Fraunhofer UMSICHT

Biocomposites

NFRPs and WPC developed with UMSICHT!

Granules and sample plate made of PLA and DuraPulp® fibers

What distinguishes a good material? For sure it is its outstanding properties compared to the competition. Here, natural fiber-reinforced plastics (NFRP) or wood-plastic composites (WPC) offer significant added value in various applications.

Added value through fiber reinforcement

Bio-based plastics are materials with outstanding properties. With a fiber reinforcement adapted to the product, additional significant performance increases can be achieved and new areas of application opened up. The final product remains bio-based and/or bio-degradable.

The realization of your project takes place at Fraunhofer UMSICHT over the entire range of processing: Starting with the correct pretreatment of the raw materials and selection of the additives to the material-friendly processing on individually adapted twin-screw extruders to the finished product. We use our wide-ranging know-how in the fields of polymer chemistry and process engineering to quickly implement your requirements.

Industries

- Plastics processing industry
- Automotive and supplier industry
- Furniture and construction industry
- Profile production
- Gardening and landscaping
- Consumer and consumer goods industry
- Machinery and equipment manufacturer

WPC granules and test specimen with the wood flour

Keywords

- Biocomposites
- Natural fiber treatment
- Natural fiber-reinforced plastics (NFRPs)
- Bio-based plastics
- Wood-plastic composites (WPC)
- Product and process development

Technological specifications

Fiber-reinforced biobased thermoplastics developed with Fraunhofer UMSICHT offer the following advantages:

- Improved mechanical load-bearing capacity compared to the unreinforced material
- Sustainable alternative to glass and carbon fibers
- Great potential in lightweight construction applications
- Improved bio-degradability possible
- Customized compounds for conventional processing machines
- Use of environmentally friendly additives for compatibility
- Wide range of applications - attractive appearance or highly filled system

Our service

- Material development based on various bioplastics such as starch, polylactic acid or other biopolyesters in combination with a wide filler and fiber range - from wood flour and flax to microfibrillated cellulose fibers
- Fiber pretreatment e.g. fibrillation and additivation
- Formulation development on twin-screw extruders with proven configurations or individual adaptations
- Injection molding of test specimens and demonstrators
- Testing of mechanical material properties
- Optical evaluation of the fiber connection
- Market analysis

Your benefit

- Competitive edge through innovative materials
- Scientific support for your research and development projects
  - short development times
  - application-related material and process development
  - from the idea to the finished product
- fast execution of tests and their evaluation
- Support for the implementation of the Sustainable Development Goals (SDG) in your company

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