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RECYCLING OF WASTE ACRYLIC TEXTILES

D4.3: Report on mechanical recycling of acrylic fibre – Executive summary

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Authors	Mara Poggio
Reviewers	Donatella Macchia, Daniele Piga (Roberto Vannucci)

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CI	Classified, information as referred to in Commission Decision 2001/844/EC	
CO	Confidential to REACT project and Commission Services	

Acknowledgment (if needed)

** R: Document, report (excluding the periodic and final reports)*

DEM: Demonstrator, pilot, prototype, plan designs

DEC: Websites, patents filing, press & media actions, videos, etc.

OTHER: Software, technical diagram, etc

EXECUTIVE SUMMARY

This deliverable is created in the context of the H2020-funded project REACT (Grant No. 820869) and focuses on frayed trials from awnings waste in acrylic.

The executive summary will provide an overview of the mechanical recycling process on awnings waste in acrylic, which have been conducted during the REACT project. The main objective of this work-package will be to optimize the tearing process in order to obtain spinnable fibres.

CETI (European center for Innovative Textiles) is equipped with a mechanical recycling platform on a pilot scale. The platform is composed of a cutting machine PIERRET and a tearing machine LAROCHE. The expertise and knowledge acquired by the engineer during previous projects will permit to carry out the trial in the best conditions and obtain results that meet the project expectations.

Mechanical recycling is a process based on physical forces, which may be used in isolation for fabric or fiber recycling. However, the main challenge facing this process is to obtain individualized and opened fibers of sufficient length with a minimum amount of short fibers. If these characteristics are fulfilled, it will be possible to up-cycle the awnings waste in acrylic in a new acrylic yarn. Indeed, open-end spinning technology required fibers with a minimum length of 18 mm and small percentage of short fibers.

The solution proposed by CETI is to adjust and optimized for each waste sample the parameters of the tearing machine. This improvement phase will be possible due to laboratory analysis on the length of fibers fulfilled on the classifiable W330A. The CETI will recommendations to optimize the process and achieve the objectives.

The “D4.3: Report on mechanical recycling of acrylic fiber” will highlight the different trials led during the React and the results obtained. Recommendations will be made to optimize the process in order to obtain spinnable fibers on an open-end technology.

To conclude, 13 different packages will be frayed on CETI mechanical recycling platform, with different tearing parameters. At the end, only 6 of them will permit to obtain suitable fibres for the open-end spinning process.