

## EMP Introduces a New Air-Filled Insert Support Pad

The EMP Conform air-filled insert pad is now available in Canada. These air-filled insert pads have been widely used in Europe for over 25 years and can now be purchased in Canada through EMP dealers.

Prior to launching distribution in Canada, EMP conducted product testing and evaluation to ensure the Conform air-filled insert meets or exceeds therapeutic requirements for this product.

### Specialty Mattress Pressure Testing

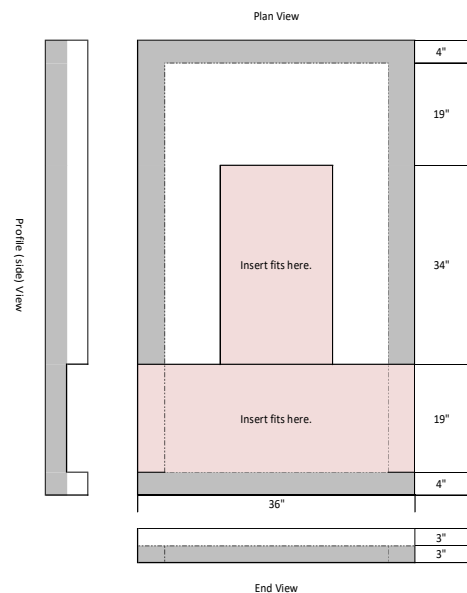
The most important characteristic required of an air-filled insert pad is to provide a low-pressure surface. This kind of pad is widely used with foam mattresses where an air-filled pad is located under key 'high pressure sore risk' areas of the users' body while laying on a mattress. With this in-mind, pressure testing was done to compare pressures observed using the Conform air-filled pad and another North-American-made widely used air-filled pad.

Pressure alone is not a reliable indicator of risk for skin breakdown and pressure is not the only factor in pressure ulcer development. Heat, moisture from perspiration or urine, poor nutrition, sensory loss resulting in an inability to reposition oneself in bed, age-related connective tissue changes, friction or shear and poor circulation all contribute to pressure ulcers.

Testing was conducted using an EMP T Style mattress. This mattress includes a 3" thick memory foam top layer with a T shaped cut-out allowing an air-filled insert to be used under the lower back, buttock and leg region, plus a second air-filled insert under the lower leg and feet region.

In preparing for pressure mapping, both the Conform air-filled pads and the other commonly used air-filled pads were initially overinflated. A pressure mapping pad was placed over each air-filled section and connected to pressure recording software on a laptop computer. The test subject, a 5'-10" tall 61-year-old male weighing 175 lb was positioned on top of the pad, laying in the supine position with buttocks positioned on top of one of the air-filled pads. The air-filled pad was then slowly deflated until the pressure recording operator determined it showed optimal (minimum) pressures via lap top computer readings. The air-filled pad air valves were then closed and pressure readings recorded over a period of approximately one minute, allowing readings to stabilize at their lowest level for that recording.

It is important to note that pressure measurements are variable. Readings fluctuate continually when a person is laying on a mattress section. Images shown here are essentially snapshots taken from a video.

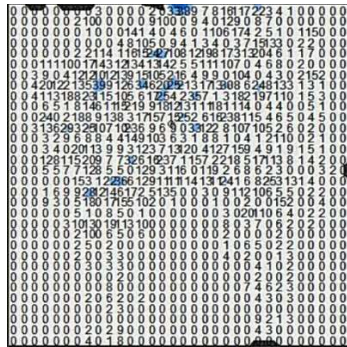




Looking at the above readings, the Conform air-filled pad and the other commonly used pad show very similar readings, both in their Maximum (mmHg) and Average (mmHg) results. Both above tests show pressures in the mid 40's to low 50's when laying in what might be viewed as higher-risk positions.

Putting these numbers into context, a literature review suggests capillary flow may collapse when direct pressure at the site increases above 32 mmHg. When dropping the head of the bed back down to supine laying flat, pressures drop further, getting closer to 32 mmHg.

**Conform Air-filled Pad Section – supine, pad under buttocks with the head of the bed lowered**



▽ Minimum (mmHg)	0.00
▽ Maximum (mmHg)	38.36
▽ Average (mmHg)	3.88
▽ Variance (mmHg <sup>2</sup> )	38.00
▽ Standard deviation (mmHg)	6.16
▽ Coefficient of variation (%)	158.95
▽ Horizontal center (cm)	22.13
▽ Vertical center (cm)	30.31
▽ Sensing area (cm <sup>2</sup> )	2162.25
▽ Regional distribution (%)	100.00

While undertaking this investigation, we also tested several foam mattresses, looking at pressures under the buttocks when in the supine position and on a flat bed. All show pressures higher than experienced on air-filled pads, generally in the mid 50's mmHg for memory foam products and somewhere in the mid 50's to mid 60's mmHg for polyfoam products.

**Heat/moisture from perspiration or Urine**

Comparing surface contact differences between a moisture-proof covered foam mattress and either of these air-filled pads, an air-filled pad surface offers significantly better air flow opportunities close to the at-risk skin. Physical shape of the Conform and other commonly used air-filled pad are very similar. The Conform product is not as deep compared to the other commonly used air-filled pad product. Both products have a very similar profile, suggesting heat and moisture dissipating characteristics will be similar.



**Other Comparative Observations**

Conform air-filled pads are 2-3/4" high. The other air-filled pad is 3-1/2" high. Pressure recordings yielded very similar results, so the difference in height did not affect pressure readings.

When sitting on a Conform cushion (another Conform product configuration) users report the surface feels more stable compared to other air-filled cushion products.

Weighing the two air-filled pad products, the Comfort air-filled pad is heavier. Weighing 7-1/2 lb compared to the other air-filled pad at 6-1/2 lb, the Conform product appears more likely to withstand day-to-day use compared to the other air-filled pad. The lower profile used with Conform air-filled pads should also reduce the risk of the pad tearing as sometimes occurs over time with other air-filled pad products.



When used in groups of two or more air-filled pads joined together, pads must be connected to each other. Conform air-filled pads are joined using a flexible strip with holes where the air-filled cells are inserted, producing a continuous joint. Other air-filled pads use 'snap' connectors located at intervals along the edge of the pad. Users report this this type of joint can lead to localized stress at the 'snap' connector resulting in tearing of the pad.



#### **Repairing a Leak**

This product is an air-filled system. It will be important that the system can be repaired in the event of a puncture. To assess this characteristic, one cell was punctured and then patched using a commonly available bicycle tire patch kit. Results indicate the product can be easily repaired in the event of a leaking cell.

#### **Care and Cleaning**

The Conform air insert is a natural rubber product, providing long-life performance with proper care and cleaning. Natural rubber should not be exposed to sunlight (UV light), which can result in premature ageing of the material. Air inserts enclosed within covers will be protected from UV light, liquids and other substances that can damage the product. Many skin Creams can affect neighboring materials. Care should be taken when using creams to avoid contaminating Conform air inserts.

Manufacturers instructions indicate disinfecting can be accomplished using commonly available disinfecting sprays or wipes. Cleaning of the mattress section can also be done using a washing machine set at maximum 40° C. Valves must be closed to prevent moisture from entering inside the system. Do NOT dry this product under UV light or sunlight.

Special thanks are extended to Kristy Fredericks. Kristy offered valuable guidance and assisted in recording pressure measurements used in this document.