

Introduction

The Sorbion Sachet dressing range, introduced in the early 2000s, provided wound care with an advanced and highly efficient approach to the management of wound exudate. The introduction of Sorbion Sachet to the market established the category of superabsorbent wound dressings. Prior to this, exudate management had largely remained an unmet clinical challenge, as only a limited volume of fluid could be absorbed and retained within the dressings available at that time.

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The maintenance of a moist wound bed is regarded as an important homeostatic mechanism and the principle of moist wound healing has provided the basis for contemporary wound care since the 1960s¹⁻³. When considering management of wound exudate through the processes of absorption and retention, it is important that this intervention does not come into conflict with the principle of moist wound healing. The Cutimed Sorbion Sachet dressing range was designed for wounds that are moderately to highly exuding, and all of the dressings comply with the principle of moist wound healing.

The delivery of an extensive range of clinical benefits (Table 1) is the result of the incorporation of a unique fibre matrix into the central core of each dressing, together with the interaction that takes place between this matrix of fibres and the outer dressing hull. As well as exudate absorption and retention, this unique design and combination

Table 1. The broad range of benefits delivered by Cutimed Sorbion dressings supports wound healing

Clinical benefits	
	■ No leakage
	■ Protection of peri-wound skin
	■ Fewer dressing changes (resulting in cost savings)
	■ Reduction of malodour
	■ Reduction in risk of cross-contamination
	■ Modulation of proteases and cytokines
	■ Gentle removal of fibrous devitalised tissue
	■ Ideal balance of exudate absorption and preservation of optimal moisture at the wound bed
	■ Low risk of sensitisation
	■ Can be efficiently applied under compression

of materials also delivers effective wound bed preparation, including peri-wound protection from maceration and excoriation.

Cutimed Sorbion Sachet dressings provide a wide variation of dressing options and are available internationally. A full complement of clinical situations can therefore be effectively addressed.

Understanding Hydration Response Technology

The Cutimed Sorbion Sachet dressings use Hydration Response Technology (HRT), a design concept that uses as few components as possible while simultaneously delivering high (multifunctional) performance. HRT dressings contain a unique central fibre matrix, constructed from a combination of hydrophilic cellulose strands that are closely bound with hydrophilic gel-forming polymers (Figure 1).

The specific proportions and interaction of these materials allow for sustained absorption of wound fluid while concurrently avoiding dehydration of the wound bed. The central matrix is contained within an outer envelope of polypropylene. This soft and flexible material is ultrasonically sealed and therefore avoids the use of glues or adhesive that may promote sensitised reactions. The high liquid penetration rate of the polypropylene, together with the fluid absorption dynamics of the central matrix, promotes speedy fluid absorption and assured retention of wound fluid.

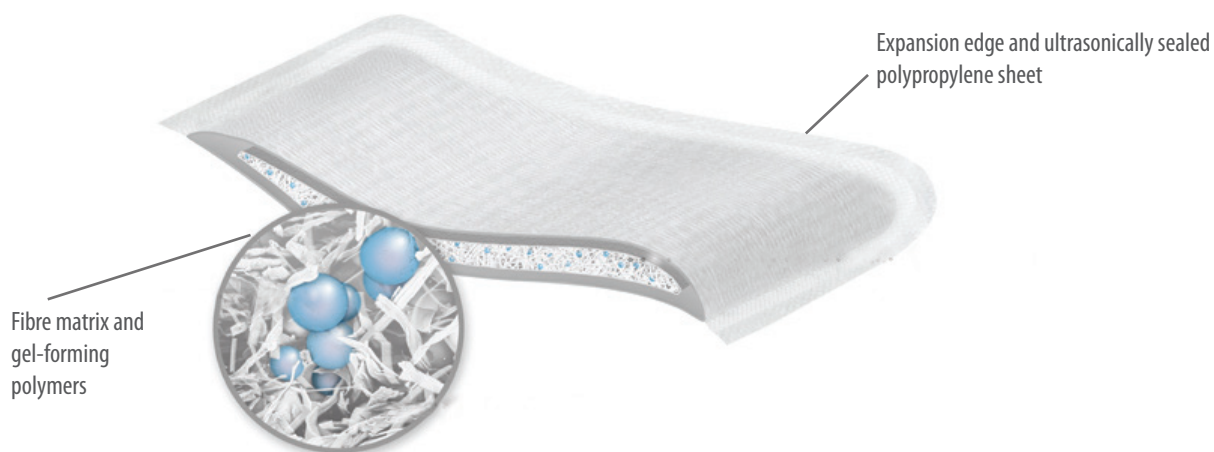
The end result of this unique combination of materials, and the incorporation of an expansion edge between the central matrix and the outer edge of the envelope, promotes dressing flexibility and intimate contact of the dressing with the wound bed. The high tear strength of the outer envelope and the design of the central matrix allows for sustained dressing integrity even when significant volumes of fluid have been absorbed. This utility avoids dressing leakage and undue exposure of the wound bed to exudate that may have an adverse impact on patient quality of life.

Using Sorbion in practice

HRT dressings are suitable for application to a wide range of wounds (Box 1).

The dressings are designed for application to moderately or heavily exuding wounds, especially where the content of the exudate is contributing to wound chronicity. Cutimed Sorbion Sachet dressings are also suitable for application to acute wounds during the exudative phases of wound repair. The high absorbency and retention of exudate within the dressing core provides not only

Figure 1 | Hydration Response Technology in Cutimed Sorbion Sachet



protection of the wound bed but also the wound edge, including the peri-wound skin. Their use on sloughy wounds (as the dressing facilitates a continuous gentle debridement) and bacterial sequestration within the dressing's core provides additional benefits.

Fluid-handling capacity

Wound exudate fulfils an important function in the healing process in acute wounds¹⁸. However, in wounds where the nature and volume of exudate becomes a clinical challenge, efficient management is essential if wound deterioration is to be avoided¹⁹. Sub-optimal exudate management can cause

maceration of the peri-wound skin, a result of prolonged contact with chronic wound fluid. Maceration can be avoided through careful wound dressing selection but it is important to remember that dressing absorption needs to be combined with retention of exudate, otherwise the wound bed and/or peri-wound skin can be exposed to the deleterious effects of exudate.

An *in vitro* study investigated the free swell capacity of 10 10 cm x 10 cm dressings used in the management of moderately to heavily exuding wounds. The two HRT dressings (Cutimed Sorbion Sachet Extra and Cutimed Sorbion Sachet S) provided the highest free swell capacity of the 10 test dressings and absorbed 223ml/100cm² and 153ml/100cm² respectively.

A 53-patient clinical evaluation supported these *in vitro* findings and reported that a HRT dressing "provided a level of performance beyond that of simple absorption", benefitting patients, clinicians and healthcare providers, recorded no instances of peri-wound tissue excoriation and found a marked reduction in maceration¹⁵.

Dressing absorbency and retention can be adversely affected under compression. The absorption capacity of 10 test dressings using simulated conditions that mimicked sub-bandage pressure equivalent to 40 mmHg was studied *in vitro*. The findings showed an overall decrease in the dressings' absorbent capacity when compared to their free swell performance. However, the two HRT dressings (Cutimed

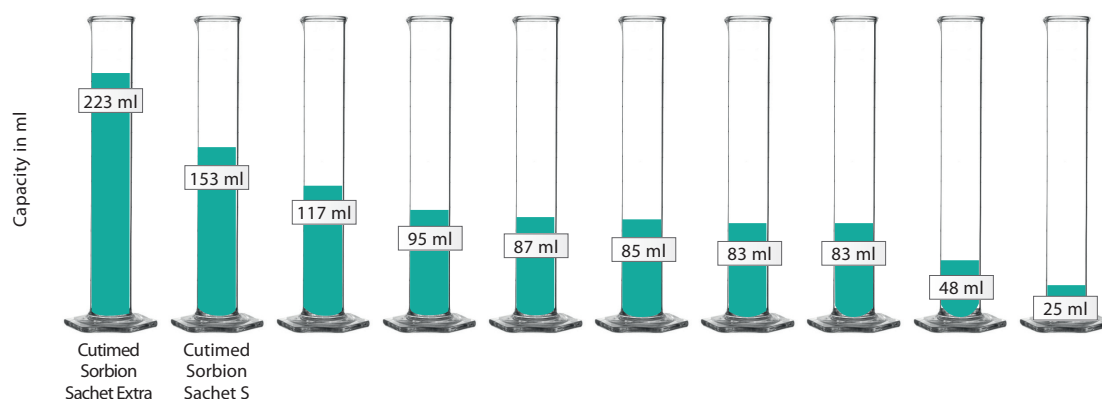
Box 1: Range of wounds suitable for use of HRT dressings

- Pressure ulcers
- Venous leg ulcers
- Diabetic foot ulcers
- Split-thickness graft donor sites
- Exuding superficial burns
- Ulcerated carcinomas
- Dehisced abdominal wounds
- Acute wounds
- Difficult-to-dress wounds
- Exuding post-interventional wounds (e.g. liposuction or any draining surgical wound)

Figure 2 | *In vitro* study demonstrating the free swell capacity of comparative dressings

Dressing capacity (results in ml per 10 x 10cm dressing)

Cutimed Sorbion Sachet Extra absorbs significantly more liquid than any of the other wound dressings tested (Evaluation based on EN 13726-1:2002 by independent laboratory: SAS haggmann GmbH, Weberstraße 3, 72160 Horb am Neckar, Germany.)



Sorbion Sachet Extra and Cutimed Sorbion Sachet S) provided the highest absorption capacity under compression at 107 ml/100 cm² and 74 ml/100 cm².

High-absorbent dressing capacity and retention of exudate is inextricably linked to product efficacy and related patient outcomes, including:

- Avoidance of dressing leakage
- Low risk of maceration
- Fewer dressing changes
- Decreased disturbance of the wound bed²⁰.

Dressing selection can heavily influence clinical outcomes; however, this important and fundamental responsibility has often been found to lack precision²¹. Wound bed preparation (WBP) provides a framework for wound management and supports the adoption of appropriate management strategies²².

The WBP concept evolved to produce the acronym TIME²³ (tissue management; inflammation and infection; moisture balance; epithelial edge advancement) and this in turn can be used to enhance dressing selection based on the functional outcome required. It has been suggested that these outcomes include:

- Debridement
- Inflammation/infection management
- Exudate management
- Wound edge protection and healing²⁴

The Cutimed Sorbion Sachet range of dressings has been proven to fulfil these functional outcomes. HRT dressings are therefore

ideally suited for managing moderately to heavily exuding wounds, being centrally placed between foams (for low-exuding wounds) and NPWT, where continual drainage of copious amounts of wound exudate is required (Figure 3).

A quick view chart (Table 2) provides information as to when to use which Sorbion product. The wide range of dressings that are available in a variety of shapes and sizes (Figure 4) has been designed to deliver effective wound bed preparation and facilitates ease of use for the clinician and improved outcomes for the patient.

Soft debridement of fibrous devitalised tissue

Although there are no published controlled trials that provide scientific evidence of the benefits of removing slough and the acceleration of healing⁹, it has been acknowledged for a long time that devitalised tissue needs to be removed if a wound is

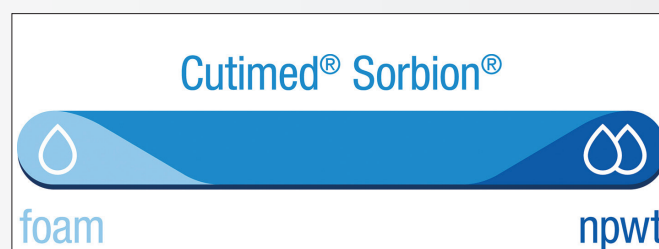


Figure 3. Positioning of Cutimed Sorbion (HRT) dressings

Table 2. When to use which Cutimed Sorbion Sachet dressing

Cutimed Sorbion Sachet Extra	For managing extremely high levels of exudate
Cutimed Sorbion Sachet S	Classic form, suited for many types of moderately to highly exuding wounds
Cutimed Sorbion Sachet XL	Ideal to treat large difficult to dress wounds
Cutimed Sorbion Sachet Border	Utilized wherever a fast and easy application is required
Cutimed Sorbion Sachet Multi Star	Ideally moulds to all body contours
Cutimed Sorbion Sachet S Drainage	Especially designed for application with catheters or drains

to successfully heal¹⁰. Slough has been characterised as: often found in chronic wounds, composed of dead host tissue, white blood cells and containing a microbial community¹¹. The persistent inflammatory state seen in some chronic infections is regularly linked to biofilm (microbial communities)¹²,¹³ and is very similar to that seen in chronic wounds¹⁴. Debridement, as a component of wound bed preparation, is associated with reduction in exudate, malodour and the generation of granulation tissue. Application of Cutimed Sorbion Sachet dressings provides a continuous gentle debridement process and is a more comfortable option when compared to sharp methods of achieving the same objective — a prepared wound bed. In a real-life clinical evaluation (n=49) of Cutimed Sorbion (HRT) dressings that took place over a four-week period, mean values of slough decreased from 38.75% to 20.1% and necrotic tissue decreased from 3.65% to 0.52%¹⁵. Soft debridement in action may be seen in [Figure 5](#) where wound debris including devitalised tissue is transferred from the wound bed into the dressing with the exudate.

Proteases and cytokines in chronic wounds

The matrix metalloproteinases (MMPs) are part of the larger family of metalloprotease enzymes, which play an important part in wound healing. In chronic wounds, it is necessary to modulate wound proteases and cytokines, as their elevated levels lead to chronic inflammation and delayed healing⁴ ([Figure 6](#)). When protease control is disordered, the impact of increased levels causes damage to the extracellular matrix and inhibits keratinocyte migration and attachment.



Figure 4. The unique size and shape of Cutimed Sorbion Sachet XL for easy application eliminates the need for multiple dressings

The modulation capability of proteases and cytokines by Cutimed Sorbion (HRT) dressings has been identified. *In vitro* studies showed that significant amounts of proteases are bound in the dressing together with wound exudate. In addition it was found that the HRT dressing demonstrated a significant binding capacity for PMN elastase, MMP-2, MMP-8 and MMP-9⁶.

In vitro studies also demonstrated the Cutimed Sorbion dressing reduced the activity of elastase and collagenase. This action can help to reduce inflammation and improve healing times in wounds where healing may be delayed or have stalled.



Figure 5. Soft debridement demonstrated as wound debris and devitalised tissue is transferred from the wound bed into the Cutimed Sorbion Sachet dressing

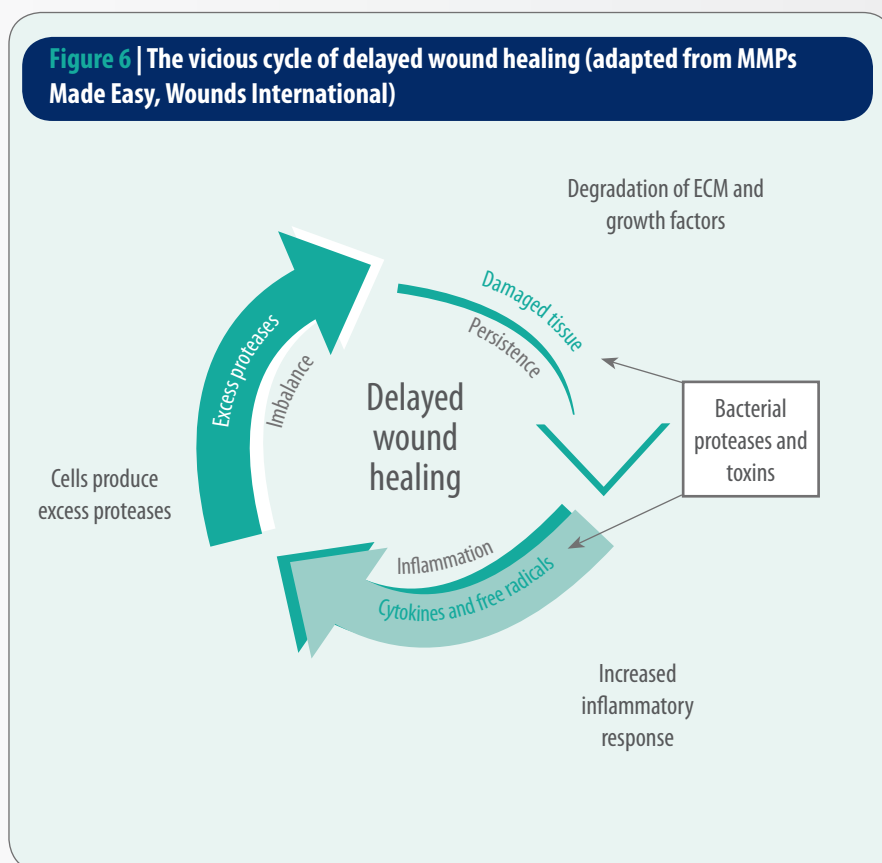
Cutimed Sorbion Sachet dressings should be applied to the wound so that there is at least 1–1.5cm overlap with the peri-wound skin. This dressing overlap will avoid skin excoriation from the deleterious effects of wound proteases and cytokines as these caustic agents will be bound within the core materials of the dressing.

Reduction in risk of cross-contamination

Bacterial colonisation of a wound healing by secondary intent should be regarded as a 'normal' situation, and is not necessarily associated with delayed healing. When bacteria (endogenous and exogenous) contaminate a wound surface, they are 'controlled' by the host defences, provided there is no physiological or immunological defect¹⁶. However, colonisation may lead to infection when pathogens multiply and express virulence factors that outcompete the immune defence system. The subsequent impact on patient morbidity and implication for cross-contamination amplifies the fundamental need to reduce wound bioburden.

Following contamination, bacteria multiply and colonisation ensues. Depending on the local environmental circumstances, the bacteria may either attach or remain as free-floating (planktonic) entities. If the local micro-environment is favourable, the bacteria undergo an irreversible state of attachment. At this stage the bacteria become more resistant to removal and this signals the transition to a biofilm phenotype¹⁶. Cutimed Sorbion Sachet has been proven in several studies to absorb micro-organisms transported in wound exudate, thereby reducing the risk of cross-contamination.

Figure 6 | The vicious cycle of delayed wound healing (adapted from MMPs Made Easy, Wounds International)



Practitioner and patient benefits

The multi-functional nature of the Cutimed Sorbion Sachet dressing range means a variety of practical benefits to both practitioner and patient. Efficient wound fluid management (absorption and retention) helps to avoid peri-wound maceration/excoriation and increases patient comfort. The ability of the highly absorptive wound dressing to sequester bacteria together with exudate, debride the wound bed and modulate proteases and cytokines emphasise the high performance. These factors have the potential to reduce/remove the chronicity-causing factors and thereby support healing.

The Cutimed Sorbion Sana range provides a similar range of dressing sizes and shapes. All of the clinical benefits of Cutimed Sorbion Sachet dressings are also found in the Sana dressings (except soft debridement), as well as an array of dressing variations. In addition, the three-dimensional polyethylene contact layer that distinguishes the Sana range provides an atraumatic interface for those wounds where the fragile nature of the wound/peri-wound skin requires a 'light touch'.

The health economics of a Cutimed Sorbion (HRT) dressing have been clearly recorded²⁵. Frequency of dressing change is reduced and this results in a decrease in extended nursing time costs. This also avoids

Box 2: Tips for use

- Always read the Instructions For Use (IFU) and understand when and when not to apply the dressings – e.g. Cutimed Sorbion Sachet dressings should not be applied to dry wounds or to mucous membranes or the eye
- Whenever applicable, use Cutimed Sorbion Sachet dressings as a primary dressing (not secondary)
- Always provide a dressing overlap with the wound of 1.5 cm to protect the peri-wound skin from protease enzymes
- Ensure the dressing makes direct contact with the wound bed and that 'dead space' is eliminated
- Do not use greasy skin barrier creams under the dressing as dressing absorbency will be compromised
- Do not use restrictive circumferential tape to maintain the dressing in place, as this may cause discomfort or ischaemic damage as the dressing swells

unnecessary disturbance of the wound bed, and disruption of the patient's daily routine – providing benefits to the clinician and patient, and associated improvements to patients' quality of life.

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