HOVERTECH International

Technical Studies Supporting Pressure Injury Prevention

"Giving me the confidence to make the best decisions for my patients."

Independent Testing Proves the Next Generation of Hovermatt SPU Products and the Hoversling Repositioning Sheet Uphold Your Efforts for Pressure Injury Prevention

MANAGES MICROCLIMATE PROPERTIES OF TRANSFER DEVICE

REDISTRIBUTES PRESSURE UNDER BONY PROMINENCES

REDUCES FRICTION AND SHEAR

EASILY TRANSFERS, BOOSTS AND REPOSITIONS

The Highly Breathable HoverMatt® Single-Patient Use (SPU) Air Transfer System Allows Caregivers to Easily Transfer, Boost and Reposition, Facilitating Compliance to Pressure Injury Prevention Clinical Practice Guidelines

Hovermatt SPU Product Line: HoverMatt® SPU; HoverMatt® SPU Link; HoverMatt® SPU Half-Matt; HoverMatt® SPU Split-Leg; HoverSling® Split-Leg; HoverSling® Repositioning Sheet

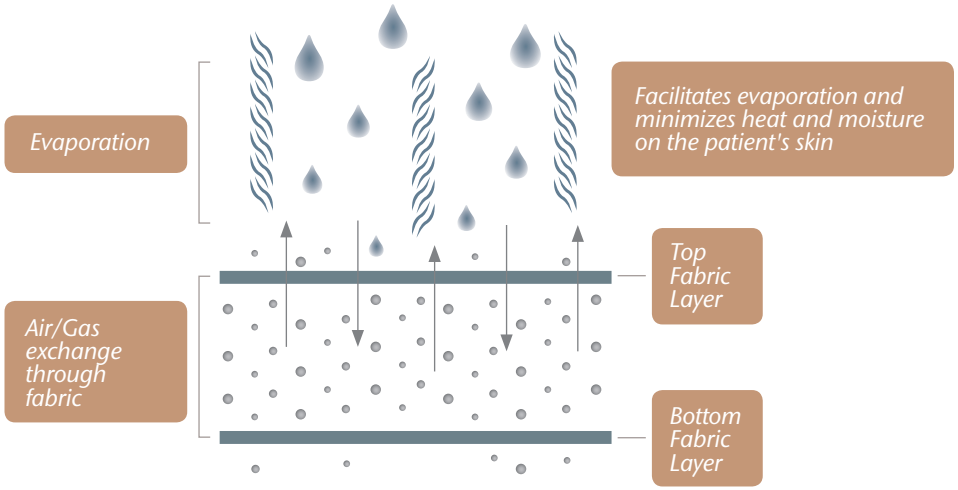
Safe Patient Handling is integral to pressure injury prevention.
American Nurses Association, 2013. Safe Patient Handling and Mobility. Nursesbooks.org, Silver Spring, MD.

Redistribution of pressure and management of friction and shear are key elements that can be facilitated through the use of effective patient handling and positioning equipment. Air transfer technology reduces the pull force by 80-90%, making it easier to transfer and reposition. Additionally, patients will be moved on a stable cushion of air, eliminating shear forces and significantly reducing friction when supine or turning laterally. This ease of transfer benefits the patient by minimizing risk for soft tissue damage and benefits the caregiver by minimizing risk for work-related injury.

Manages Microclimate with Advanced Breathable Fabric Technology*

When considering the ideal conditions for pressure injury prevention, the local temperature and moisture, or relative humidity (microclimate), at the interface of body and support surface are often linked. HoverTech's highly breathable fabric assists in creating an optimal microclimate by allowing air to circulate at that interface and moisture to evaporate. This enhancement protects the integrity of the patient's skin and minimizes the potential for pressure and moisture related injuries.

"Microclimate management includes moderation of temperature and moisture levels at the interface of skin and support surface. This means that humidity is managed to avoid extremes of either excess wetness or drying of the skin." Clark M, Black J Skin IQTM Microclimate Made Easy. Wounds International 2011;2(2).



CLINICAL STUDIES HAVE ILLUSTRATED:

- Higher skin temperatures and pressure reduce blood flow, impeding the delivery of nutrients to the skin.
Lachenbruch, C., 2005. Skin Cooling Surfaces: Estimating the Importance of Limiting Skin Temperature. Ostomy/wound management 51, 70–79.
- Excess moisture increases the friction coefficient, when combined with patient handling tasks, increases the risk for friction and shear.
Source: (Wound Healing: Evidence-Based Management By Joseph M McCulloch, Luther C Kloth - F.A. Davis, Jul 1, 2010)

**The data is calculated at a 95% confidence interval. Adapted from the Sweating Guarded Hotplate Project, Project #1710 - EC Service, Inc. Data on file at HoverTech International.*

Independent laboratory testing of HoverMatt SPU products and HoverSling Repositioning Sheet, using the latest industry recognized standards, illustrates high evaporative properties and compatibility with low air loss surfaces

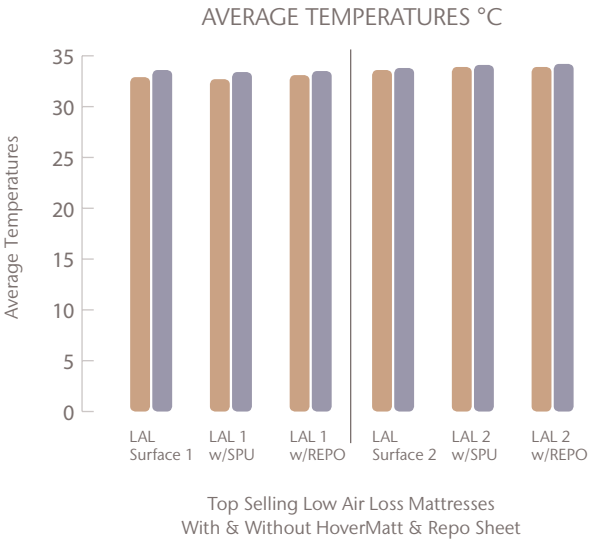
Breathability is measured by the Moisture Vapor Transmission Rate (MVTR). The higher the MVTR, the more permeable the membrane and the more breathable the fabric. The advanced nylon fabric has been tested using the industry standard ASTM E96 B Method test. The resulting evaporative properties of the fabric used in the HoverMatt® SPU were 23% higher than the standard threshold for breathability. These test results demonstrate and support the evidence for the performance of the advanced fabric.

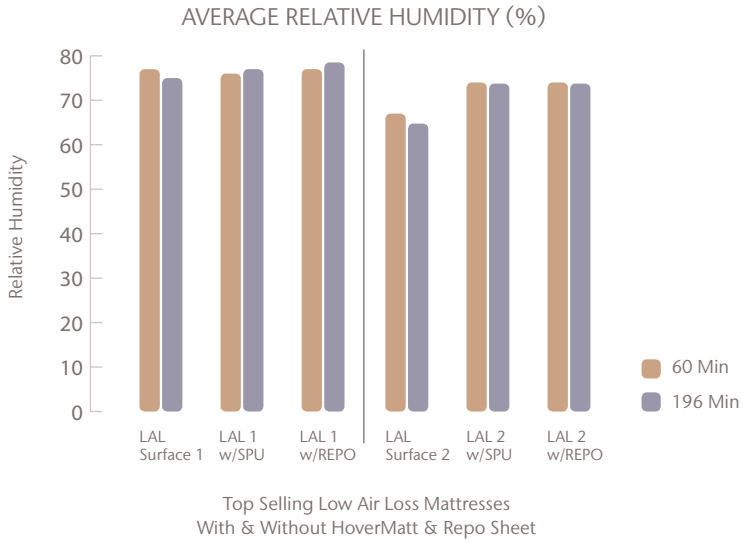
Heat And Water Vapor Testing (Body Analog Test Method)*

Description: One of two new standardized tests for microclimate.

Method: The HoverMatt SPU and the HoverSling® Repositioning Sheet were tested on two low air loss support surfaces. This test uses a metal thermodynamic rigid cushion loading indenter (TRCLI) to deliver temperature, load and moisture in the form of water vapor to the support surface. The indenter-support surface interface conditions are monitored by temperature and humidity sensors.

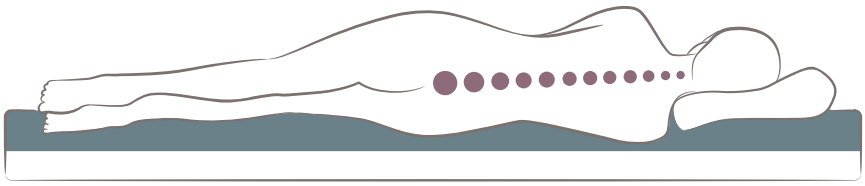
Results: With the use of the HoverMatt SPU and the HoverSling Repositioning Sheet, there is no clinically significant difference between the performance of the control and the HoverMatt SPU and Repositioning Sheet in either temperature or relative humidity.





**The data is calculated at a 95% confidence interval. Adapted from Heat and Water Vapor Testing (Body Analog Test Method), Project #1710 - EC Service, Inc. Data on file at HoverTech International.*

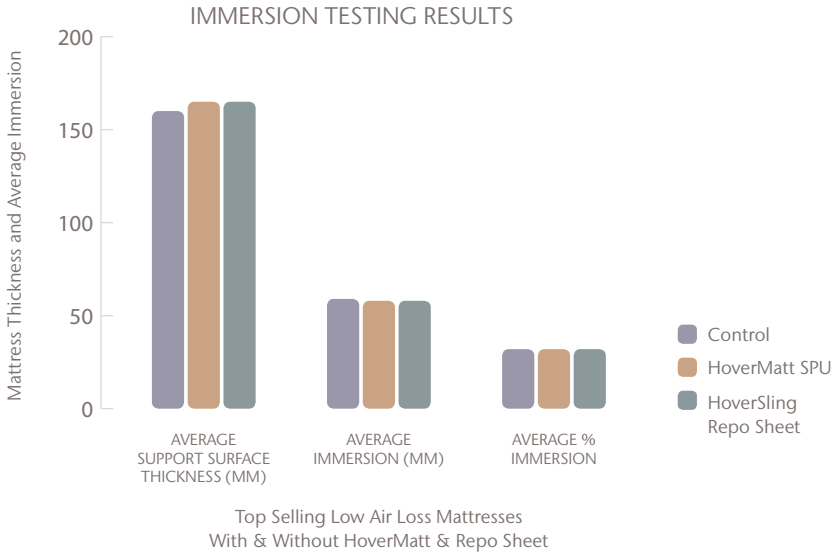
Immersion Testing*



Description: *Results of the immersion test method indicate how far a load sinks down into the support surface. It depicts the potential for pressure redistribution.*

Method: *The tests compare a baseline of results for immersion with the patient directly on a support surface to the results for immersion of the patient with the HoverMatt SPU and the HoverSling Repositioning Sheet at the interface of the patient and the support surface.*

Results: *The presence of the HoverMatt SPU or Repositioning Sheet did not have a significant impact on immersion. The minimal difference in the comparative studies indicate that it is safe to leave the HoverMatt SPU or Repositioning Sheet under the patient for all day care.*



**The data is calculated at a 95% confidence interval. Adapted from the Immersion Testing Project, Project #1537 - EC Service, Inc. Data on file at HoverTech International.*

The combined evidence-based benefits of HoverTech's air-assisted devices results in increased alignment with clinical practice guidelines for pressure injury prevention standards.

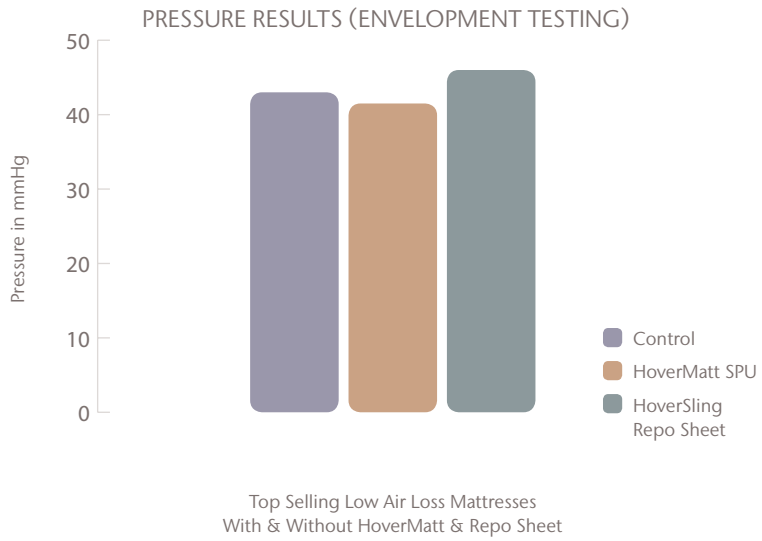
Envelopment Testing*

Description: Designed to characterize how well a support surface conforms or fits to the irregularities of the body.

Method: The test is performed with the support surface alone (control) and with the HoverMatt SPU or Repositioning Sheet on top of the support surface. The results of the test measure how far the support surface allows the body to sink into it and also how the support surface conforms around the body. If the result of testing is the same or very close, in both scenarios, that means that there will be no clinically significant difference between the support surface alone and the support surface with the HoverMatt SPU at the interface between the patient and the support surface.

Results: The presence of the transfer sheets did not have a significant impact on immersion quantifying compatibility with low air loss surfaces, proving the HoverMatt SPU devices can be left under the patient.

Summary: The results of standardized testing for microclimate (Body Analog Method) along with test reports on Immersion and Envelopment show that the HoverMatt SPU and the HoverSling Repositioning Sheet are compatible with low air loss surfaces, in the management of microclimate and pressure redistribution.



**The data is calculated at a 95% confidence interval. Adapted from the Envelopment Testing Project, Project #1710 - EC Service, Inc. Data on file at HoverTech International.*

Friction and Shear

Shear stresses – and by association, friction – are important extrinsic factors involved in the development, and sometimes persistence, of pressure ulcers. However, many uncertainties remain about the role and critical levels for shear stress and friction in pressure ulcer development. Even so, a clear understanding of how shear stresses and friction occur will undoubtedly assist clinicians in consistent implementation of aspects of pressure ulcer prevention protocols designed to minimize shear stresses and avoid increasing the coefficient of friction of skin.

International Review. Pressure Ulcer Prevention pressure, shear, friction and microclimate in context, 2010.

Gerhardt, L.-C., Strassle, V., Lenz, A., Spencer, N.., Derler, S., 2008. Influence of epidermal hydration on the friction of human skin against textiles. Journal of The Royal Society Interface 5, 1317–1328. https://doi.org/10.1098/rsif.2008.0034

Sliding Resistance Test* – A Measurement of Friction and Shear

Description: Measures the force required to pull a 50th% male femoral epicondyle to L1 mannequin down a support surface.

Method: A male mannequin is pulled down a support surface, simulating patient migration. This data is comparable to the shear and bulk modulus forces applied to a bed-bound patient.

Results When Not Inflated: The HoverMatt SPU and the HoverSling Repositioning Sheet do not increase risk to skin and soft tissue associated with the mechanical forces of shear and friction.

**The data is calculated at a 95% confidence interval. Adapted from the Sliding Resistance Testing Project, Project #1518 - EC Service, Inc. Data on file at HoverTech International.*

Pressure Injury Prevention Guidelines

The National Pressure Ulcer Advisory Panel, the European Pressure Ulcer Advisory Panel and the Pan Pacific Pressure Injury Alliance have written Clinical Practice Guidelines to aid in prevention and treatment of pressure injuries:

- Never drag a patient across any surface during transfer or repositioning. Use devices and techniques that reduce tissue damage due to friction and shear.
- To avoid areas of localized pressure from patient handling devices that may result in additional tissue damage, only use equipment that has been specifically designed to stay in place and to be left under the patient.
- Turn and reposition all individuals at risk for pressure injuries and establish schedules by customizing frequency and duration. Use the 30° tilted side-lying position or the prone position if tolerated and her/his medical condition allows.
- Consider level of immobility, exposure to shear, skin moisture, perfusion, body size and weight of the individual when choosing surfaces. Use breathable incontinence pad when using microclimate management surfaces.

National Pressure Ulcer Advisory Panel (NPUAP, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Emily Haesler (Ed.).

Cambridge Media: Osborne Park, Western Australia; 2014.

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