

Quality management of hemp straw from plant to agromaterial: Innovative axes to a better design of hemp fiber uses in thermoplastic composites

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Anglais

In order to satisfy the increasing demand for new eco-designed products with higher performances, the use of hemp fibers is considered with primary interest. Extracted from stems, these fibers have exceptional properties interesting textile, non-woven materials and composites industries. But, the access to these major markets implies to reach precise specification and to certify such quality.

Several R&D projects pointed the effects of each successive stage involved in stem formation then in straw treatment and finally in fibers process. Among the different markets, a focus will be made on thermoplastic composites:

- Pedoclimatic conditions could be affect fibers and shives quality at molecular / chemical and morphological levels. These effects appears less pronounced that the impact of retting on fiber yield and fiber quality. We demonstrated that different levels of retting impact the performance of thermoplastic composites.
- Industrial process to extract then transform fiber and manufacturing final product could be altered several morphological, mechanical and chemical intrinsic parameters of fiber bundles.
- Fonctionnalisation of fiber could modify fiber – matrix interaction

Taking account all these data, various solutions to increase thermoplastic composites performances and so quality management of hemp, from straw to final product are listed. This strategy, piloted by FRD throught different R&D program, underline the systematic use of specific technical datasheet thus ensuring a certificated quality and guaranteing compliance with the specification.

At the same time, FRD has developed a wide range of methods and protocols (chemical composition, morphology, mechanical properties, ...) to help to manage straw, fibers and shives quality. Full service offer of FRD on www.f-r-d.fr.