
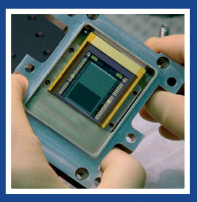


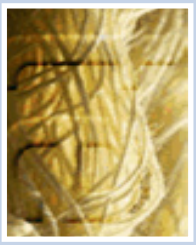

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Production of cellulose carbamate using new synthesis method

Cellulose carbamate (CCA) is targeted principally for current viscose using industry (Rayon-fiber and Cellophane-film manufactures).

In nutshell CCA is:

- CCA is in dry (delivery) state a stable powder that can be stored like any cellulose. The production of CCA and the application is separated totally - industrial logistics is now as usual.
- Application phase is also free of CS2 emissions.
- No environmental pollution - no occupational hygiene problems

INVENTION

The invention concerns the production method ("synthesis") of CCA.

The new synthesis technology works without any extra processing aids (no need for liquid ammonia or pre-radiation of pulp) using only cellulose and urea as active materials. The synthesis is solvent- free, it is based on standard industrial equipment and the scale-up of production is simple. The efficiency of the synthesis is high and all the residuals can be recovered easily.

SOLUTION BENEFITS

- Replace existing viscose process with CCA and get rid of air and water pollution
- Flexible production – tailored products also in small scale batches
- Replacement of synthetic binding agents by CCA (self adhesive property)
- Benefit of biodegradation of CCA-material vs. synthetic materials
- Benefit of built-in antimicrobial property of CCA in food contact applications
- Use as an ion exchange material in purification applications
- Adding some other active chemicals into cellulose body in synthesis phase (immobolization)

APPLICATION AREAS

- (Rayon) fiber industry
- (Cellophane) film industry
- Sausage casing manufacturing
- Nonwoven industry
- Paper converters
- Filter manufacturing