

Variable Pressure Foaming

in polyurethane systems shows a clear reduction of pressure in an *in vivo* test model.

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Introduction

Pressure ulcers occur on any body part and are caused by a combination of factors, with unrelieved pressure as an important one: pressure relief is essential for prevention and treatment of pressure ulcers.

A new manufacturing process, Variable Pressure Foaming (VPFSM), has led to a viscoelastic polyurethane foam technology which produces an open-cell foam with 40% higher air flow than traditional technology. In addition, Surface Modification Technology (SMTSM) is used to generate high levels of pressure distribution in known, high-risk anatomical areas. The technology produces no detrimental emissions during manufacturing and uses materials derived from renewable natural elements.

Test methods

Pressures on VPFSM foam were compared in an *in vivo* model with traditional mattresses, using total body pressure mapping (table) of human subjects in supine position on the test surfaces. The table shows the average pressure over the entire body surface, the maximum pressure measured anywhere on the body, and the percentage difference versus the best performing mattress.

	Average Pressure (mm Hg/inch ²)	Maximum Pressure (mm Hg/inch ²)	Performance Difference vs. VPF SM (%)
REGULAR MATTRESSES			
Mattress I	17.69	58.34	65
Mattress II	16.99	56.81	61
Mattress III	19.29	55.31	56
Mattress IV	20.19	53.67	52
Mattress V	16.13	52.10	47
Mattress VI	16.28	50.77	43
Mattress VII	16.64	49.59	40
Mattress VIII	17.11	49.27	39
Mattress IX	16.74	48.42	36
Mattress X	18.55	47.51	34
VPF SM	14.95	35.39	0
BARIATRIC MATTRESSES			
Mattress XI	22.04	55.39	37
Mattress XII	18.52	49.22	22
VPF SM	18.04	40.47	0

Conclusion

Pressure mapping tests of regular and bariatric mattresses clearly show the advantages of the VPFSM mattress, with substantially lower values for average and maximum pressure.

In the clinical situation, this should translate to significant advantages for the prevention and treatment of pressure ulcers by reducing the main threat to patients: pressure.