



LIFE15 ENV/ES/000658 LIFE-ECOTEX

RESULTS NEWSLETTER: 2020

CIRCULAR ECONOMY APPLIED TO TEXTILE WASTE OF POLYESTER NATURE

In this last newsletter we demonstrate the success of the results achieved and, in particular, the contribution of chemical recycling to the circular economy in the footwear sector, thanks to the treatment via glycolysis of polyester textile waste.



PARTNERS



GAIKER Technology Centre, referent in recycling technologies.



CTCR. Footwear Technology Centre of La Rioja, expert in footwear technologies.



BETA RENEWABLE GROUP S.A., sustainable energy operator.



EKO-REC Ecología, Reciclaje y Medio Ambiente, S.L., manufacturer of synthetic textile fibres.



LOGROTEX, manufacturer of non-woven textile products.

www.life-ecotex.eu

1 ► SUCCESSFULLY COMPLETED THE LIFE ECOTEX PROJECT

The LIFE ECOTEX project has been successfully completed, achieving the objectives initially set. The main results obtained due to the development of the LIFE-ECOTEX project were:

- The demonstration of a feasible circular economy concept for the footwear sector by avoiding landfilling 750 kg of PET textile wastes generated in that sector.
- 550 kg of conditioned PET textile waste were chemical recycled by catalytic glycolysis.
- 350 kg of high added value BHET monomer were produced (Purity > 95 %).
- 300 kg of chemical recycled PET were manufactured, with similar quality to virgin PET.
- 800 kg of PSF were manufactured with chemically recycled PET.
- 2 prototypes of non-woven felts were obtained: 650-800 g/m² for insoles and 1,500 g/m² for insulators.
- 2 marketable sustainable products made of chemical recycled PET:

- a) Shoe insoles: 130 insoles (No. 37), 130 insoles (No. 42) and 130 insoles for children.
- b) Insulation panels (1.2 m x 1.2 m): 12 panels (2,000 g/m², 60 mm thick) + 12 panels (1,500 g/m², 40 mm thick).



2 ► BUSINESS NEGOTIATIONS: THE CHEMICAL RECYCLING OF PET AS A LINE OF INTEREST FOR THE EUROPEAN INDUSTRY

- There is a high interest from the agents of the PET value chain and its waste in the results of the LIFE ECOTEX Project and in their exploitation. Throughout the project and mainly during its last phase of execution, numerous contacts have been received from companies that generate and manage PET waste, textile recycling companies, footwear and textile manufacturers and PET synthesis companies. These contacts have materialized in agreements for the beginning of the development and implementation of the PET2PET Process on an industrial scale in Spain for the treatment of polyester textiles and in other European countries for the treatment of PET containers, and in the execution of new projects for the manufacture of textiles with high specific technical specifications from chemically recycled PET.



3 ► REDUCTION OF THE CARBON FOOTPRINT OF CHEMICALLY RECYCLED PET MATERIAL AND NEW SHOE INSOLES

The reduction of the Carbon Footprint of PET material and PET textiles products manufactured with chemical recycled PET has been calculated in the LCA study carried out:

- ▶▶ Manufacturing PET pellets with chemically recycled PET, in order to obtain a material with the same properties as virgin amorphous PET, reduced their Carbon Footprint in 35 % against using virgin amorphous PET as raw material.
- ▶▶ A pair of shoe insoles made of chemical recycled PET had a 23.1 % lower carbon footprint than a pair of PU foam insoles (commonly used in casual and sport footwear), and 12.8 % lower than a pair of shoe insoles made of virgin PET.



4 ► POLICY RECOMMENDATIONS

New recommendations for European environmental policies authorities regarding the use of chemically recycled polyester in textiles manufacturing have been proposed, in order to:

- ▶▶ promote the circular economy of polyester materials by chemical recycling;
- ▶▶ to consider chemical recycling in waste management legislation and enhance it against other EoL options, and
- ▶▶ to support the use of up to 25 % of chemical recycled polyester material in new footwear products.



5 ► REPLICABILITY AND TRANSFERABILITY OF LIFE ECOTEX PROJECT RESULTS

▶▶ Replication in the European footwear sector:

- ▶ In the biggest footwear producer countries, such as Italy, Portugal, Romania, Czech Republic, Germany.



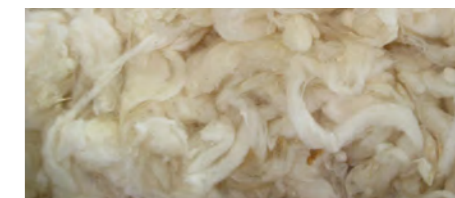
▶▶ Replication and Transfer using other PET wastes from different origins:

- ▶ PET waste from automotive and packaging sectors.
- ▶ PET from marine litter.



▶▶ Replication and Transfer using chemical recycled PET to obtain more sustainable products:

- ▶ In other sectors: packaging, textiles and automotive.
- ▶ In other applications: continuous textile fibres (yarns), injection moulding and 3D printing.



6 ► DISSEMINATION ACTIVITIES

KET'S, ESTRASBURGO 2019

►► This event organized by the Enterprise Europe Network, whose content focused on the following topics: nanotechnology, advanced materials, biotechnology and advanced manufacturing, within the European Horizon 2020 Program. In this day, after the various presentations in which he made a review of the topics open for 2019 and the future of this topic in the future Horizon Europe program (2021-2027), the representatives of the CTCR held several meetings with universities, companies and research centers of the European Union and associated countries in order to raise new ideas for collaboration under the LIFE-ECOTEX project.



INFODAY NMBP, MADRID 2019

►► The CTCR attended the information day organized by the Centro para el Desarrollo Tecnológico Industrial (CDTI) in which a review of the NMBP (Nanotechnology, Advanced Materials, Biotechnology and Advanced Manufacturing Processes) type calls for the next year 2020 was carried out. In this way, the human team of the CTCR promoted the importance of the circular economy in the footwear sector, showing the results of the recycled polyester insole.



6 ► DISSEMINATION ACTIVITIES

HORIZON 2020 FOR CIRCULAR ECONOMY AND TRANSFORMING INDUSTRY, VARSOVIA

►► Event focused on the theme of the circular economy and industry, holding meetings with various entities, companies and European research institutes. Thanks to this participation, preferences have been established within the scope of the Horizon2020 programme and work is already underway with the new contacts made in the search for synergies.



HORIZON 2020 ENVIRONMENT & RESOURCES INFORMATION DAYS, BRUSELAS (BÉLGICA)

►► Conference focused on the Social Challenge 5 of the European program Horizon 2020. It showed the topics available in this call during the year 2020, analyzed the new features incorporated into the program and held several meetings with European entities dedicated to research, development and innovation, thus establishing new international relations to carry out European projects.



6 ► DISSEMINATION ACTIVITIES

TRADE FAIR, FUTURMODA, ALICANTE

►► Participation in the two editions of Futurmoda 2019, the largest event, which presents the essential raw materials for the manufacture of footwear. There, the opportunity was taken to present the results of the present project, to establish new contacts and to show the importance of reducing the carbon footprint in the footwear sector with very successful environmental proposals such as LIFE-ECOTEX.



6 ► DISSEMINATION ACTIVITIES

THE CTCR AND THE BASQUE INSTITUTE, GAIKER, ALLIED FOR THE FORMATION OF THE STUDENTS OF THE IES VIRGEN DE VICO, IN ENVIRONMENTAL RESEARCH

►► Representatives from the area of project management coordination of the Footwear Technology Centre of La Rioja, CTCR, and the area of R+D+i/Environment of the Gaiker Technology Centre (Basque Country) gave a workshop-masterclass on the new eco materials that are being achieved thanks to the application of the most innovative recycling techniques. The recipients were the students of the Higher Degree in Design and Production of Footwear and Accessories of the IES Virgen de Vico de Arnedo whose training has also served to highlight the environmental milestones achieved that will motivate, in the short term, the elimination of much of the waste generated in the footwear sector in La Rioja and, consequently, the reduction of environmental impact.

The shoe industry generates a large amount of waste that can now be used in the manufacture of new environmentally friendly products thanks to certain success stories in research that lead us to more sustainable production models. A clear example of this is the Life-ECOTEX project, which, after three years of development, has allowed the production of insoles from surplus polyester waste that is wasted during the cutting process; all this, thanks to chemical recycling, via glycolysis, which has led to the closure of the life cycle of tons of textile waste.



7 ► LAYMAN'S REPORT

PUBLICATION OF LAYMAN'S REPORT ON THE PROJECT'S WEBSITE

- To extend this content, we recommend accessing the complete document available on the website www.life-ecotex.eu

Below is a brief sample of it in images:



8 ► COMMUNICATION PLAN AFTER-LIFE

The after-LIFE communication plan has the aim at engaging stakeholders in the LIFE-ECOTEX project's results, with the following specific objectives:

- To promote chemical recycling in general and the catalytic glycolysis reaction to treat PET wastes in particular.
- To promote the replicability of the closed loop recycling scheme in the footwear sector and in other industries like the automotive, textile or packaging.
- To promote the new products obtained within the LIFE-ECOTEX project (shoe insoles and insulation panels) by communicating:
 - 1) their environmental benefits as they are made of recycled material
 - 2) their competitiveness in price and in quality

Firstly, the target groups of stakeholders with potential interest in the LIFE-ECOTEX project have been defined with specific objectives for each group.

AFTER-LIFE COMMUNICATION PLAN'S TARGET GROUPS	COMMUNICATION ACTIONS OBJECTIVES
Footwear/shoe-making sector	To increase the demand on footwear products made of recycled PET
PET waste managers and recyclers	To boost chemical recycling vs. other EoL alternatives
Construction sector	To enhance the use of insulators made of chemically recycled PET

8 ► COMMUNICATION PLAN AFTER-LIFE

To achieve the objectives previously defined and to enhance the awareness of LIFE-ECOTEX project's results, the following actions have been established:

- Maintaining the project's website for five years after the end of the project, in order to be able to get feedback from any visitor interested in the project.
- Arranging meetings or visits with stakeholders for networking.
- Communicate the LIFE-ECOTEX project's results in future professional fairs, conferences, workshops, technological and commercial events and meetings.
- Publishing articles in technical or sectorial magazines.
- Clustering other demonstrative projects related to chemical recycling and the use of chemical recycled PET or other polymers.

Additionally, a summary of the specific communication actions, responsible partners, framework, estimated budget required and funding sources have been defined.



9 ► MEDIA IMPACT

Many media outlets have echoed during this time the achievements of the Life-ECOTEX Project, summarizing below only some of those impacts:

The collage shows several media outlets reporting on the LIFE-ECOTEX project:

- SER Radio Arnedo 95.2 FM:** "El CTRC imparte un taller sobre nuevos materiales 'eco' a alumnos del IES Virgen de Vico de Arnedo".
- RETEMA (Revista Técnica de Medio Ambiente):** "Demostrado con éxito el proceso de reciclaje químico de poliéster desarrollado en el proyecto LIFE-ECOTEX".
- ECticias.com:** "El proyecto europeo LIFE-ECOTEX demuestra el concepto de economía circular en la industria del calzado".
- ir residuo:** "La industria del calzado se apunta a la economía circular con el proyecto LIFE-ECOTEX".
- sportstextiles.com:** "Spanish researchers want to make recycled polyester fibres from shoe waste".



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