# Dyeing Properties of Polyamide 12

Esther Rohleder*[1], Susann Reuther-Senkalla[2], Clara Heil[1], Karolina Jagla[2], Kristina Klinkhammer[1], Melanie Jakubik[1], Jankiben Siddphura[1], and Robert Groten[1]

[1]Forschungsinstitut für Textil und Bekleidung der Hochschule Niederrhein (FTB) – Germany
[2]TFI – Institut für Boden- und Raumsysteme an der RWTH Aachen e.V. – Germany

**Abstract**

For most textile floor coverings, the functional, safety and quality requirements during lifetime can only be met by combinations of different polymers, which significantly lowers the recyclability. In the presented research project "ALPA", the potential of Polyamide 12 (PA 12) was studied as raw material for textile floor coverings regarding the requirements for functionality, safety and quality. Additional requirements were taken into account, such as a reduced global warming potential (GWP), a prolonged lifetime and the possibility for recycling into high quality fibers due to the elimination of a necessary separation of different components of conventionally used material's mixtures. The material provides special properties in terms of moisture absorption, mechanical resistance and reduced soiling tendency and therefore has the potential as base of a durable monomaterial textile floor covering.
Nevertheless, the water absorption of PA 12 is much lower than that of PA 6, used as standard material so far, impeding the simple transfer of conventional dyeing procedures and recipes. Therefore, the dyeing properties were analyzed and recipes and procedures were optimized to meet the specific requirements of PA 12. The results were compared with benchmark material (PA 6.6). The obtained hues are varying but the color saturation that could be reached was close to the one obtained with PA 6.6.

The results show that PA 12 is a promising polymer for textile applications.
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*Speaker