

InMask – Development of sensorized meltblown nonwovens for smart face masks

Motivation

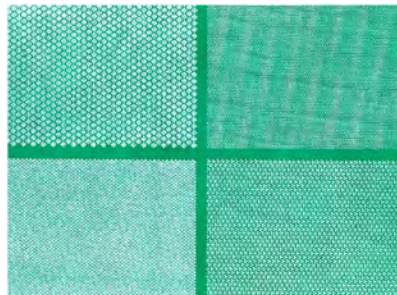
The proposed research project aimed to develop a mouth-nose covering with an integrated non-electric moisture indicator based on PP or PET in accordance with DIN EN 149. The indicator was to display a visible color change at critical moisture levels, thus providing the wearer with information about the condition of the mask. The background to this development is the decreasing filter effect as moisture increases in the meltblown nonwoven fabric, which should be detected early by the indicator. Until now, functionality has been ensured by means of rigid maintenance intervals for the masks. The indicator solution could ensure more efficient filter use.

Solution approach and results

The project results demonstrate the feasibility of moisture indication using hydrochromatic ink. This was applied in a downstream printing process to the covering spunbond layer of the filtering meltblown layer. The color change of the hydrochromatic ink from white to transparent as moisture absorption increased enabled a non-electrical moisture indicator to be created. Tests showed that the paint adhered well to the material.



Manufacturing of a meltblown layer at STFI



Possible print patterns on colored spunbond nonwoven



Color change with increased moisture

Acknowledgement

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The final report on this project is available on request.

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