

BioHyg

Sustainable, biobased hygienic products

Project aim

The main objective was to develop a functional, marketable hygiene textile composed of several nonwoven layers with different property profiles.

- consist entirely of biobased and ecologically harmless materials,
- wear comfort, feel and barrier safety,
- water absorption capacity of 15 g/g, water retention capacity of > 50 %,
- basic weight of the overall composite should not exceed 220 g/m².

Approach

The viscose speciality fibers used were supplied by Kelheim Fibres. Each hygienic absorbing textile is a composite of 3 or 4 layers. The TopSheet has to be very soft because of its skin contact and must not be absorbing but semi permeable. Therefore, semi hydrophobic and hydrophilic properties are necessary which were achieved with a blend of Bio-Cotton and the hydrophobic viscose fibre Olea in a spunlaced nonwoven. Acquisition Distribution Layers (ADL) need an open structure, should be semi permeable with low rewet back to the TopSheet and a good distribution on the surface area. A spunlaced nonwoven, developed by using Galaxy[®] viscose fibres and hydrophobic PLA biopolymer fibres was developed. For the Absorbent Core it is mainly important to hold the liquid back and to have a high absorption of liquid in the first place. With Bramante viscose fibres, blended with thermoplastic PLA/PBS bicomponent fibres the best results were achieved. The nonwoven for the absorbing core was processed by carding, needlepunching and an additional thermobonding. The BackSheet should be completely safe and leakage proof. Therefore, a spunlaced nonwoven made of PLA bicomponent fibre was additionally calendered.



Fig. 2: absorbing pad with TopSheet, ADL, Core, BackSheet (top to down)

Results

The combination of the best practice nonwoven layers achieved the following results:

- TopSheet softness-value of 3,06 (measured by a Tissue Softness Analyzer from Emtec)
- Water absorption capacity = 26 g/g
- Rewet = 0,157 g/g, Suction Time = 2,41 s
- Basic weight: 25 gsm (Top) + 40 gsm (ADL) + 100 gsm (Core) + 40 gsm (Back) = 205 gsm in total
- Core efficiency = 67,73 %, Distribution area = 61,03 %

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INNO-KOM

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