LIFE EGGSHELLENCE Project starts: A potential raw material for ceramic wall tiles

(REF.: LIFE19 ENV/ES/000121)

ITC will use the eggshell for tile production

Castellón, October 14 2020- The Instituto de Tecnología Cerámica (ITC) is going to use eggshells to carry out the European project LIFE EGGSHELLENCE: A potential raw material for ceramic wall tiles (REF.: LIFE19 ENV/ES/000121), which has been approved by the European Commission within the LIFE programme and which connects two very different production sectors: egg production and processing and ceramics production. Both sectors will establish an industrial symbiosis in accordance with the principles of the Circular Economy, in this case, reusing the waste of thousands of tonnes of eggshells produced each year to process them as raw material in the manufacture of ceramic tiles.

This was announced today after the kick-off meeting of the project, which involves, under the coordination of the ITC, the companies AGOTZAINA, S.L., a specialist in the production of high quality pasteurised liquid egg products, the Portuguese company Adelino Duarte da Mota (MOTA CERAMIC SOLUTIONS Group), and the Castellón ceramics companies EUROATOMIZADO, S.A. and MAINCER, S.L., as well as the University of Aveiro, in Portugal. According to Dr Francisca Quereda, the main researcher of LIFE EGGSHELLENCE at ITC: "The idea for the project arose from identifying a problem in the egg processing industry, as it is estimated that around 150,000 tonnes of eggshells are generated in Europe and are destined for landfill. They often cause problems, such as bad odours or the growth of bio-organisms that lead to complaints or denouncements.

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The two countries involved in this project, Spain and Portugal, are currently producing 5,500 tonnes per year of eggshell waste in the case of Portugal and 16,000 tonnes per year in the case of Spain. If we add the costs of transporting this waste to landfill, which would be around €25-60 per tonne, this would lead to additional costs of between €50-100,000 per year".

The need to protect virgin and non-renewable raw materials together with the previous experience of the members of this project in the field of ceramic processing and waste valorisation, has encouraged the consortium to try to demonstrate the technical feasibility of using eggshell as a secondary raw material in the production of ceramic tiles, as the calcium carbonate contained in eggshell is used in ceramic compositions.

"If we are successful", explains Francisca Quereda, "this project will result in economic benefits, both for the egg processing industry and for the ceramic industry, but also in environmental benefits, as it will contribute to the implementation of the Waste Framework Directive (Directive 2008/98/EC) following the objectives and targets of the Roadmap for a resource-efficient Europe, among many other aspects".

This will require the design of a device to separate the membrane from the eggshell, which contains the calcium carbonate, and to process it for its use in the ceramic composition. This would initially benefit two industries in Spain and Portugal, members of LIFE EGGSHELLENCE, who expect a waste reduction of at least 90% for the company AGOTZAINA, and a reduction in calcium carbonate mineral consumption for ceramics of around 2,500 tonnes (considering only the amount of carbonate that could be supplied by AGOTZAINA as soon as the project is completed).

"If from now until March 2024, when LIFE EGGSHELLENCE ends, we achieve our goals, we will be able to recycle 5,400 tonnes per year of eggshell production from Portugal, as the two main egg processing companies in this country are involved in the replication of the project, while in Spain we would reach 5,600 tonnes/year of total eggshell production recycled considering the companies involved in the replication together with the company AGOTZAINA", says Dr. Francisca Quereda.

In the case of the ceramics industry, and in Portugal, this calcium bio-carbonate extracted from eggshells would represent 18% of the total use of this raw material (around 30,000 tonnes per year), while in the case of Spain, it would replace 4% of the total, estimated at 150,000 tonnes per year.

Thus, LIFE EGGSHELLENCE will allow industrial symbiosis, achieving a circular economy between two sectors that will generate two new value chains and new business models that can be replicated on an international scale.

In today's meeting the next steps to be taken have been outlined, among them, to have a project website to publicise and disseminate its progress and results as well as other communication tools, basic for citizens and public opinion to be aware of the real effort being made both by the European Commission to support projects like this, and by industries, research centres and universities, which contribute their ideas and knowledge to achieve the objectives of Green Europe.