

3D spacer textiles; a new clinically and cost-effective alternative to hybrid and foam mattresses.

AeroSpacer is a revolutionary new reactive non-powered mattress comprising 3D spacer textiles, which are shown to be superior to foam.^{1,2} The new mattress was developed by Medstrom Healthcare in collaboration with the Bioengineering and Tissue Health Faculty of Health Sciences at the University of Southampton.

This new 3D spacer textile mattress:

- Actively removes heat and moisture from the skin/surface interface¹
- Provides effective pressure redistribution by displacing load and maximising immersion and envelopment¹
- Absorbs external and internal shear strain, reducing tissue distortion over bony prominences¹
- The complete therapeutic mattress can be laundry disinfected and tumble dried, or can be simply wiped clean

Independent and published testing demonstrates how passive body movement circulates air throughout the mattress, reducing temperature and humidity at the skin/surface interface.¹ This creates a cooler, less moist environment conducive to preventing moisture lesions and improving comfort levels. This effect can be accelerated by the introduction of an optional fan.

The researchers also assessed how AeroSpacer and foam responded to non-uniform loading (simulating the effect of shear) and uniform loading (simulating the effect of pressure).

Key Findings:

- Whereas foam held the temperature at the perspiration threshold³, AeroSpacer reduced temperature to below the perspiration threshold, demonstrating its ability to reduce temperature at the skin/surface interface. Fig 1.
- Whereas foam maintained relative humidity at 100%, AeroSpacer demonstrated a 20% reduction without the fan and a 60% reduction in relative humidity when the optional fan was used, demonstrating how AeroSpacer helps prevent and heal moisture lesions. Fig 2.
- AeroSpacer demonstrated a greater displacement than foam of both uniform and non-uniform load by up to 30%, indicating a superior level of immersion and envelopment and an ability to reduce the effect of shear strain in tissue over bony prominences. Figs 3 & 4.

AeroSpacer can be laundry disinfected, improving control of infection processes and delivering cash-releasing savings and environmental benefits by significantly reducing the number of condemned mattresses.

AeroSpacer is the first mattress that can be machine washed and tumble dried. This not only improves governance with improved infection prevention procedures, it also provides significant cost savings versus foam, as disposal rates of 20% per annum due to strikethrough would no longer be an issue. With a 2-year performance warranty and 5-year life expectancy this may create a paradigm shift by switching from foam, the mainstay of hospital mattresses for more than 50 years and introducing spacer textiles, mattresses fit for the 21st Century.

1. Evaluation of the skin microclimate and shear strain performance of the AeroSpacer 3D spacer mattress; Worsley P; Parsons B; Bader DL; University of Southampton, European Pressure Ulcer Advisory Panel Conference Proceedings. Ghent ©2015 EPUAP/NPUAP/PPPIA.
2. A new pressure-relieving mattress overlay for the prevention of pressure ulcers in elderly patients at risk. Ricci E, Cassino R, EWMA Journal 2013 Vol 13 No 1
3. Lachenbruch, C. Skin cooling surfaces: estimating the importance of limiting skin temperature. Ostomy Wound Management 2005; 51.

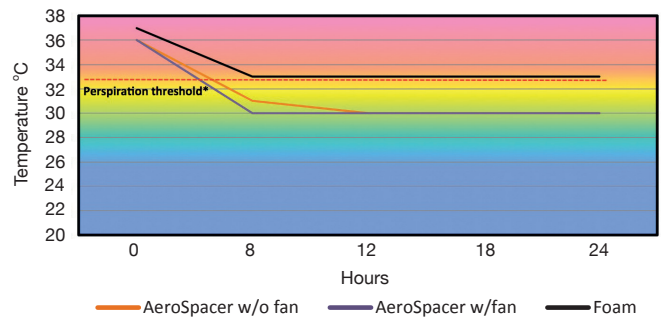


Fig 1 Results of temperature testing on materials, demonstrating the 'Lachenbruch' surface sweat threshold.

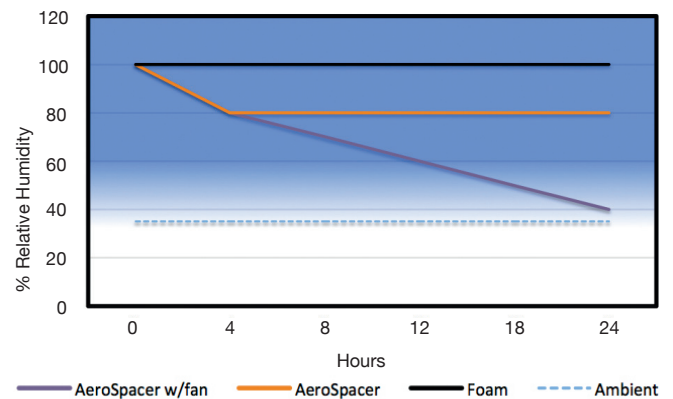


Fig 2 Results of relative humidity testing on AeroSpacer and foam.

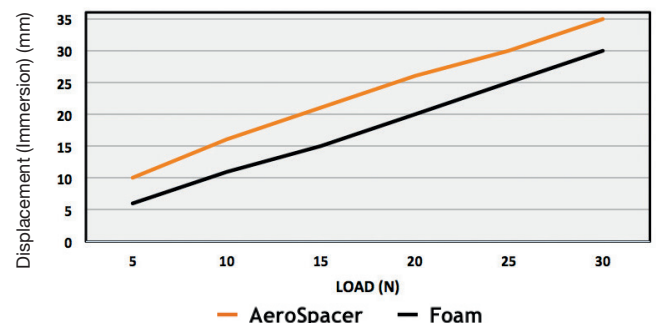


Fig 3 Results of load testing at a 30° incline representing shear absorption.

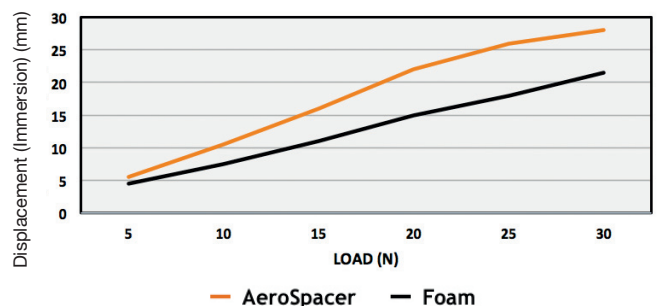


Fig 4 Results of vertical load testing representing immersion.

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