



## Method in production of starch pigments and applications on paper coatings

### Current situation

In paper making the use of mineral fillers has been continuously increasing. Mineral fillers are cheaper than wood fibres and they give paper opacity, brightness and better printability. However, when 1000 kg of this kind of paper is recycled, 50-80 kg of inorganic sludge is formed. There is a growing need for a method to manufacture organic fillers and pigments to replace mineral materials in paper production. Assuming fillers and pigments were organic and they could be combusted, 8 million tons of fuel oil could be replaced by them in energy production. Renewable starch-based pigments are lightweight, less harmful for wood fibres, less abrasive for paper machine components (wires, cutters etc.) and environmentally friendly.

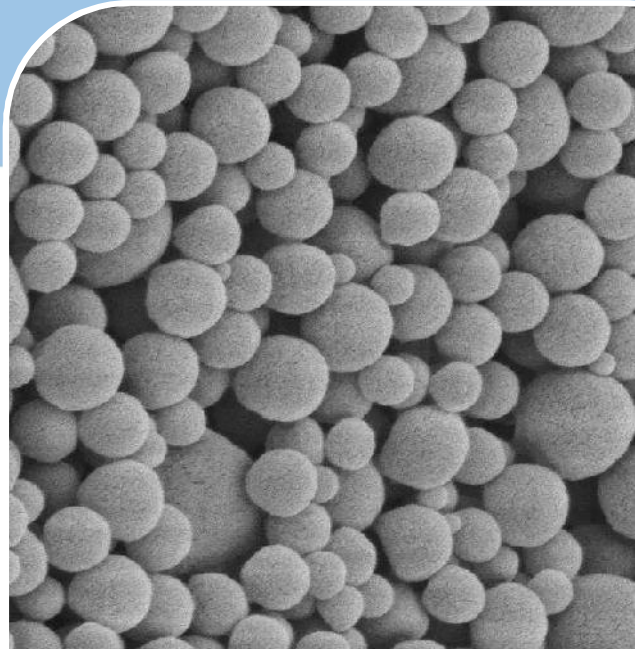
### Invention

VTT has developed and patented a novel synthesis and processing technology for starch-based pigments. The developed method enables manufacture of nanoscale pigments or stabilized porous filler structures of renewable materials to be used in paper converting instead of mineral materials. The approach is based on ideas well known in starch processing, manufacturing of chemicals and pigments.

The technology is now being verified in industrial pilot scale both in manufacturing and application sites.

### Solution benefits

- Stable raw material like plastics – production starts from dissolving starch acetate, precipitation with water (particle size definition), evaporation, filtration, washing and finally drying.
- Improved surface properties (gloss, smoothness, brightness), improved surface strength, improved offset printability (print gloss, density, dot size)
- Adhesion promotion as coated surface in extrusion coating



### 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

- Novel, clean and effective production technology
- Easy adaptation into current products
- Easy way to add new functional groups into starch backbone
- New business prospects with old customers and opening of totally new customerships.

## Applications and customers

### Application areas:

- Paper coatings
- Paper board coatings
- Extrusion coated paper / Paper board
- Mineral pigment replacement – new functional properties

### Potential customers in early phase:

- Current pigment manufacturers
- Current paper mineral manufacturers
- Chemical companies for paper converting
- Paper and board manufacturers

VTT is looking for a partner to produce pigments and provide application support for different end users.

VTT is also seeking industrial partners who are interested to apply this pigment derivative for their products either by replacing old technology or for totally new applications.

Starch based pigments are available from VTT for R&D purposes.

### Additional information

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