



Bio-based adhesives

Current situation

Adhesives used for paper, board or wood products are often made from oil-based raw materials making the final product non-biodegradable or difficult to recycle. However, price increase of crude oil will increase the competitiveness of renewable raw material based products. Green issues and environmental legislation also direct attention to bio-based materials. Traditionally, renewable starch-based adhesives have been used as glues, e.g. for corrugated board, but the application areas have been limited due to poor water resistance and high water content of the adhesive formulations.

Invention

The new advanced starch-based adhesive technology developed by VTT has, to a large extent, solved the aforementioned limitations. The technology offers novel adhesive formulations from renewable raw materials which have 100% or high solid content and are applicable with state-of-the-art processing methods:

- Hydrophobic hot melt adhesives
- Water soluble hot melt adhesives
- Water based dispersion adhesives based on hydrophobic starch / biopolymer products
- Water based solution adhesives

Solution

VTT can offer a wide range of:

Water-based adhesives

- High solid content water solutions (up to 80%)
- Dispersion adhesives based on hydrophobic starch derivatives
- Flexibility in formulation and adjustable properties (viscosity, solids, water resistance, adhesion)
- Based on modified starch / starch derivatives with various substitution degrees and Mw
- Other bio and natural polymers can also be used in adhesive formulations



Why partner with VTT?

10 reasons for technology partnering with VTT

1. Key factor in Finland's success story with a track record to prove it
2. Licensing and co-venturing opportunities
3. Portfolio of more than 1,000 patents and inventions
4. New business and product concepts based on strong IP and world class research
5. Combined experience of more than 2,000 motivated researchers in eight focused areas of technology
6. Active member in hundreds of scientific & business communities
7. Excellent track record as coordinator and partner in EU projects
8. Collaboration with TOP 50 R&D companies in Finland
9. Global R&D partnership with 50 Fortune 500 companies
10. Market driven multi-disciplinary solutions

Invention

Hot-melt adhesives

- Solid content 100%
- Modifiable properties (melting, viscosity, adhesion, film forming)
- Based on starch derivatives or biopolymer grafted starch products
- Natural or synthetic biopolymer modificates can be used as components of hot melts

Compared to traditional hot melt adhesives these starch based products have also good grease resistance required, for example, in several packaging applications.

Applications

- Adhesive formulations for paper, board and labels
- Binders for paints
- Suitable formulations for priming
- Adhesives for construction materials

Patented technologies (US 5,780,568, EP 0950074, WO 03/068884, WO 03/068823, WO 04/029097, WO 04/037864).

Additional information

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