Reference: ?? (??)

DEGRADABLE ALTERNATING CYCLING KETENE ACETAL-ALKYL CROTONATE COPOLYMERS

Degradable polymer, biobased, ester backbone, recycle, consumer products, health, chemical engineering, transport and logistics

TYPE OF DEVELOPMENT

Degradable Polymers.

DESCRIPTION

In this invention, we show that it is possible to synthesize by free-radical polymerization biobased and biodegradable copolymers with alternating composition by copolymerizing a cyclic ketene acetal (e.g., MDO) and crotonic acid esters (e.g., butyl crotonate). Furthermore, additional conventional commercial monomers (e.g., acrylates, methacrylates, vinyl acetate) can also be copolymerized with the mentioned comonomers to yield copolymers that do maintain degradability properties.

INDICATION

- Industries of food, beverages and tobacco, lubricants, dispersants and paper industry.

NOVELTY/ADVANTAGE

The effects of environmental pollutions and greenhouse gases release have leaded to a clear change in the global environmental condition.This global crisis, together with the depletion of fossil resources, gave rise to an increasing attention towards degradable and/or bio-based polymers.

•Crotonic acid (CA) is an unsaturated carboxylic acid precursor of amethacrylic acid, used in polymeric materials. It can be obtained from thermal degradation of poly, a renewable source.

•MDO's unfavorable reactivity with commercial monomers make homogeneus copolymers production challenging, as MDO and CA derivates rarely react with acrylates, methacrylates, and vinyl acetate.

•Pairing crotonate monomers with MDO enhances efficient copolymerization allowing for degraded copolymers, a key feature in applications requiring single-use polymeric materials.

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Applicant:
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COOPERATION GOAL

Company interested in the license and industrial collaboration.