The plastics industry to use enzymes to improve the sustainability of its processes

ENZPLAST Project focuses on enzymes use in the plastics sector for different applications by developing new more sustainable processes in line with the Green Chemistry. AIMPLAS has involved them in the synthesis of polymers, thus avoiding the use of metal catalysts to result in a safer process for people and the environment.

They are also being used in new methodologies for the washing process of recycled materials, including the complex separation of multilayers. In addition, it is also being assessed how different enzymes act in the compost biodegradation process of polymers of different nature.

Valencia (13-12-2018).- AIMPLAS, the Plastics Technology Centre, is carrying out the ENZPLAST project, supported by the Valencian Institute of Business Competitiveness (IVACE), whose main objective is developing new processes more sustainable for the manufacturing, recycling and composting of plastics.

Supported by the Valencian institute of business competitiveness (IVACE) and cofounded by EU ERDF funds within the 2014-2020 ERDF Operational Programme for the Valencian Region, the ENZPLAST project pursues three objectives: the first one is related to the challenge of implementing synthetic routes to obtain plastics safer for the health of people and eco-friendlier. For that purpose, enzymes will be used instead of metal catalysts, which have an associated toxicity. Furthermore, these solutions involve other clear advantages in the polymerization process, since they require reaction temperatures lower than those required when using conventional catalysis and they minimize the use of organic solvents with the subsequent reduction in emissions.

Secondly, a procedure to use it in the recycling process is being developed, in which enzymes will be incorporated in the washing stage to remove its odour and its efficiency in the separation of multilayer materials will be studied, which are currently relevant challenges. In this sense, the type of industrial sectors to benefit from this innovative solution (dairy, meat and fish wastes) has been established, determining the families of key compounds that produce odour problems. In this way, we will be able to select the most suitable enzymes or groups of enzymes with criteria.

Finally, the effectiveness of different enzymes in the biodegradation process for several different bioplastics is being studied. For this, the selected enzymes will be added into the biodegradation process both under aerobic and anaerobic digestion conditions.

About AIMPLAS

AIMPLAS, the Plastics Technology Centre, is located in Valencia, Spain and is recorded at the Register of Technological Centres of the Spanish Ministry of Economy and Competitiveness. The institute is a member of FEDIT (Spanish Federation of Innovation and Technology Entities) and REDIT (Network of Technological Institutes of the Valencia Region).

AIMPLAS is a non-profit research association with the objective of operating as a technological partner for enterprises from the plastics industry and thus offering them integral and customized solutions by coordinating research, development and innovation projects as well as technological services (analysis and testing, technical assistance, training as well as competitive and strategic intelligence).

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