



Challenge Accepted.

MATERIAL COMBO AMPLIFIES COMFORT AND USABILITY FOR SWISS ARMY™ KNIFE

 **AVIENT™** > CASE STUDY: BERGAMID™ POLYMER FORMULATIONS & GLS™ TPES





VICTORINOX™ UPDATES ITS ICONIC POCKET KNIFE WITH MATERIALS THAT MAKE A DIFFERENCE

THE CHALLENGE

The Original Swiss Army™ knife from Victorinox™ is one of the world's most recognizable brands, and the company has earned a strong reputation for the quality of its pocket knives. Victorinox designed and manufactured its first knives more than 130 years ago, and their pocket knives have been officially issued to Swiss Army recruits since 1891. Today, the tradition of quality and innovation lives on, and the Swiss Army knife has become a trusted companion of consumers, adventurers, military and rescue personnel all over the world.

But even an icon needs a facelift now and then. It all began when the Swiss Army asked Victorinox to update the military-issue Swiss Soldier's™ Knife. For engineers at Victorinox, the answer was to make it even more durable and user-friendly than previous versions. This included an upgrade to the knife's grips, which long had been made of metal. Although a very durable material, metal can present a challenge as it can become slippery when wet.

Designers conceptualized a new, larger version of the Soldier's model, including 10 tools, a lock blade that can be opened with one hand and, importantly, a non-slip handle manufactured from a combination of hard and soft thermoplastics.

The handle concept was key to the redesign, according to the Victorinox team. They wanted to transition from metal to a polymer-based, two-component handle that would deliver:

- scratch and chemical resistance
- excellent mechanical properties
- a grippy, soft-touch feel

To support the transition, Victorinox sought our help based on its expertise in polymer science and ability to support product development and efficient manufacturing of the new two-component handles.

THE SOLUTION

Avient engineers guided the Victorinox team early in the development cycle for the new Soldier's Knife, proposing a combination of materials for the handles that would meet the design aspirations as well as Swiss Army standards for durability. They also provided local support during the sampling process, which helped speed testing and development time for Victorinox.

Achieving the non-slip handle Victorinox envisioned required a soft material for the new grip areas that would chemically bond to a rigid polymer underneath. Avient material scientists found the perfect combination with a custom rigid nylon formulation for the handle paired with a soft GLS™ thermoplastic elastomer (TPE) in the grip areas.

THE IMPACT

With our support, Victorinox was enabled to do what it does best—develop and manufacture high-quality tools that meet both military and consumer needs. Avient provided product development assistance and testing, and ultimately delivered customized materials that met strict requirements for durability.

The new knife was a major success. Other militaries around the world also adopted the redesigned Soldier's Knife, and Victorinox has even added the two-part handles to several consumer models.

What made this success possible? Beyond finding the best material combination—Bergamid™ nylon copolymer and GLS™ TPEs—our global presence and expertise across an array of specialty polymers and colorants, combined with local service and support, helped Victorinox to accelerate development work, streamline production and reach their design goals.

To learn more, contact Avient at +1.844.4AVIENT (1.844.428.4368) or visit www.avient.com.