

# 3D-printing service



3D-printing has many applications in orthopedics. The process of 3D-printing usually starts with creating a digital scan. With the help of specialized software that we provide, this scan can then be converted into a 3D model ready for printing.

The devices are then built layer by layer using the chosen material, resulting in a highly accurate and custom-made final product.

One of the biggest advantages of 3D-printing in orthopedics is the ability to create orthoses and prostheses that perfectly fit the patient's anatomy, reducing the risk of complications. Shapemakers has already developed several products using the finest 3D-printing techniques, such as the B&C Knee brace and a brace.



## 3D-printing Solutions

As an innovative company within the field of orthopedics, Shapemakers always seeks the best solutions for specific challenges. One of these solutions is 3D-printing of components or even entire end products. By utilizing 3D-printing for orthoses and prostheses, there are more production possibilities compared to the manual process. Certain structures, hinges, and designs can be incorporated during the printing process, enabling the creation of dynamic products.

There is a wide range of choices in materials and colors for 3D-printing. Additionally, post-processing techniques can be applied to modify product properties. A few examples of these post-processing methods include Vapor smoothing, polishing, and making the products water-resistant. For each application, the optimal combination will be determined through collaboration between the patient and the producer.

As a supplier, we offer a product catalog with a diverse range of printing techniques and post-processing options. Moreover, if needed, we are open to exploring other production techniques to meet specific requirements.

## Materials, Techniques, and Post-Processing

SLS	MJF	FDM
TPU (White, Post-processing)	TPU (grey, Post-processing)	TPU
PA11 (In colour, Post-processing)	PA11 (In colour, Post-processing)	PP
PA12 (In colour, Post-processing)	PA12 (In colour, Post-processing)	PA

## Material Properties

### TPU

- High elasticity
- High resilience

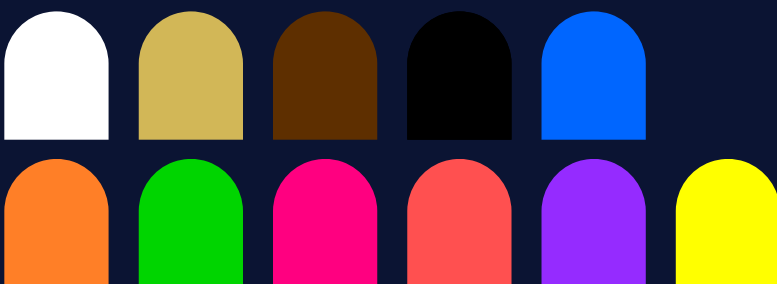
### PA11

- Elongation 1700/1800 MPa
- Tensile strength 45/38 MPa
- Minimum wall thickness 1.0 mm
- Layer thickness 0.1 - 0.12 mm

### PA12

- Elongation 1650 MPa
- Tensile strength 48 MPa
- Minimum wall thickness 0.7mm
- Layer thickness 0.1 - 0.12 mm

## Colours





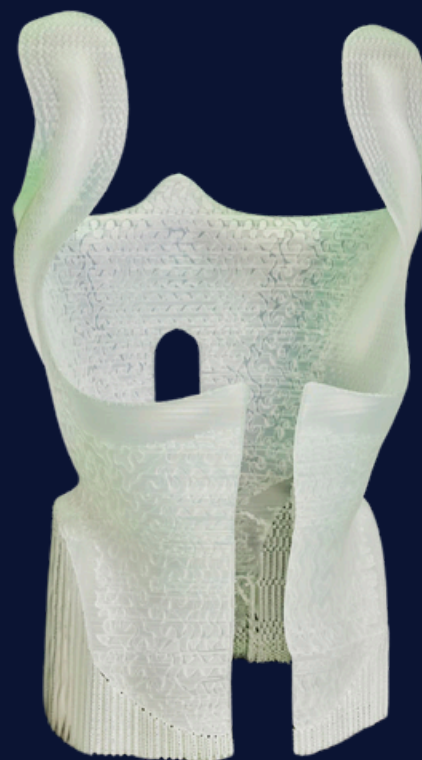


## The same material, more possibilities

The brace is 3D printed in polypropylene, which is renowned for its excellent material properties.

Through our special slicing software, we can create the possibility to adjust specific parts of the brace to be stiffer or more flexible during the printing process, providing the patient with increased comfort and support.

This innovative manufacturing process reduces labor intensity, improves efficiency, utilizes 100% recycled plastic, and generates almost no waste.



With utmost precision, we, in collaboration with B&C Custom Bracing, have developed a knee brace. We have achieved a brace that offers sufficient protection during both low and high-impact activities without restricting your freedom of movement.

The brace is designed to absorb movements or impacts that could potentially cause harm to the leg and/or knee, such as hyperextension, rotations, and lateral forces. This reduces the risk of injuries significantly. Additionally, the brace can aid in the recovery process from an injury.

The knee brace can be used both as a preventive measure and as a means of recovery. It provides stiffness around the cruciate ligaments, thereby avoiding strenuous movements that could lead to further strain.

**3D-printed  
sitting-aid**



Material

Programmable Foam®

**Custom cushion  
round finish**



Material

Programmable Foam®

**Custom cushion  
Unique design**



Material

Programmable Foam®

**Custom cushion  
Straight finish**



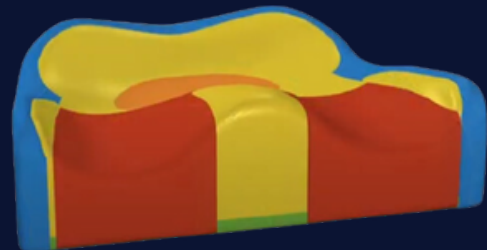
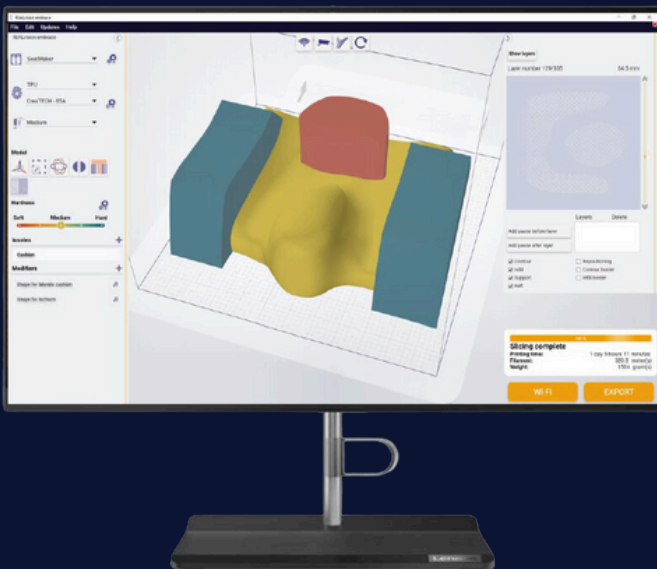
Material

Programmable Foam®

**Patented slicer software**

The unique slicer software allows us to print unique designs. Thanks to the advanced gyroid structures, it can create perfect pressure distribution, making the transitions between density zones smooth and seamless.

The TPU we use for printing is not only certified as Skin Safe but is also easy to modify. This makes it possible to make simple adjustments by cutting or thermoforming.





# Revolution in Seating Comfort: Introducing Shapemakers' Programmable Foam®

In Shapemakers' diverse range, you'll now discover innovative seating solutions. We aim to create the perfect seating experience tailored to the unique needs of our customers. Whether you're seeking advanced 3D-printed solutions or milled cushions made from soft foam, our production methods are adaptable based on the desired material types.

Introducing Programmable Foam®.

Programmable Foam® heralds a new era in the realm of foam products. It's not just a 3D-printed alternative to traditional foam; through a more refined approach to 3D printing, it unlocks new properties for your foam products.

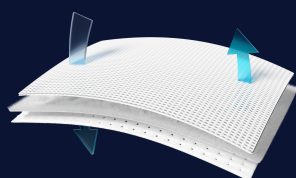
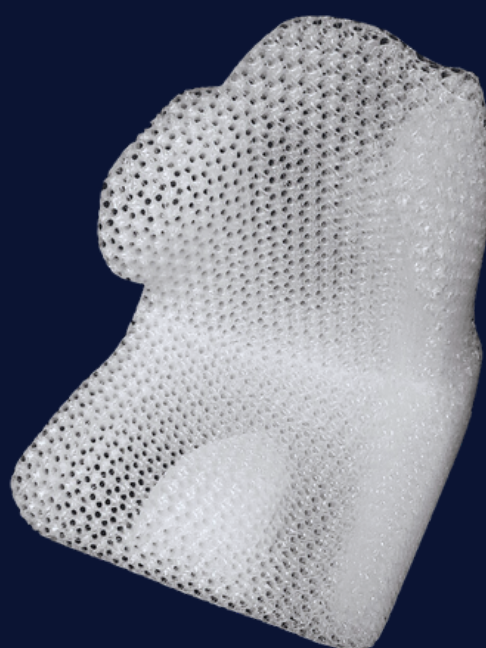
Take a closer look at the features of Programmable Foam®:

- **Efficient Pressure Distribution:** The gyroid infill structure efficiently distributes pressure, ensuring a comfortable seating experience.

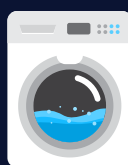
- **Comfortable Pressure Relief:** Softer zones relieve pressure points, making prolonged sitting enjoyable.

- **Breathable Design:** The breathable design ensures continuous airflow, allowing you to sit comfortably even for extended periods.

**No Moisture Absorption:** Prevent moisture absorption and maintain the durability of your seat cushions.



A structure that provides enhanced ventilation properties.



Hygienic and washable at 60 degrees Celsius, as well as colorfast.



Pressure relief with multiple hardness zones.