

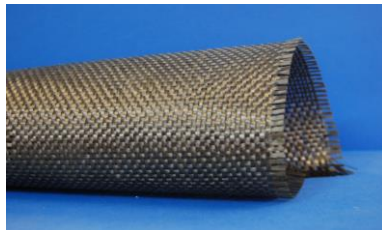


BIO-BASED NATURAL FIBER ORGANIC SHEET

Ideas on utilisation

Organic sheet plate-shaped thermoformable semi-finished products for lightweight construction are being used more and more frequently. So far, composite materials made of synthetic fibers such as glass, carbon or aramid fibers with petrochemical-based plastics have been used as standard for high-performance lightweight construction solutions.

Future resource shortages of fossil resources and increasing awareness of the environment lead to questions about alternative materials for organic sheet.



Material selection for organic sheets v.l.n.r. :: cellulose propionate (CP) granules, basalt tissue, flax tissue. ©TU Dresden, HIT

Potential adopters of technology

Possible fields of application for these novel materials are, for example

- mechanical and plant engineering. In particular for enclosures and machine cladding parts as well as encapsulation of individual components, this novel material offers a variety of possibilities with reduced component weight in comparison to conventional fiber composite and sheet metal components.
- interior and structural components in vehicle construction and the aerospace industry.
- safety technology, electronics, sports industry and orthopedics.

Advantages of technology

The better technical properties of bio-based natural fiber organo sheets for certain applications can open up interesting application possibilities. Especially advantageous are:

- The low weight. Natural fiber organo sheets are lighter than organo sheets with glass or carbon fibers.
- The high load capacity. Certain natural fiber biopolymer composites are similarly tensile and elastic, such as glass fiber petro-polymer composites.
- Sound-absorbing properties. Natural fibers absorb more sound than glass or carbon fibers.



- The soft crash behavior. Natural fiber organo-sheets have a high energy absorption capacity. They do not splinter and have no sharp breaklines after the crash. This is for example interesting for safety in vehicles.
- The good surface quality. The composites developed at the TU Dresden show that even after the conversion forming a very smooth surface.

Market and context of technology

The technologically possible separation of semi-finished product manufacture and molded part production enables customized production with high cost-effectiveness.

Semi-finished product manufacturers with experience in the production of customized organic sheets can also produce biobased natural fiber organic sheets on conventional belt presses. Note the specific conditions for natural material pairing with regard to pressure, speed and temperature.

Molding manufacturers can work on conventional presses using custom molding tools with a material matching process regime.



Preconditions in adopting enterprises

[

- Which pre-conditions are necessary in the adopting enterprise? (Needs for investments, qualification of staff, legal permissions/ approvals, expenditure of time, changes in business and production processes etc.
- Which dependencies in relation to upstream and downstream processes/ technologies in the value chain do exist? Is there a need for changing other technologies as well?

approx. 500 characters]