

Coating and finishing technology with chitosan

Chitosan

Motivation/challenge

In addition to customer needs, it is the increasing regulatory pressure that is forcing the switch from fossil-based to bio-based or at least biodegradable polymers. The use of synthetic polymers has become established, particularly in the area of finishes and coatings, due to the higher functionality requirements. However, this also means that the greatest need for action is to take account of customer requirements and legislation.

Solution

Chitosan is a natural biodegradable polysaccharide that can be obtained from fishery waste as well as from waste streams from larval protein production and from residues from industrial fermentation. Chitosan has proven antibacterial properties and/or inhibits the growth of odor-causing microorganisms. It has also been successfully used in the textile sector to improve water-repellent finishes. It has also been proven to improve the abrasion resistance of finished textiles.

Chitosan contains nitrogen in the form of an amino group, which suggests an application in the form of flame-retardant finishes, but also offers the possibility of easy modification and therefore the possibility of mapping other useful properties.

Process-relevant properties

Chitosan is soluble in water in a slightly acidic environment. It has rheology-modifying properties even in low concentrations. Depending on the specific application and formulation, it is also possible to select chitosans with defined properties (polymer size, charge). Compatibility and simultaneous use with many other substances has been proven, but must be tested on a case-by-case basis.

Aim of the cooperation

We aim to cooperate with industrial companies that work with us – either bilaterally as contract research or jointly in publicly funded projects – on the development of chitosan-based coatings and finishes to replace petroleum-based polymers. Initial investigations in a feasibility phase are possible at any time.



Improvement of water-repellent finishes with chitosan

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