

“Green shoe” concept

BMS is committed to help meet the global challenges of energy shortages and climate change through innovative and sustainable technologies and processes. This is the company’s central message at K 2010. Under the motto “From Megatrends to Business”, the company will showcase polymer materials solutions and developments in the areas of climate, technology, mobility, living and health.



The Ecotrekker concept includes materials from renewable PU feedstocks, solvent-free coatings and adhesives, a PC blend, and a TPU based on renewable resources

One example is the recently developed unique concept of **Ecotrekker**, a "green shoe" that uses a whole host of sustainable materials and technologies. "Footwear manufacturers, end consumers and, not least, the environment can all benefit equally from this development," explains Dr John Zhang, head of Bayer MaterialScience's Global Footwear Competence Center in Shanghai. Here the concept shoe was developed in close collaboration with **Simple Factory Group**.

Up to 90 % of all components in the Ecotrekker can be given eco-friendly properties by using BMS products. In microcellular polyurethane elastomer systems for outer soles and midsoles alone, the proportion of renewable raw materials is as high as 70 %. BMS said, that this high value puts the company as a raw material supplier for shoe soles into the number one spot in the industry, as does a proportion of up to 40 % of renewable materials in the polycarbonate blend used and also the products and technologies developed in-house for solvent- and plasticiser-free textile coatings and adhesive raw materials. Using these coatings and adhesives alone would cut global emissions of organic solvents by approximately 150,000 t.

Desmopan TPUs based on a high proportion of renewable raw materials have been used for the concept shoes' heel counter, shoelace eyelets and the manufacturer's logo on the sole. Due to its outstanding mechanical properties, the highly abrasion- and wear-resistant bio-based TPU can of course also be used for traditional TPU shoe components such as outsoles or decorative upper parts. TPU films from the **Dureflex** range form a vapour-permeable membrane to reinforce the inner sole, without using plasticisers.

The shoe cap used in this prototype of a safety shoe and made from a PC+PLA blend from the **Makroblend** range is not only lighter than the conventional steel cap. With its high proportion of bio-based raw materials, this material with modified impact resistance is also more environmentally friendly and remains recyclable.

While shoe soles depend on polyurethane systems that have good processing characteristics and a range of properties typical of systems commonly found on the market, abrasion and wear resistance and high flexibility play a key role in water-based coatings with **Impranil**. Adhesives based on aqueous **Dispercoll U** polyurethane raw materials ensure eco-friendly, long-lasting and flexible bonding between the upper material and the sole.

Furthermore, a counterfeit-proof label based on a polycarbonate film from the **Makrofol ID** range is used for the limited edition of the concept shoe. The inscription is carried out using high-contrast laser engraving. In addition, different security features like holograms can be incorporated.

BMS says, that it is also currently working on the development of new technologies to obtain suitable raw materials from waste from bio-based natural materials such as straw and wood waste.

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<http://www.gupta-verlag.com/general/news/k-2010/8755/green-shoe-concept>