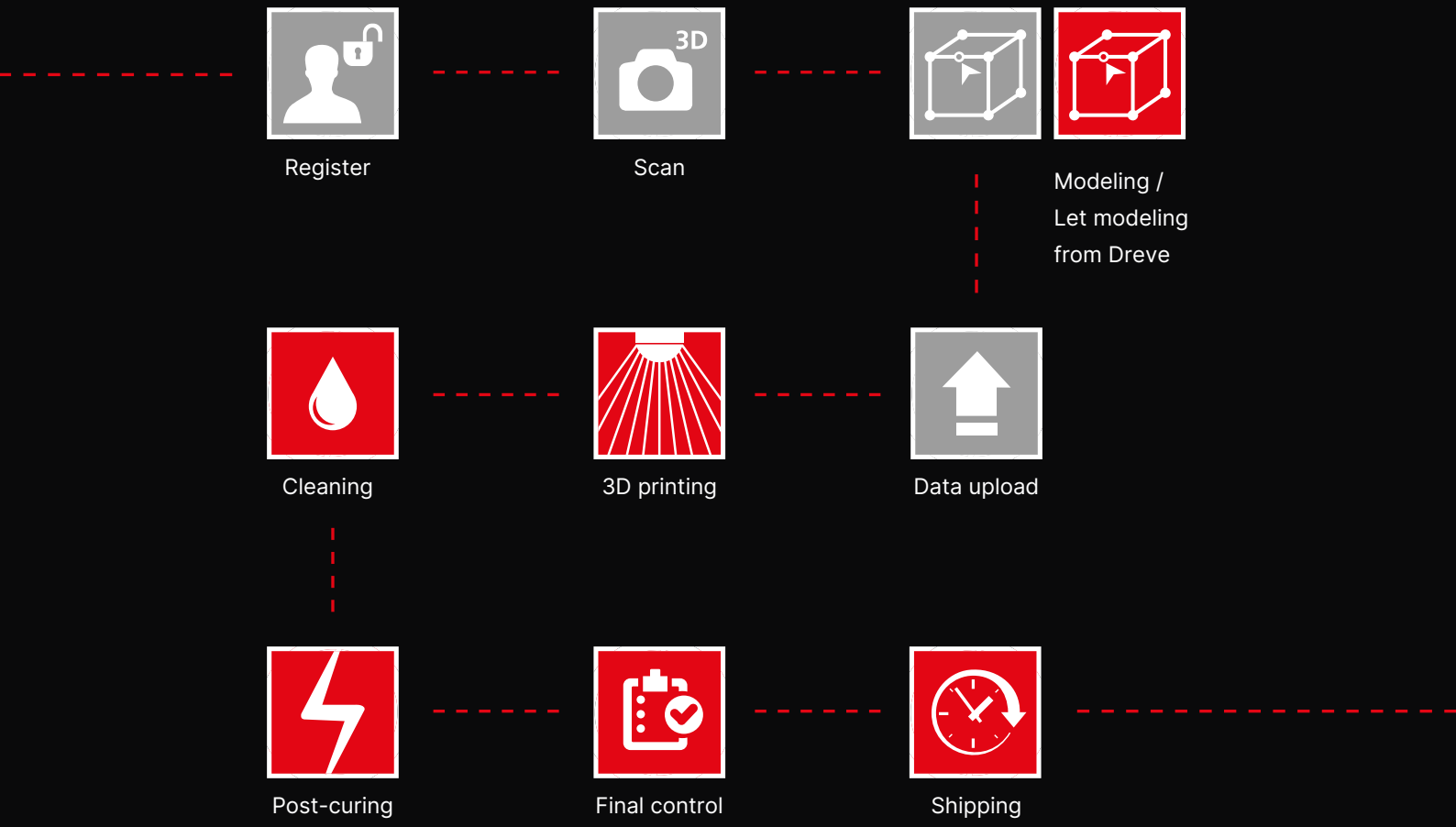
3. Construction

4. Data upload

5. Production

6. Final control

7. Shipping




# That‘s the way to make a shoe!

Customer

Dreve

# Sustainability

In today‘s world, awareness of sustainability and ecological products continues to grow. This idea also affects the work of the orthopedic shoe technician in his workshop. Shoe lasts are no exception, even though the aim should always be to use the last for as long as possible and for as many pairs of shoes as possible for reasons of efficiency alone, provided that the patient‘s foot does not change significantly. However, if this is the case, the disposal of the last must be clarified.

In this context, our 3D-printed last is on par with the wooden last in every aspect. The resin used is free from toxins, allowing for the disposal of the molding with regular household waste. Thermal recycling for generating heat or electricity is seamlessly feasible. Alternatively, you have the option to return the skirting board to us for recycling through Dreve.

Disposal options for the Dreve 3D printed last:

- **Disposal via household waste**
- **Thermal recycling possible without problems**
- **Return to Dreve for free disposal**

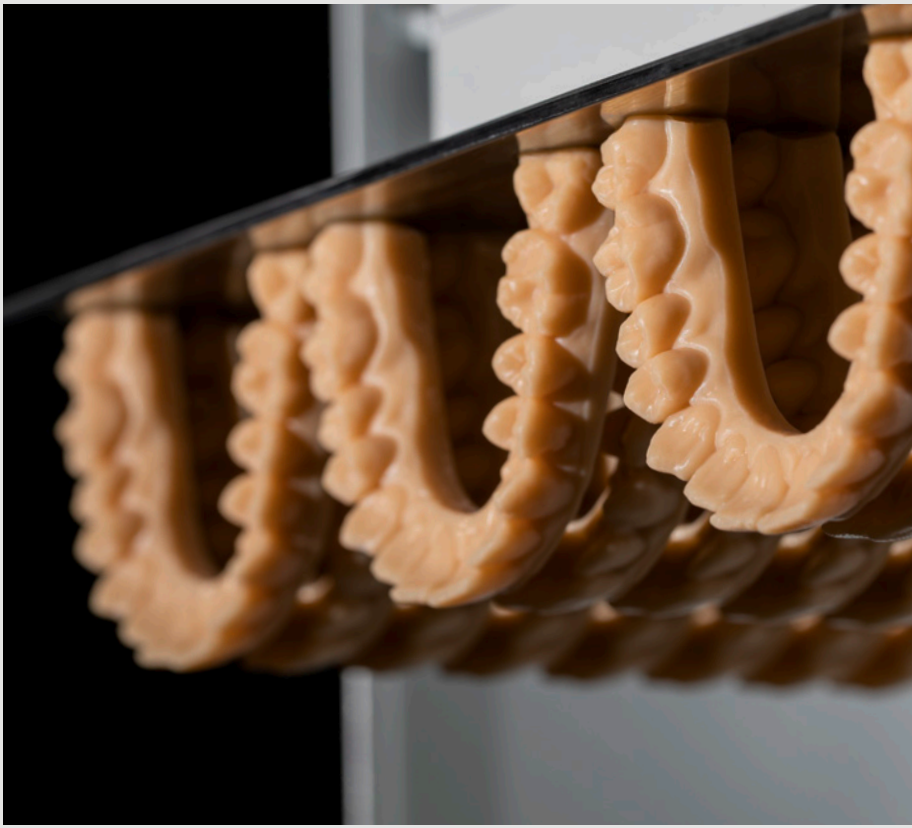
# About us

Founded as a dental laboratory in Unna in 1949, the Dreve company group has been family-run from the outset. Since the production of our first 3D-printed earmold in 2002 to the full digitalization of the earmold production process, we have remained steadfast in our commitment to our company motto “Innovation by Tradition.” Fueled by curiosity and a passion for innovation this approach has driven us to extend our support to the orthopedic industry by sharing our expertise and products in their journey towards digitalization.

We possess extensive expertise in biocompatible medical products, along with a deep understanding of corresponding regulations and rigorous additional requirements, making these integral to our daily operations.

Through this broad foundation, we see ourselves as both a material and a device manufacturer - but in combination, above all, as a system supplier offering a complete workflow. In particular, our digital workflow, consisting of the materials, 3D printers, post-curing devices and further necessary consumables, enables a user-friendly entry into CAD/CAM-supported manufacturing.

# Innovation aus Tradition



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