



High performance polymeric composites based on polycarbonate waste, including compact discs

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Abstract

A Polish institute developed new high performance polymeric composites based on polycarbonate waste, including compact discs. The polymeric composites might be applied in engineering, automotive, electronic and electrical industry, and can be made equivalent to the materials made by leading producers. The institute is looking for partners for joint further development and technical consultancy.

Description

A Polish institute active in developing and designing chemical processes and materials, modernization and optimization of existing processes, has developed a new pro-ecological technology of new high-performance polymeric composites based on polycarbonate waste, including compact discs. The end product are polymeric composites which are equivalent to and can substitute raw materials. The project's innovativeness is due to the application of the method of reactive extrusion and simultaneous filling (e.g. glass fibre, montmorillonite, graphite, nano silica) in the presence of modifiers which can lend support to the formation of compatible heterogenous structure with improved adhesion at the interface. Stable covalent bonds are formed due to the chemical reactions that take place during reactive processing in corotating twin-screw extruder between functional groups of polycarbonate and reactive modifier.

Innovations and advantages of the offer

The innovation is related to the method of reactive extrusion and simultaneous filling (e.g. glass fibre, montmorillonite, graphite, nano silica). Depending on the type and concentration of the filler, new polymeric materials can be obtained, including nanocomposites with unique properties e.g. considerably higher stiffness, good mechanical strength and better thermal properties.

Therefore, the obtained composite is an engineering polymer, which can be applied for many years in numerous industries such as engineering, automotive, electronic and electrical.

Advantages:

- recycling and reprocessing of waste materials (mainly compact discs)
- restriction of natural resources from petroleum cracking in favour of recycling materials (production waste, compact discs)
- wasteless and sewageless technology

For further information (including IPR status) please contact:

Susanna Chericoni
Phone: 39 050 931620
Fax: 39 050 931640
Email: s.chericoni@cpr.it