

Biopolymers in tissue paper: the trends

Starch is a natural polymer widely used in papermaking. In wet end, it plays an important role in sheet formation, drainage and physical characteristics and has a positive impact on runnability. Innovation is at the heart of ROQUETTE's preoccupation with the needs of papermakers.

Régis HOUZÉ – ROQUETTE (Biopolymers VECTOR®)

VECTOR® technology, dedicated for Tissue production, is based on a new process which allows the grafting of different functional groups on to the starch polymer chain. These modified products are available in the form of ready-to-use liquids which have FDA approval. The products in the VECTOR® range are differentiated by their dry solids, rheology and charge density. Offering new opportunities to achieve retention, drainage, dry & wet strength, but also softness and dust elimination, these solutions are built to lower the global cost.

Products from the VECTOR® range have:

- High and stable charge densities.
- Stable viscosity and concentration during storage and use.
- Ease of use (store, handle) with a low risk of equipment failure.

IN TISSUE, CATIONIC VECTOR® IS MAINLY USED TO IMPROVE FIBRE BONDING, which allows the refining to be reduced and a higher proportion of short fibres to be used, leading to improved sheet softness and bulk. The bonding also reduces the amount of paper dust produced during manufacture and conversion.

ROQUETTE IS THE ONLY ONE HAVING DEVELOPED A RANGE OF CATIONIC AND ANIONIC BIOPOLYMERS in order to meet the need of producers with or without Wet Strength Resin (WSR). The advantages of anionic biopolymers are :

- Stability: product is stable itself and stabilize the wet-end chemistry balancing the over charge when using too much cationic aids.
- Production: good balance with ionicity allows to improve machine runnability reducing breaks and WSR consumption.

In these cases, because fibre bonding is improved, it is possible to reduce the amount of refining required which in turn leads to improved drainage on the wire and reduces dryer load. This not only reduces the energy cost/tonne but also enables the productivity of the machine to be increased.

The table before shows that not only the chemistry has been improved, but also the direct effect in a better working order of mechanical properties.

On this machine, it was possible to avoid breaks and reduce the overall amount of WSR resulting in cost saving and less chemical used.

In this paper mill, the anionic biopolymer is introduced to the fan pump, just after the WSR (machine chest).

CONCLUSION: the advances made in making new products derived from starch allow the papermaker to consider new approaches with bio-sourced polymers. These specially conceived products can improve the efficiency of existing additives and, in certain cases, reduce the total amount of starch being used while maintaining the product quality. As new generations of these products are developed, the functionality and performance will be further improved opening new areas for the use of starch-derived materials. ROQUETTE's objective is to provide products to improve production efficiencies and reduce overall costs. •

