UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH
Unitat de Valorització

Reference number
MKT20210183_C

BioAdd: waterborne adhesive from biowaste

Adhesive containing biobased side streams from food, paper, and/ or textile industries, produced through a fast and environmentally friendly process avoiding the use of toxic reagents or solvents, and which adhesive properties can be easily customised for uses with different materials.

The Challenge

The depletion of fossil-based resources and the environmental concerns of their exploitation require the use of raw materials from renewable and abundant natural sources. Industrial biowaste containing lignocellulosics and proteins is considered as a low-cost biomass of minor commercial added value, usually incinerated for energy recovery. Therefore, its valorisation by conversion into value-added products, such as adhesives, will reduce both the fossil resources consumption and the waste generation.

The Technology

An adhesive composition, comprising a first compound including a lower alkyl vinyl ether-maleic anhydride copolymer and a second compound including at least one compound from natural origin containing hydroxyl or primary or secondary amines groups and/or mixtures thereof. The natural compound can be any of lignin, cellulose, hemicellulose, a polysaccharide, a protein, and/or their derivatives and mixtures thereof. The method consists in properly mixing the reagents in water or in aqueous buffer solution and the removal of the excess of solvent after the reaction.

Innovative advantages

- Valorisation of biowaste into added value adhesive products
- Use of waterborne adhesive formulations
- Simple, fast, economic and scalable process for adhesive production
- Adhesion on wood, polyurethane foams, leather, plastics

Current stage of development

Validated adhesiveness with different materials following ISO standards

Applications and Target Market

- Adhesive suitable for a broad range of material surfaces
- Waterborne adhesive
- Cheap, user- and environmentally-safe adhesive suitable for large surfaces, such as those in furniture and construction industries.

Adhesive that maintains joined two different sur-faces (wood and polyu-rethane foam) with high bonding strength that withstand sewing the re-sulting sandwich without losing adhesive properties

Business Opportunity
Technology available for licensing with technical cooperation

Patent Status
Priority application

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