



**TALLINN UNIVERSITY OF TECHNOLOGY**  
SCHOOL OF ENGINEERING  
Department of Materials and Environmental Technology

**DEVELOPMENT OF BIODEGRADABLE ADULTS'  
INCONTINENCE PADS**  
**TÄISKASVANUTE BIOLAGUNEVATE URIINIPIDAMATUSE  
SIDEMETE TOOTEARENDUS**

MASTER THESIS

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Tallinn 2023

Disposable incontinence products cause massive amount of domestic waste in the world, which will be dumped onto landfills or incinerated. For disposable incontinence products it is predicted that with next years the production and therefore waste capacity only increases.

The aim of the master thesis was to create biodegradable adults' incontinence pad. To achieve the main aim, suitable way to align textile fibres to form a nonwoven material was found. Also, suitable textile fibres for absorbent core and suitable other materials for pad were found to make the product biodegradable. And lastly, technical package, minimum requirements table and incontinence pad's prototype using analogous materials was prepared.

To get the better understanding of adults' incontinence products, the research about their materials and brands' opinions about sustainability was carried out. Furthermore, technologies of making incontinence products and absorbent cores were examined. Based on the theoretical information found were chosen experiments that were carried out with competitors' products and developed pad's prototype materials. Finally, regulations for medical devices were read. Information regarding certificates and symbols for developed product and its package was researched. To get customers opinions about their currently used products and using incontinence products made of sustainable materials was carried out a customer survey.

The experimental part firstly focused on testing competitor's products, as there was not possible to found out any parameters from the literature that could be used when planning an incontinence product. The results were taken as minimum requirements for the new developed pad's properties. Second part of the practical section concentrated on testing new developed pad's prototype materials and making two of the layers. Observation, measuring thickness, mass per unit area, observation with digital and light microscope, absorbent capacity, colour fastness and pH level were the tests that were carried out.

The third part of the thesis was dedicated to the product development of a new pad. The main idea for product development was to create a biodegradable or industrially compostable pad. For the developed pad description of the product, technical drawings, specification sheet were done and calculations and suggestions for production and utilization were given. As a result, incontinence pad's prototype of similar materials was made.

To sum up, the main goal that was stated for the thesis to develop a biodegradable adults' incontinence pad was fulfilled.