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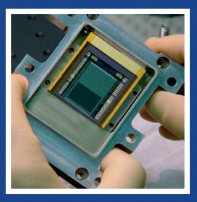

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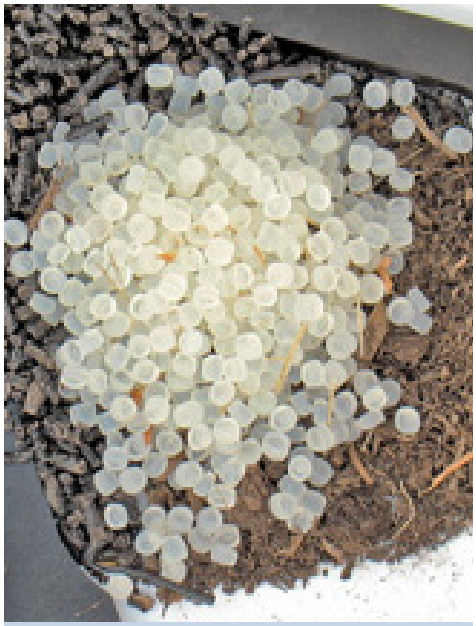

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PEAT FIBRE REINFORCED BIOCOMPOSITES

CURRENT SITUATION

Increasing trend in material science is different composite materials, where two or more materials are combined together. From biorefinery point of view these materials are based on different biomass fractions and thus called biocomposites. Manufacture of these new materials increases demand of different bioplastics as such or matrix material in composites. The worldwide capacity of bioplastic production is now 315 000 tonnes but it is expected to reach 1400 000 tonnes by 2010 [(1)].

Biocomposite research and applications are mainly focused on medical purposes (tissue compatibility needed) or on the use of biopolymers with fibres like flax, hemp, jute, cellulose (saw dust, cutter chips) or bamboo for various purposes. Automotive, packaging and construction industries are the main driving forces for these materials. Existing biocomposites however suffer from some deficient properties like low impact strength, narrow temperature durability range and weak moisture and biological resistances which could be improved with the help of new fibres, improved polymers and/or new additives.

[(1)] Endres Hans-Josef et al., Overview of the Current Biopolymer Market Situation, Bioplastic magazine vol.2, 3 (2007) p.31-33.

INVENTION

The invention comprises of peat (as a fibrous material), thermoplastic biopolymers and additives. Peat acts as fibrous filler or reinforcement material in composite. Peat based biocomposites are produced by using conventional plastic processing methods like compounding, injection moulding and extrusion. This approach utilizes peat as a new fibre material in biocomposites and it also brings new use for peat as material. Peat fibre reinforced biocomposites have lower water absorption compared to other conventional natural fibre composites. Usage of dry peat also enhances composite strength properties with polymers containing suitable functionality for fibre-matrix coupling.

SOLUTION BENEFITS

Peat fibre reinforced biocomposites with reduced water uptake properties and low raw material costs makes it possible to tailor new products for horticulture, agriculture, soil/road construction, plant shelters etc. in places, where biodegradability is needed. For example, in (herb and flower) greenhouse cultivation or corresponding places this material helps to get rid of polyolefin-based pots that are disposed after one use. The reduced water uptake may as well delay the start of biodegradation so the material is suitable in places where biodegradability, but also some durability, is needed before interment or composting.

This invention offers possibilities for value-added applications for peat and also new cost- efficient raw material opportunities for plastic processing industry. As well as new materials to be used in horticulture, agriculture, soil/road construction, plant shelters etc.

APPLICATION AREAS

Horticulture, agriculture, soil construction, construction, packaging

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