

# FOXSEAL™ VENTED 512 REASONS IT'LL NEVER LET YOU DOWN

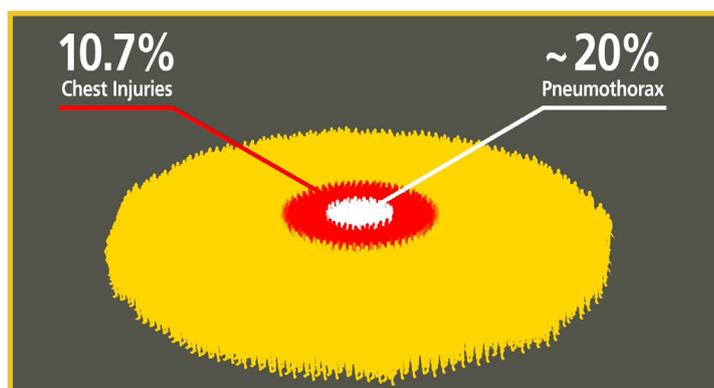
**FOXSEAL™ Vented**  
NEXT GENERATION CHEST SEAL



Tension pneumothorax is a life-threatening condition that develops when air enters the chest from outside the body through a penetrating chest injury. This pressure can build up and if trapped inside, can lead to the collapse of the lung. Such build-up of pressure can compress both the affected and unaffected lung, as well as the heart and great vessels, leading to reduced cardiac output and death.

Emergency treatment is needed to allow the trapped air out and seal the wound area, preventing further tension.<sup>1</sup>

Combat-related thoracic trauma has been a significant contributor to the morbidity and mortality of casualties throughout multiple decades. Pneumothorax is reported as the most common injury sustained in chest trauma, occurring in 20% of patients.<sup>2</sup> In the late 1980s and early 1990s, a study of 3,640 military casualties concluded that 10.7% were treated for chest injuries.<sup>3</sup>



According to TCCC guidelines, all open and sucking chest wounds should be treated by immediately applying a vented chest seal to cover the defect.<sup>4</sup>

Analysis of the current available vented chest seal dressings on the market identifies designs at treating open pneumothorax. The different design features include different adhesive formulations, different number of valves or vents and various shapes and sizes.

Assessment of literature and market available data identify the following key requirements for an effective vented chest seal:

- Ability to maintain clear vents to allow release of air/gas from the pleural cavity throughout the wear time.
- Prevent air entering the chest via a penetrating injury and preserve natural lung function.
- Wear time of several days, especially needed for injuries sustained in remote areas or when patient evacuation is at best challenged.
- Adhesion to skin in different, often extreme conditions.
- Conformability around the chest area, achieving an effective seal on flat, uneven, and contoured surfaces even on tough areas, such as the armpit.
- Work under body armour or clothing without being occluded, to protect the patient during conflict or from environmental causes (i.e. hypothermia).
- Fit easily within small IFAKs, medical kits or even a pocket for easy access, potentially folded, without the dressing being affected if stored in extreme temperatures or if the packaging gets wet.

# THE NEXT GENERATION CHEST SEAL

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Foxseal Vented is the next generation chest seal dressing designed for the emergency treatment of open chest wounds.

Easy-to-use, fast 360° application, can be placed in any orientation. Simply remove the product from the pack and stick it to the chest. The vents are designed to work even if the central valve is partially placed over the wound (50% minimum) and works effectively on flat, uneven, or contoured surfaces.<sup>6</sup>

It is also proven to work under protective clothing or body armor to protect the patient during conflict or prevent hypothermia.<sup>6</sup>

Foxseal Vented is the first-ever chest seal utilizing a Hyper-Vent System™ with 512 venting pathways<sup>5</sup>, giving you more ways to release pressure formed in the chest cavity. A soft valve chest seal, with no plastic cap for maximum protection against blockage.



## HYPER-VENT SYSTEM

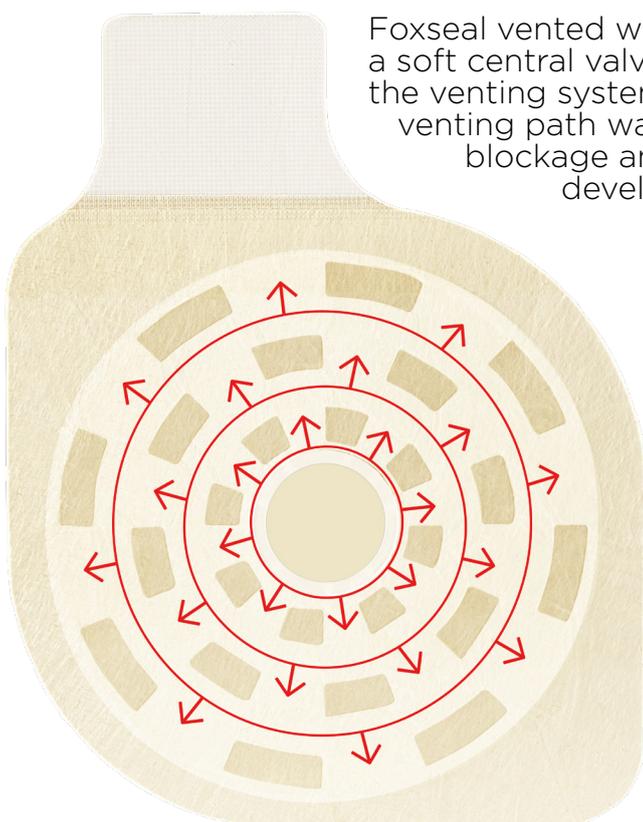
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Foxseal vented works by allowing trapped air to escape through a soft central valve and a circular venting system. 3 circles form the venting system, with 8 vents on each circle and a total of 512 venting pathways for the air to escape, minimizing the risk of blockage and preventing tension pneumothorax from developing.<sup>5</sup>

This unique 360° Hyper-Vent system has been proven to perform under clothing or body armor and over 2 days prolonged wear time, providing maximum patient protection.

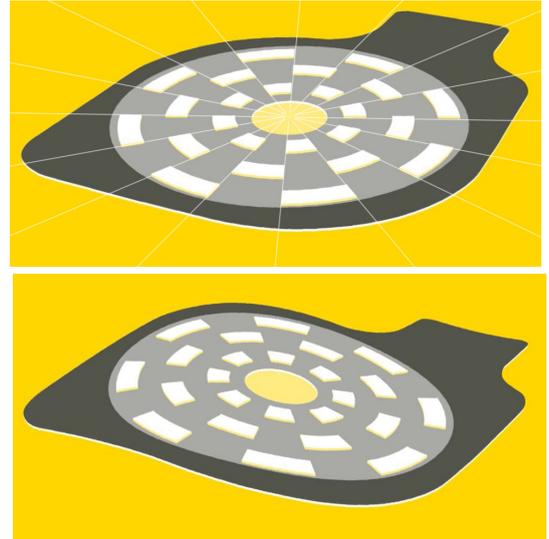
It should still be advised to be cautious about overtightening of straps, bodyweight, etc., as it may ultimately cause full occlusion.<sup>6</sup>

The geometric pattern of the dressing is made with safety in mind. It enables the release of pressurized air from the chest cavity to minimize the risk of tension developing whilst blocking air from re-entering through the wound during inhalation, leading to respiratory arrest. An effective airflow control system that is not compromised even when the chest seal is adhered on uneven, or curved surfaces.<sup>6</sup>



# WORKS IF CREASED

When designing Foxseal vented, an area of particular focus was the development of creases and their effect on the venting system's performance. Creases can form if the dressing has been folded or adhered on uneven or curved surfaces and can compromise airflow control. Foxseal Vented has 24 smart adhesive islands strategically positioned, with small overlaps on each side of the vent, to prevent creases from compromising performance. It has been extensively tested with creases unable to be formed that could affect the venting mechanism.<sup>6</sup>



# SOLID ADHESION

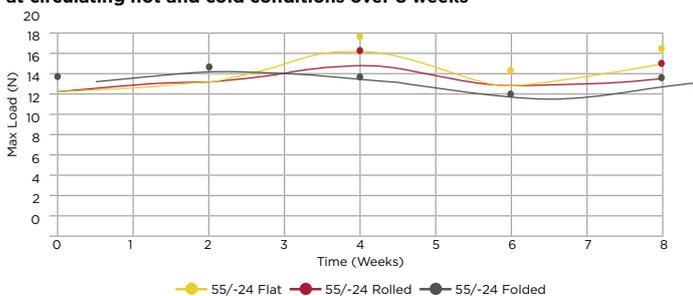
PROVEN IN EXTREME CONDITIONS<sup>4</sup>



Foxseal vented uses the same hydrogel adhesive technology as Foxseal occlusive dressing. A proven chest seal and supplied to NATO military forces, the world over. This next generation dressing offers solid adhesion thoroughly tested in extreme conditions and proven to work in cold and hot environments, ranging from -5°C to 40°C degrees (23°F - 104°F).<sup>8</sup> The chest seal adhered successfully in both dry and wet conditions in-vitro, i.e., sand, sweat, dirt.<sup>10,11</sup> The most robust adhesion was found in warmer temperatures and in dry sandy skin environments. However, the adhesive performance of the dressing was consistent throughout.

**PACK CAN BE FOLDED OR ROLLED, PERFORMS EVEN WHEN STORED IN EXTREME KITTING CONDITIONS<sup>6</sup>**

**Adhesion Profile during simulated transport and tour at circulating hot and cold conditions over 8 weeks**

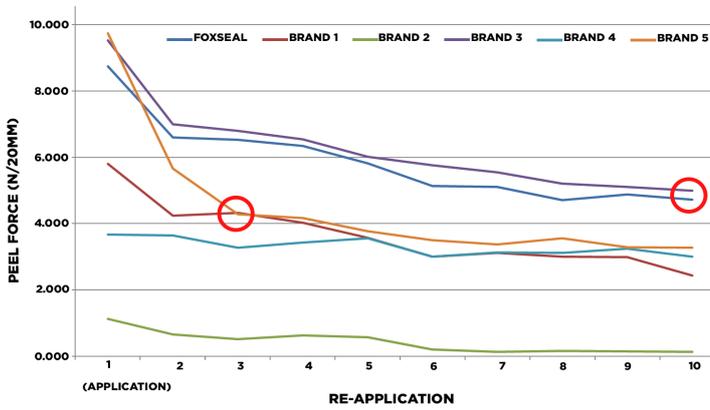
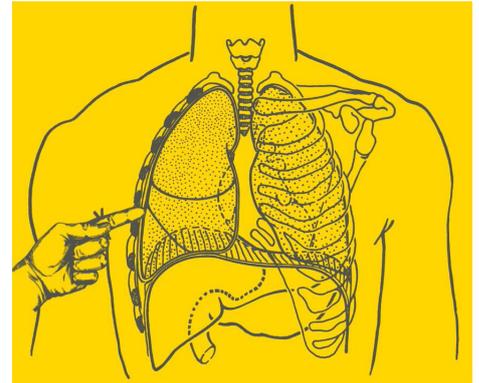


All dressings tested in-vitro displayed high adhesion strength after being carried in an IFAK flat, rolled and folded over an 8-week period, in -24°C and 55°C (-11.2°F and 131°F). Consistently higher than the specification standard (4 N).

Testing also demonstrated uncompromised performance in storage conditions, displaying reliable solid adhesion after being transported or on tour, being kitted in an IFAK flat, rolled, and folder over an 8-week period in varying temperatures -24° to 55° Celsius (-11.2°F - 131°F).<sup>9</sup> The light and flexible base strengthens adhesion, providing a complete seal and no detected channelling. This minimizes the risk of air or fluid escaping from the base of the dressing.<sup>6</sup>

# RE-SEAL TAB

Emergency chest decompression is a life-saving procedure performed in the presence of tension pneumothorax. Chest decompression can be performed by needle decompression, finger thoracostomy, or tube thoracostomy. Unlike needle decompression, finger thoracostomy allows maximum air/liquid release from the pleural cavity and full lung re-expansion, making it the only effective option in some patients.<sup>12</sup>



Foxseal Vented allows the dressing to be peeled back for life-saving finger decompression and works effectively when peeled and resealed several times over 24 hours or until the casualty receives definitive medical intervention.<sup>13</sup> It has demonstrated market-leading adhesive properties over multiple reapplications.<sup>13</sup>

The dressing is intended primarily for military use and so may be exposed to harsh environments. Foxseal Vented is light, flexible, and compact can be folded to fit in a pocket, wallet, or small first aid kit.

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## 512 REASONS WHY IT'LL NEVER LET YOU DOWN

**FOXSEAL™ Vented**  
NEXT GENERATION CHEST SEAL



### 360° HYPER-VENT SYSTEM™

Works in any orientation, on contoured surfaces, under clothing or armour<sup>6</sup>, even if creased.<sup>6,9</sup>



### SOLID ADHESION

Proven in extreme conditions.<sup>8</sup>



### RE-SEAL TAB

To enable lifesaving rapid decompression.

# REFERENCES

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5. *Hydrogel based dressing with film roll stock and an additional Polyurethane (PU) film layer covering a central soft valve. Smart radial design consists of 3 circles, each with 8 vents. A total of 24 vents and 512 venting pathways that minimise the risk of occlusion and provide a secure one way venting system.*
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13. *Medtrade data on file report - P0165 (2019). Testing of adhesion properties of Chest Seal following burping (in-vitro).*