



Press Release

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3D Printed Vocal Mask for Choirs and Music Classes

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With the ongoing COVID-19 pandemic, many industries have been impacted including choirs, music classes and concerts. Social distancing requirements have restricted gatherings that affect communities and people's livelihoods. Public solutions often include wearing masks and hand sanitization to help reduce the spread of the virus. Most off the shelf masks are used for medical or respiratory safe environments. A new 3D printed mask has been developed specifically for choirs and music classes allowing the user to sing unobstructed.



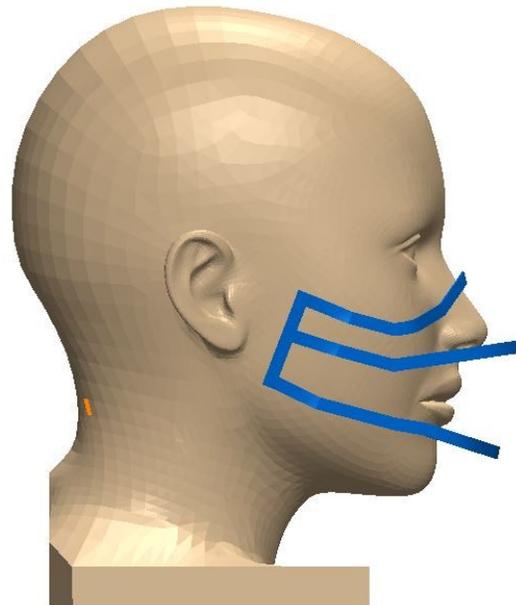
David Angerman has been teaching music his entire adult life. He quickly realized that current masks were not compatible for his music classes. "Singing requires unobstructed movement of the jaw and off the shelf masks not only were uncomfortable but restricted the tonal sound of our students", David explained. During the summer, David and his colleagues became concerned about whether they would be able to teach fall

classes. "I knew I had a small window to develop a safe mask alternative to get my choirs singing again," David continued. The idea for The Vocal Mask™ was born. David first began work with an engineer to create various designs. Once the CAD work was completed, prototyping was needed. David, who resides in Austin, Texas, reached out to local 3D printing service provider Varia 3D, Inc.

“When I was contacted by David and his Design Engineer, I was excited to help them explore various 3D printing solutions,” said Brian Bauman, Founder. Varia 3D originally produced parts in PA12 Nylon but the initial results were not well received. “Although the mask frame was very thin, the nylon material was too rigid for David’s design,” Brian explained. He continued, “We have been testing a new copolyester based elastomer from Evonik and felt it might be a great solution for The Vocal Mask.” David agreed and future prototypes were made in various thicknesses and sizes. Once David felt confident in the final design, it was time to go to production.

“I knew the biggest risk factor getting this product launched was producing the masks as quickly as possible,” said David. “Originally we considered injection molding from overseas to get to the price point and volume that was needed,” David continued. The Vocal Mask not only contains a flexible frame, but is also attached with a special reusable fabric. David contacted Varia 3D again about whether 3D printing could be used for production of the frame.

Brian discussed, “We always educate our customers that 3D printing is not only used for prototyping, but an economic solution for short run production.” The benefits of any tool-less production process are the ability to make design changes on the fly and provide on-demand customization as needed. “Varia 3D made a convincing argument that with 3D printing we would reduce our time to market and allow us to make changes based on early customer feedback,” David described. He continued, “Based on our prototyping costs, I was not sure we could get our price point low enough. We needed to order an initial 1000 units to get started with molding.”



Varia 3D worked closely with Evonik to swiftly procure the required material. “Our new Flexosint 65 copolyester appeared to be the perfect solution for this application”, said Dr. Abhi Bhat, who heads powder development at Evonik’s new 3D Printing Technology Center in Austin, TX. “It offers a Shore D hardness of 46 (Shore A 95) while maintaining elongation values of 300%,” he added. This material is based on Structured Polymers’ new powder production process that Evonik acquired in 2019. The new Flexosint 65 will be offered in White and Black variants. “With Evonik’s new copolyester material, we were able to check all the boxes for The Vocal Mask production,” said Brian. He continued, “David needed the mask frame to be economically produced in a natural black flexible material with high compression and tear strength. We were able to meet this need eliminating risky tooling costs when launching a new product.”

The Vocal Mask is currently on sale via the company's website. It includes a removable Milliken™ BioSmart™ Technology fabric which is durable through 75 wash cycles according to their website. The company already has sales from individuals, churches, public and private schools including universities.

About The Vocal Mask™

David Angerman founded The Vocal Mask with the tagline *Helping choirs get back to singing again!* He is currently the choir director for Regents School of Austin while also serving as the Minister of Music at Bethany Lutheran for the past 40 years. More information can be found at thevocalmask.com

About Varia 3D

Founded in 2014, Varia 3D, Inc. is an on-demand 3D printing solutions provider specializing in prototype to manufacturing parts production. The company utilizes various additive manufacturing technologies to help customers achieve design freedom for tool less manufacturing. Contact info@varia3d.com for more information on becoming one our Additive Manufacturing Partners™.

About Evonik

COMPANY INFORMATION

Evonik is one of the world leaders in specialty chemicals. The company is active in more than 100 countries around the world and generated sales of €13.1 billion and an operating profit (adjusted EBITDA) of €2.15 billion in 2019. Evonik goes far beyond chemistry to create innovative, profitable and sustainable solutions for customers. More than 32,000 employees work together for a common purpose: We want to improve life, today and tomorrow.

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