



REVOLUTIONIZING CUSTOM INSOLES USING RAISE3D E2

Transforming Orthotics with Cost-Effective, Custom 3D Printing Solutions

The global orthotics market is booming, currently sitting at a value of approximately \$6.7 billion and expected to grow at an annual rate of 4.3%. This growth is being driven by a growing demand for better patient care and custom-fit orthotic solutions. Traditional orthotics can cause discomfort and health issues due to their one-size-fits-all design. That's where customization comes in, but unfortunately, the usual methods of making custom orthotics are often costly and time-consuming.

Enter the RAISE3D E2, a game-changer in the 3D printing world, especially when it comes to creating highly customized orthotic solutions. With its Independent Dual Extruder (IDEX) system, it offers significant advantages in producing flexible and precise components like custom insoles.

THE BENEFITS OF CUSTOM INSOLES

• **Correcting Abnormal Motion:**

They help correct or prevent abnormal foot motion, improving posture and reducing injury risks.

• **Pressure Redistribution:** They distribute pressure evenly across the foot, alleviating discomfort, pain, and calluses.

• **Enhanced Performance:** They improve comfort and performance during physical activities, benefiting athletes and active individuals.

With these benefits in perspective, it would make a world of difference if personalized insoles could be created easily using 3D printing technology.

Our curious team at Shop3D.ca decided to put the Raise3D E2 to the test to print custom insoles suitable enough for correcting posture and alignment while maintaining a perfect fit for the wearer.

Tools:

- Einscan H2
- Raise3D E2
- eSun TPU95A (Flexible)
- Ideamaker



PROJECT HIGHLIGHTS

CUSTOM INSOLES CREATION

The project used 3D scanning, CAD modeling, and 3D printing with the Raise3D E2 and eSun TPU95A filament to produce fully customized insoles.

ENHANCED FOOT SUPPORT

The custom insoles improved posture, redistributed pressure, and increased comfort and performance for the wearer.

3D PRINTING SUCCESS

The Raise3D E2 printer, along with TPU printing tips from Shop3D.ca, ensured precise, flexible, and supportive insoles with an excellent fit.

THE PROCESS

The creation of the insoles involved three essential steps: 3D scanning, CAD modeling, and 3D printing.

3D Scanning

Firstly, we needed to get precise foot details and accurate measurements to ensure the custom insoles fit perfectly. To achieve this, we performed an accurate 3D scan of the wearer's foot to capture precise dimensions, using the Einscan H2 3D scanner by Shining3D. Using a 3D scanner helped to leave no room for measurement errors, and to have a precise digital replica of the foot.

3D CAD Modelling

Next, we converted the scanned data into a CAD model and tailored it specifically to address the wearer's foot issues, such as posture and alignment. Once the CAD model was created, we were finally set to print. So, we generated an STL file for printing on the Raise3D E2.

3D Printing

After importing the STL file into the Ideamaker, we proceeded to slice the sole with the selected TPU material and then printed the insole on the connected Raise3D E2 printer.



Einscan H2 Scan of the Foot

THE RESULTS

The result was quite impressive: the custom insoles fit like a glove. The dimensions were accurate, the material had the flexibility and support required for insoles, and it was very comfortable to wear. What's more, since the insoles are customized, they have the

added benefit of helping to correct the wearer's alignment and posture.

Overall, our team was happy with the outcome and would definitely recommend printing personalized insoles with the E2 using TPU.

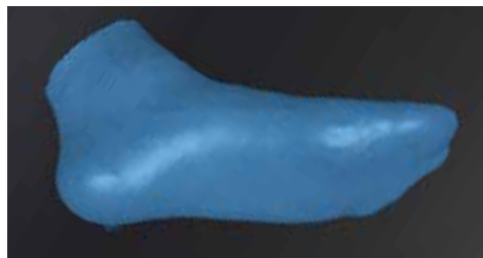
THE CONCLUSION

The dual extrusion capability of the RAISE3D E2 allows for optimized functionality of each part of the insole. Additionally, the IDEX system prevents material mixing, ensuring cleaner prints and higher-quality final products, which is crucial for maintaining the integrity of different materials used in orthotics. It also enhances the production of custom orthotic solutions, offering greater flexibility and precision while reducing costs and lead times.

This technology represents a significant advancement in 3D printing, providing valuable tools for improving patient care and advancing the future of custom orthotics.



Scan of the Foot



3D Model of the Foot



3D Printed Insole Support

TIPS FOR PRINTING WITH TPU

SELECT THE RIGHT TPU GRADE

Each TPU grade offers different flexibility; select based on the project's purpose.

DESIGN AND INFILL

Avoid thin or delicate parts, and increase the infill to improve support and durability.

TEMPERATURE AND CALIBRATION

Find the optimal setting by experimenting with different temperatures and ensure proper calibration.

SUPPORTS

Use supports sparingly, as TPU's flexibility often requires fewer supports during printing.

POST-PROCESSING

Post-Processing: Refine the comfort and finish by sanding or polishing the final print.

Interested in creating custom solutions with Raise3D? Book a free consultation with Shop3D and find out how a Raise3D 3D printer can accelerate your time to market.