PROCESS FOR THE DECONTAMINATION OF RECYCLED PLASTIC

TECNOLOGÍA PATENTADA

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RESUMEN

The University of Alicante **research group E4CE (Engineering for Circular Economy)** has developed a procedure for the **decontamination of recycled plastic materials**.

This technology's innovation lies in the decontamination stage carried out by extraction using a water-soluble extracting agent and rinsing.

This technology eliminates contaminants present in the recycled plastics to improve their quality to be used in high added value applications.

The technology, which is protected by a patent application, has been developed on a laboratory scale. Companies interested in the commercial exploitation of this technology through license agreements and/or technical cooperation are sought.

VENTAJAS Y ASPECTOS INNOVADORES

MAIN ADVANTAGES OF THE TECHNOLOGY

This technology has the following advantages:

- It improves the quality of recycled plastics regardless of their origin, whether post-industrial or post-consumer. Therefore, it solves, to a certain extent, the problem of recycling domestic plastic waste, increasing its recyclability.
- A recycled material free of organic contaminants is obtained, increasing the added value of the product.
- By increasing the quality of recycled plastic, the range of new opportunities for these materials will expand because they can be used in many applications (e.g., packaging in the cosmetics, hygiene, and food sectors).
- It removes a broader range of organic compounds, from the most volatile to the heaviest.
- It is a sustainable procedure, as it allows recirculation and reuse of both water and the extracting agent
- By working at atmospheric pressure, the technology is simple and easy to implement.
- The decontamination module can act as an independent module for the recycling process. In this case, the input to the process would be the recycled pellets, and it can become a system for improving the quality of the product already recycled by other companies.
- The decontamination stage can be carried out before or after regranulation.
- Only nontoxic agents are used in the process.

INNOVATIVE ASPECTS

This procedure introduces two innovative aspects concerning existing technologies on the market.

It is a method capable of removing non-volatile contaminants present in the plastic. The existing technologies on the market cannot eliminate non-volatile pollutants, which is a limitation when introducing recycled plastic into such essential sectors as food or pharmacy.

On the other hand, as it is a closed cycle where all the extracting agent and the water used are recovered, the process is sustainable both from an environmental and economic point of view.

APLICACIONES DE LA OFERTA

The novel process described above allows the decontamination of plastics from household and industrial sources. This process is intended to remove contaminants, and with them, unintentionally added compounds (NIAS) found in the plastic matrix and surface, dirt such as solid particles, adhesive residues, or labels.

This invention is framed in the field of the processing of plastics of varied nature, such as PE, PP, PET, etc., coming from the plastic waste, either of industrial or domestic origin.

COLABORACIÓN BUSCADA

Companies interested in acquiring this technology for commercial exploitation through technology transfer agreements (see below) are sought:

- Patent license agreements.
- Technical cooperation agreements (R&D projects) for using the technology or application in other waste or sectors.
- Partners for a technology-based company to implement this technology.

Profiles of companies sought:

- Recycling of plastic waste.
- Manufacturers of plastic packaging.
- Producers of virgin raw material.