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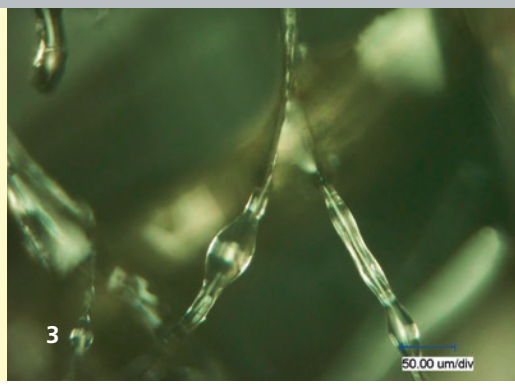

1 *Ramie fibers before single fiber preparation.*
2 *WPC granules, test bars, and wood flour used.*
3 *Light microscopy image of a surface treated flax fiber.*

BIO-COMPOSITES

DEVELOPED BY UMSICHT!

Fraunhofer Institute for Environmental, Safety, and Energy Technology UMSICHT

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Our team of engineers and chemists develops bio-composite materials in collaboration with you: From formulation over plastics processing to products. Start into bio-composite production or enlarge your product portfolio – we support your development of skills. Our aim is to increase the variety of products made of bio-composites. Your questions are our challenges!

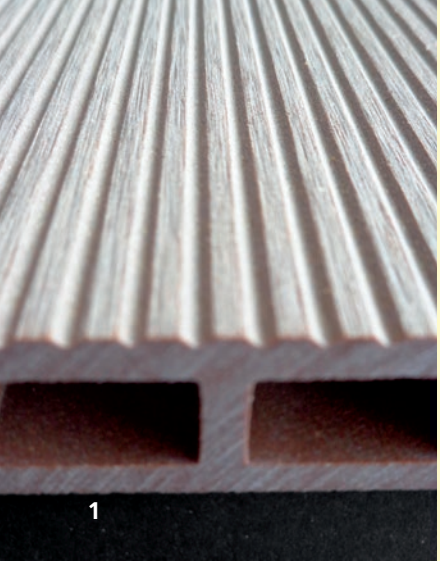
Our strengths lie in the combination of experience along the entire development and value chain with a constant eye on market opportunities and availability of raw materials. Our research basis is the integrated consideration of fibers and their modification as well as plastics and additive mixtures for bio-composites.

Keywords

- Bio-composites
- Natural fiber reinforced plastics
- Wood-Plastic-Composites (WPC)
- Natural fiber treatment
- Bio-based plastics
- Product and process development

Industrial sectors

- Plastic processing industry
- Automotive and supply industry
- Furniture industry
- Construction industry
- Profile production
- Horticulture and landscaping
- Consumer goods industry
- Machinery and plant manufacturers



1 *Natural fiber reinforced plastic profile.*
2 *Natural fiber reinforced plastic granules and colored plates.*
3 *Storage box made of natural fiber reinforced plastic.*

DEPARTMENT BIO-BASED PLASTICS

Polymer chemistry

- Development of chemical products based on renewable resources
- Additive systems
- Monomers for polymer synthesis
- Components for adhesives
- Natural fiber treatment
- Analytics and testing

Processing and applications

- Development and compounding of thermoplastic plastics
- Validation on conventional plastics processing equipment
- Plastics reinforced with natural fibers
- Application engineering consulting
- Technology consulting, market and feasibility studies, recycling concepts

Your benefit

- Competitive advantage due to innovative materials and short development time
- Implementation of your projects from the idea to the finished product
- Quick conducting of tests and their assessment
- Preparation of independent expert opinions
- Scientific support of your research and development projects

Material development

- Physical functionalization of biopolymers through blending
- Additives
- Reactive processing
- Compatibilization in the melt
- Main application areas are injection molding, extrusion and thermoplastic foaming

Production scale-up and testing

- Pilot and small series production of compounds and products on industrial systems
- Material characterization and component testing
- Testing of biological degradability of materials
- Certified testing laboratory of DIN CERTCO Gesellschaft für Konformitätsbewertung mbH (DIN CERTCO Registration No PL142)