

## New Generation of Bike Saddles

Made with dedicated LUVOCOM® High-Performance Compounds

In addition to their low carbon footprint, these materials are characterized by their high strength and outstanding impact energy absorption. Previously used materials such as PA12-CF15 can be replaced directly and with a significantly reduced risk of breakage. Existing injection molds can generally continue to be used without modification.

In new designs, further weight reductions are possible through thinner shells. This is possible, for example, with the 100% bio-based LUVOCOM PA11-rCF This high-end material is characterized by extremely high impact strength, which makes it more resilient to falls and impact loads than previously used materials.

With this material platform, the LEHVOSS Group is laying the foundation for a new generation of sports saddles that, combined with a comprehensive approach to reducing the carbon footprint.

Main features:

- Optimized durability by highest mechanical performance
- Optimized sustainability by bio-based polymers and recycled carbon fiber
- Optimized price/performance balance



Materializing  
Ideas

## Background and Motivation

The LEHVOSS Group has intensively focused on developments and innovations in the field of performance and high-performance bicycle saddles. This is due to increased demands on the materials used in terms of performance and sustainability.

In recent years, the appearance of saddles has changed significantly. Designs have been adapted and optimized to reflect the latest ergonomic findings. Metal rails have been replaced with carbon fiber-reinforced thermosets, new foams have been developed and combined with innovative saddle covers.

An often-neglected aspect has been the material selection for the injection-molded saddle shell – the interface between the saddle rails and the seat surface. The functions and requirements of this component are crucial. Specifically:

- Basis for the application of the damping material/foam with good adhesion properties
- Mounting of the saddle rails
- Absorption of riding loads under dynamic conditions
- Ergonomic comfort interface in combination with foam and saddle cover
- Dimensional stability under load over long periods and under changing temperature conditions
- As light as possible
- Good properties in bonding and laminating processes as well as in one- and two-component injection molding
- Lowest possible carbon footprint

To optimally meet all these requirements, the LEHVOSS Group has developed a globally unique material platform for saddles that allows for a specific material selection for each application. Of particular note is the use of fully or partially bio-based plastics combined with recycled carbon fibers – a proven specialty of the LEHVOSS Group. This is the only way to achieve the lowest carbon footprints.

## Development Collaboration

Focused on future developments in the saddle market, LEHVOSS and KRAIBURG TPE jointly conducted overmolding tests (2 components). The goal was to demonstrate that two component solutions can also be implemented. For example, damping properties and edge protection can be achieved through the use of overmolded soft materials.

KRAIBURG TPEs from the consumer, bio-based, and appliance product lines were used and overmolded onto LUVOCOM PA11-rCF (100% biopolymer).

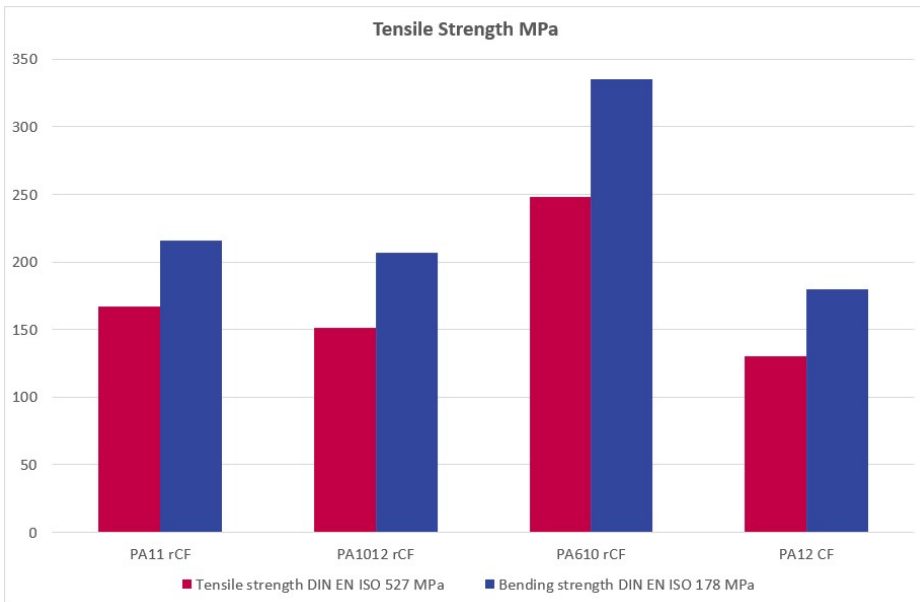
The usual standardized tests showed that good to very good adhesion can be achieved with all KRAIBURG products. Thanks to its strong adhesion properties and low product carbon footprint, the bio-based TPE grade presents a highly attractive solution. TPEs with a hardness of 40 and 60 ShoreA were tested.



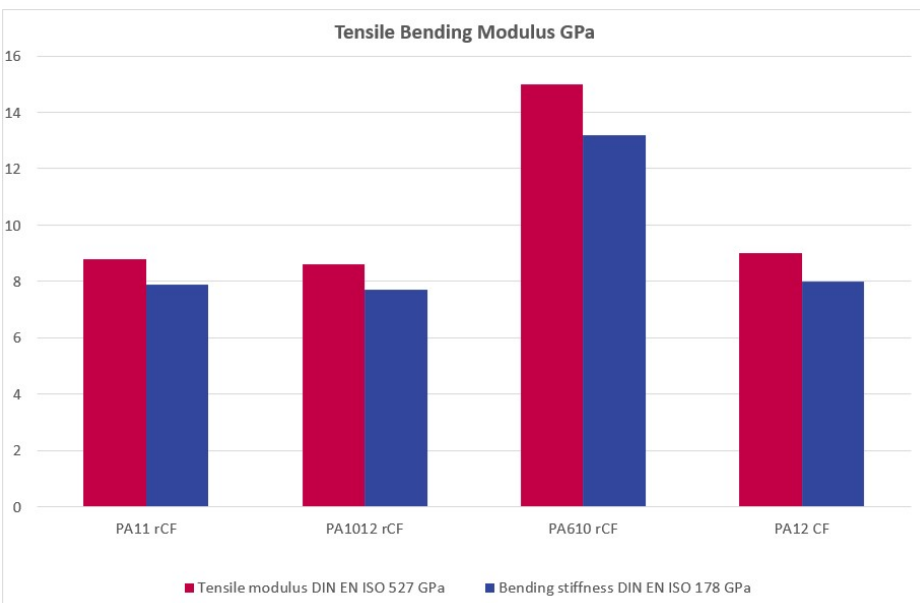
**KRAIBURG** TPE  
CUSTOM-ENGINEERED TPE AND MORE

Made by VEKRUN

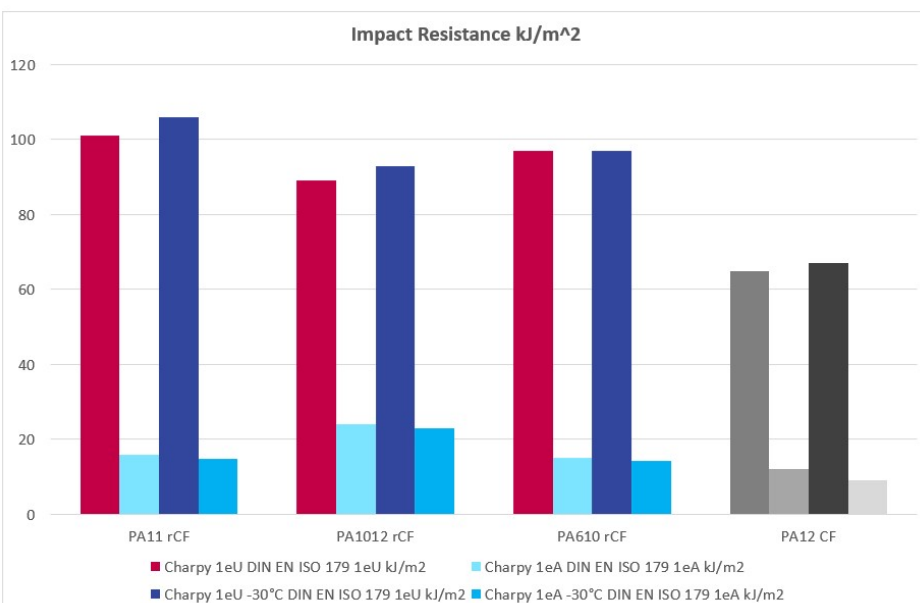




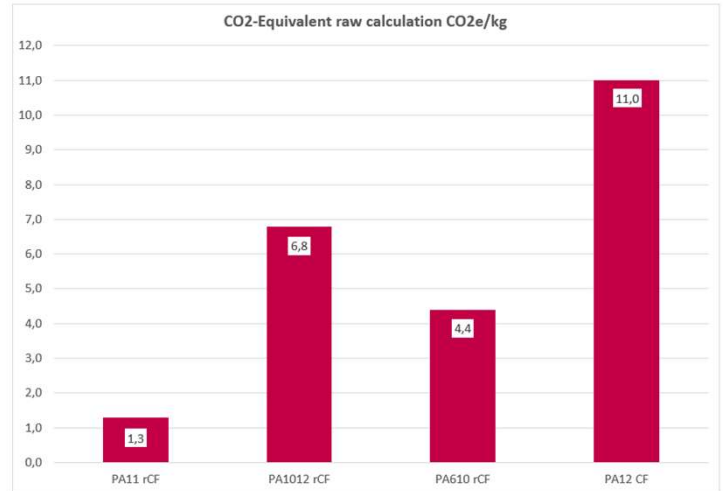
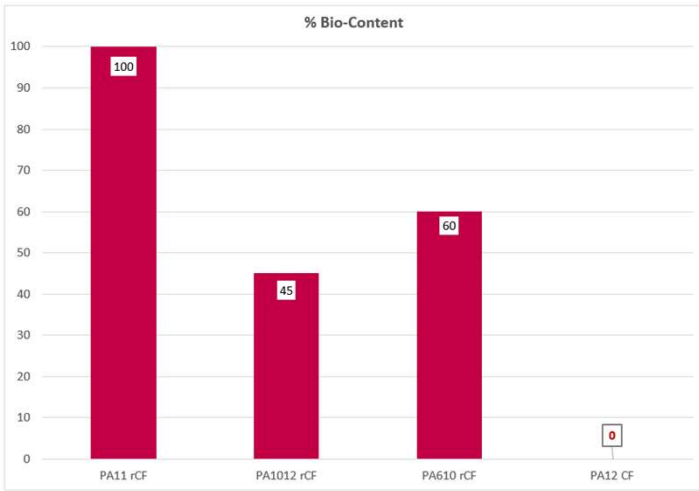
The higher tensile strengths of the new LEHVOSS material generation allow for a reduction in component wall thickness, resulting in a weight reduction compared to the previous solution using PA12 CF.



The PA11 rCF and PA1012 rCF offer the same seating comfort as the previous PA12 CF solution. The PA610 rCF is designed for saddle systems where rigidity is paramount.



All new-generation materials offer significantly higher fracture resistance than previous solutions. Impact energy absorption reserves are significantly higher, especially in cold environments.



Bio-content versus CO<sub>2</sub> equivalent – A very clear message



**Want to know more? Simply contact our experts!**

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