

Fluid retention of Foam Dressings

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Introduction

For optimal, uncomplicated wound healing, the avoidance of maceration of the periwound area is a crucial criterion for success. This is achieved with a wound dressing which, besides possessing a high initial absorption capacity, also guarantees the rapid transport of exudate deep into the material. In conjunction with compression treatment, the maintenance of this absorption capacity by the wound dressing is an important factor in reducing the risk of maceration. A high degree of retention prevents the exudate from reaching the edges of the wound or absorbed exudate from being discharged back onto the wound surface or onto the edges of the wound under pressure.

Materials and methods

Five popular foam dressings with no adhesive edges were subjected to a fluid absorption test (saline solution, based on EN 13726 or Edana Method 442.1-99), and the residual absorption capacity was then determined by application of a weight (pressure simulation). This capacity is also described as retention.

Identical values for absorption under pressure were also obtained when the weight was applied to the wound dressings before the liquid was added to the product.

Procedure and calculation

Discs with a diameter of 50 mm were punched out of the products, their weight was determined, and they were soaked for 24 hours with a 0.9% saline solution at room temperature. The wet diameter of the product discs and the increase in their weight were then calculated. Next, the swollen sample was covered with the weight, which was equivalent to 1,120 g / 19.63cm² or about 35mmHg (compression

pressure), and the expressed liquid was aspirated. After removal of the weight, the sample was re-weighed. The ratio between absorption capacity under pressure and free absorption capacity (without pressure) gives the retention capacity.

Calculation bases

- Product discs with a diameter of 50 mm are equivalent to a surface area of 19.63 cm².
- A 1,120 g weight is equivalent to a pressure of about 35 mmHg (on a surface area of 19.63 cm²).
- Correspondingly greater wet diameters require correspondingly greater application weights.

Results

As Figure 1 clearly shows, PermaFoam™ possesses the highest residual absorption capacity (retention) under pressure compared with the competitor products tested. In comparison with the free state, the absorption capacity under a 35 mmHg pressure is reduced by only 12%. This high retention is due to its polymeric properties and special pore structure.

Retention

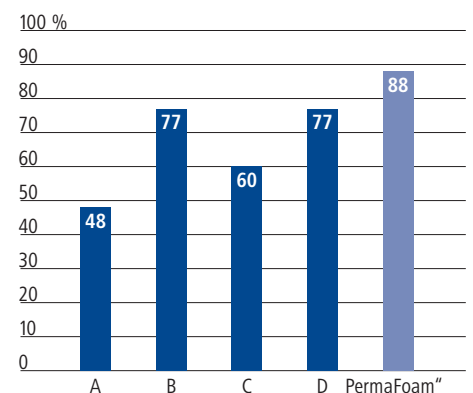


Fig. 1: Comparison of residual absorption capacity (retention) of five foam dressings under a 35 mmHg pressure.

Discussion

The high affinity of the foam material in PermaFoam™ for the exudate binds this very efficiently. This prevents exposure of the wound to the aggressive proteolytic wound exudate and therefore also wound irritation, and additionally protects the periwound area from maceration. The high residual absorption capacity under pressure makes this wound dressing particularly suitable for use in compression treatment. Since PermaFoam™ retains its absorption capacity almost completely under pressure, PermaFoam™ can be left on the wound for several days. This reduces the amount of wound care needed and therefore leads to greater cost-efficiency.

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