

Pressure Sensitive Adhesives for Ostomy Care

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ABSTRACT

2.5 million people live with an ostomy, which is a condition resulting from treatment of digestive and urinary diseases. They have a surgically created opening on their stomach for discharging waste, to which an ostomy device is attached to collect the waste (Figure 1). Coloplast is a medical device company, which aims at bringing new and innovative products to ostomy care market to improve quality of life of people living with an ostomy. To realize this goal, we are combining user insight with new technologies in collaboration with industrial and academic partners.

The pressure sensitive adhesive is an important component of the ostomy device. It is the interface between the human skin and the bag and it is composed of a hydrophobic polymer matrix and hydrophilic particles named hydrocolloids. The hydrophobic matrix assures adhesion to the skin, while the hydrocolloids absorb the moisture from the skin and the stoma effluent.

Addition of hydrocolloids to a hydrophobic polymer matrix has implications on the properties of the pressure sensitive adhesive. The modulus of the adhesive increases, and it becomes less sticky, which in many cases is undesired. A good understanding how to balance

stickiness, rheological properties as well as water absorption is critical for a new generation of pressure sensitive adhesives.

We investigated how concentration, size and size distribution of hydrocolloids affect the rheological properties as well as water absorption of pressure sensitive adhesives. To do this, we generated simple model systems by mixing the hydrophobic polymer and hydrocolloids, where the concentration, size and size distribution of hydrocolloids are varied. We found out that the concentration of particles in the formulation has the largest affect both on rheology and water absorption, which was expected. To our surprise, the size and size distribution of hydrocolloids within the tested range did not have a significant effect on the rheological properties and water absorption.

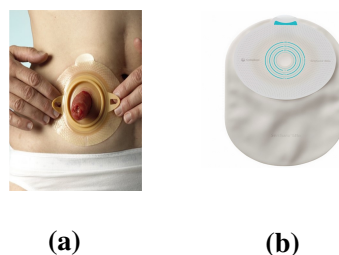


Figure 1: (a) An ostomy base plate on a consumer with stoma (b) A full ostomy device