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Publication date:
2019

Document Version
Peer reviewed version

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Citation (APA):

Chiaula, V., Mazurek, P., Nielsen, A. C., & Skov, A. L. (2019). *Advanced wound care adhesives with improved moisture handling capabilities*. Abstract from 2019 Science of Adhesion Conference GRC, South Hadley, United States.

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Advanced wound care adhesives with improved moisture handling capabilities

Valeria Chiaula^{1,2} (valchi@kt.dtu.dk), Piotr Mazurek¹, Anders Christian Nielsen² and Anne Ladegaard Skov¹



1. Danish Polymer Center, Department of Chemical and Biochemical Engineering, Technical University of Denmark, Building 227, 2800 Kgs. Lyngby, Denmark
2. Coloplast A/S, Holtedam 1-3, Humlebæk, Denmark

Broadly, for wounds to heal, a moist, clean and warm environment is required. A moist wound bed easily promotes growth factors and many cell types including epithelial cells to migrate, facilitating wound edge contraction. Thus, appropriate dressings play a significant role to create and maintain such environment.^[1] Silicone adhesives are silicone elastomers which are not fully crosslinked but remain close to the gelation threshold (i.e. with a low crosslinking degree).^[2, 3] Within the field of advanced wound care, silicone adhesives are currently the preferred, state-of-the-art adhesive system due to its gentle skin adhesion properties. However, due to their hydrophobic nature, current silicone adhesives for wound care face challenges when it comes to moisture handling. Here, we propose a novel, skin-friendly, industrially relevant glycerol-silicone hybrid adhesive with improved moisture handling due to the incorporation of emulsified glycerol. Various parameters will be taken into account in order to develop a relevant adhesive, in particular glycerol content, glycerol domain size and adhesive thickness to allow for a controlled moisture absorption. Additionally, we will show that required adhesive properties, such as peel adhesion and tackiness, are not compromised by the incorporation of emulsified glycerol.

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