

## Baby Bed Sheets with a Nanofiber Membrane

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**Abstract :** Nowadays there are countless kinds of bedsheets or mattress covers for little children which should stop any liquid getting into the mattress. It is quite easy to wash the cover of the mattress, but it is almost impossible to clean the body of a mattress which is made of latex foam, wool or synthetic materials. Children bedsheets or mattress covers are often made with plastic coating which is not steam or air permeable and therefore is not very hygienic. This is our goal: by laminating a nanofiber membrane to a suitable bedsheets textile material, we can create a bedsheets which is waterproof but at the same time steam permeable and also partially breathable, thanks to the membrane. For the same reason, nanofiber membranes are widely used in outdoor clothing. The comfort properties and durability of the new nano-membrane bedsheets were studied. The following comfort properties were investigated: steam permeability - measured in accordance with Standard ISO 11902 hydrostatic resistances - measured in accordance with Standard ISO 811 and air permeability - measured in accordance with Standard ISO 9237. The durability or more precisely the wash resistance of the nano-membrane bedsheets was also measured by submitting the sheet to 30 washing cycles. The result of our work is a children's bedsheets with a nano-membrane. The nano-membrane is made of polyurethane to keep maximum flexibility and elasticity which are essential for this product. The comfort properties of this new bedsheets are very good especially its steam permeability and hydrostatic resistance.

**Keywords :** bed sheet, hydrostatic resistance, nanofiber membrane, water vapour permeable

**Conference Title :** ICFDH 2018 : International Conference on Fashion and Dress History

**Conference Location :** Dubai, United Arab Emirates

**Conference Dates :** June 21-22, 2018