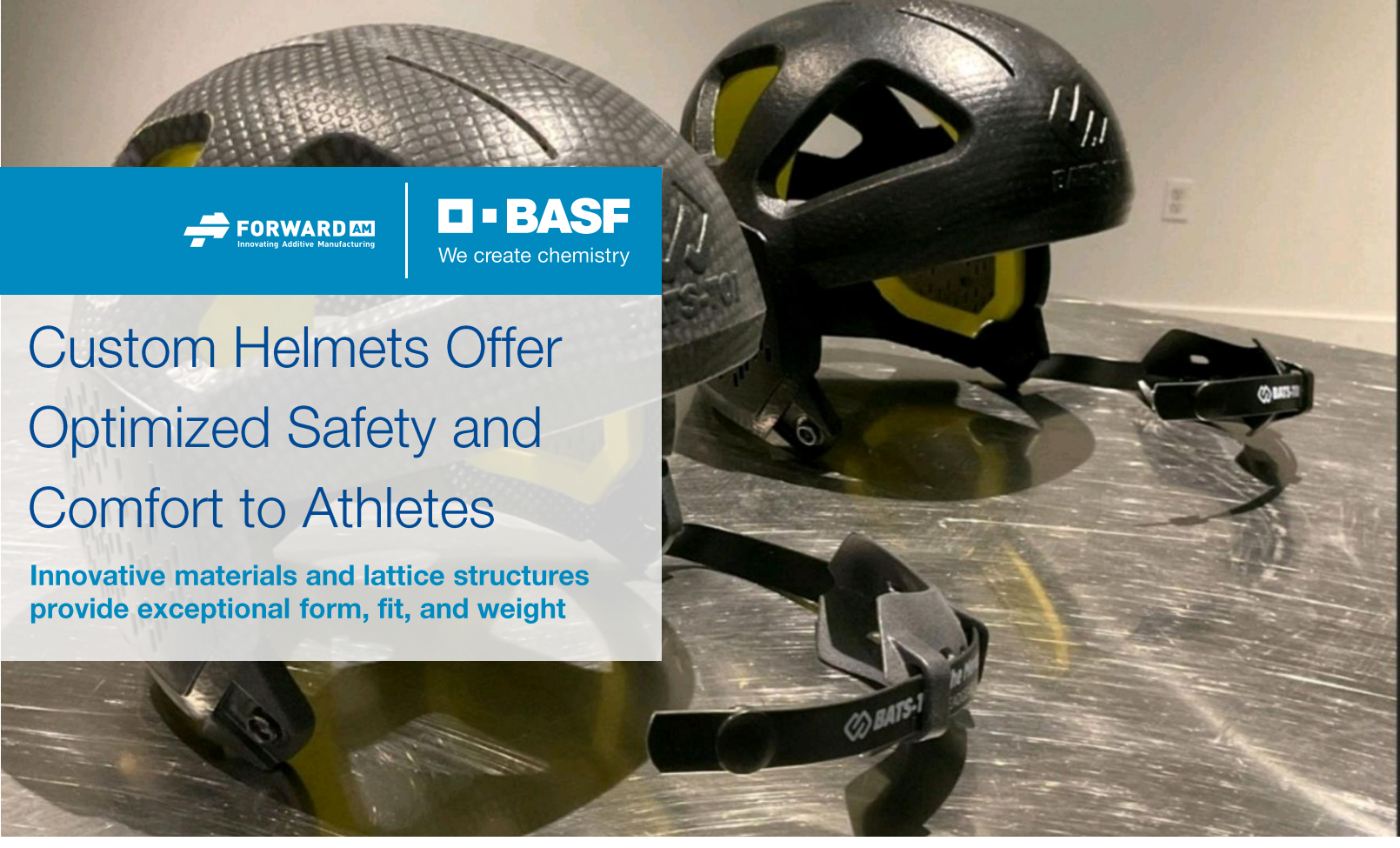


FORWARD AM
Innovating Additive Manufacturing

BASF
We create chemistry

Custom Helmets Offer Optimized Safety and Comfort to Athletes

Innovative materials and lattice structures provide exceptional form, fit, and weight

OVERVIEW

ABCorp and BATS-TOI™ collaborated to design and develop a highly functional and custom helmet utilizing lattice structures. This innovative helmet is superior to a traditional injection molded product while also offering increased safety and decreased manufacturing costs. By partnering with BASF Forward AM, these companies were able to utilize our Ultrasint® TPU01 material, along with HP Multi Jet Fusion technologies, to create an exceptional product by applying our design expertise when it comes to printing with lattices. The solutions found through AM technologies and materials not only met the safety and performance requirements but also cut manufacturing costs creating a helmet that is versatile enough for multi-sport activities.

QUICK FACTS

Materials:

- Ultrasint® TPU01

Technology:

- Multi Jet Fusion

Partner:

BATS-TOI

ABCorp
Secure since 1795

ABCorp is a manufacturing services company with a history that can be traced back to the American Bank Note Company, which was founded over two centuries ago in 1795. As the United States has grown and developed, so has ABCorp as they have expanded into the cutting-edge technologies available through 3D printing by offering rapid, full-color prototyping and even short-run, highly detailed parts manufacturing.

The team at BATS-TOI™ is committed to innovation the continuous search to improve, create, engineer and design the best head protection for athletes of all levels.

ABCORP.COM

Reduced production time by four months

Reduced weight by 215 grams

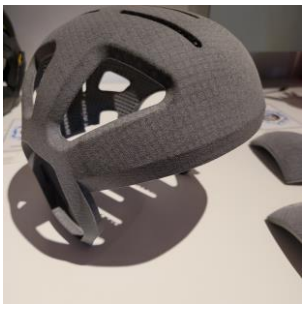
Saved 500K in production costs

Challenge: Design a scalable, cost-effective helmet providing the ideal weight and comparable impact absorption properties as an injection molded model

When analyzing the manufacturing challenges of traditional wrestling helmets, the four main issues that arise are related to fit, comfort, protection, and costs. Through the utilization of Additive Manufacturing (AM) materials and lattice printing technologies, innovative solutions can be found and implemented to address all of them. 3D printing with state-of-the-art materials and specialized lattice structures can help solve the four biggest issues regarding traditional wrestling helmets. The fully dimensional design platforms available through 3D printing technologies enable the cost-effective manufacturing of custom-fit and comfortable helmets that provide athletes with increased protection and safety.

"We are proud that our headgear has been selected as the Official Wrestling Headgear by the National Federation of High Schools due to its design and impact performance technology. By teaming up with BASF Forward AM, ABCorp, and HP, we knew we were working with the leading experts within the AM industry and using top of the line 3D printing materials and technologies."

-- Mario Mercado, Founder of Bats-Toi



Challenge: Ensure the headgear met impact protection requirements while also reducing production lead times

To ensure the designs are fully optimized, impact tests of the 3D printed model are conducted by designing various versions using the same CAD model as the base which can then be printed in the same build. 3D printing technologies also provide for the ability to make customized headgear that is adaptive to customer needs and can deliver different variations in days or weeks rather than in months or years.

Ultrasint® TPU01 meets the specific requirements for certification regarding exposure and contact on human skin. This material also meets the impact certifications required for helmets as each headgear model is certified by a third-party organization for safety and impact performance.

Learn more about Ultrasint® TPU01: