

# Test methods for primary wound dressings and microscopic observation of commercial wound dressings

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## Abstract:

The role of the dressing is to protect the wound against external factors and maintain optimal healing conditions. The dressing should: maintain high moisture of the wound, remove excess exudate, not damage the newly formed tissue when changing the dressing, be a barrier to bacteria, be biocompatible and non-allergenic. Due to the wide availability of various types of dressing materials, the project "Oh my God, what to do with these wounds, what dressing to choose and how do they differ?" was created. As part of the project, the purchase of various types (antibacterial, hydrogel, superabsorbent, etc.) of commercial dressings from various manufacturers was planned and their key parameters were characterized. The structure of dressing materials, absorbency and vapor transmission were analyzed.

**Keywords:** dressing, wound healing, moisture vapour transmission rate

Wound dressings are materials that are designed to aid in the healing process and protect the wound from further damage. In addition to effective dressing, it is important to consider patient comfort and the ability to monitor drainage [1]. Wound healing is a complex process that involves various cellular and molecular processes such as inflammation, cell migration, angiogenesis, temporary matrix synthesis, collagen deposition, and reepithelialization [2]. The dressing should: maintain high moisture of the wound, remove excess exudate, not damage the newly formed tissue when changing the dressing, be a barrier to bacteria, be biocompatible and non-allergenic, good mechanical properties as well as gas exchange capacity, water vapor permeability [1].

Understanding the properties and functions of dressings enables their practical application in various settings. To conduct a comparative study, various types of commercial wound dressings were selected.

The following test of dressing were performed:

- SEM observations of the topography were carried out using SEM Quanta 200 (W) from FEI (USA),
- The absorption under free soaking was determined according to the guidelines described in EN 13726-1:2002/AC:2003 [3],
- Moisture vapor Transmission Rate (MVTR) in contact with water vapor was determined using the guidelines, as defined in EN 13726-2:2002 [4].

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