Advancing the science of wound bed preparation
How Drawtex® wound dressing works

LevaFiber™ Technology provides three different types of action.

### Mechanisms of Action

#### Capillary Action

Capillary action gives Drawtex its ability to move wound exudate and wound debris into the porous material of the dressing. With the small pores acting as capillaries, intermolecular attractive forces between the exudate and solid surfaces of the wound dressing allow the exudate to be drawn upward against the force of gravity.

#### Hydroconductive Action

Hydroconductive action is controlled by Darcy’s Law, which defines the ability of a fluid to flow through porous media. Fluid can move from wetter to drier, even against gravity. This explains how water can be transported from the roots of a tree to the leaves. The LevaFiber Technology of Drawtex allows the dressing to lift, hold, and transfer the wound exudate both vertically and horizontally by hydroconductive action.

#### Electrostatic Action

Electrostatic action occurs when the negatively charged Drawtex wound dressing comes into contact with the wound exudate. Ions from the exudate form a mobile layer of the opposite charge known as the electric double layer, effectively reversing the charge on the surface of the dressing to become positive. This allows the dressing to draw out a large amount of exudate, wound debris, bacteria, and harmful MMPs.

Based on these mechanisms of action, Drawtex facilitates effective wound bed preparation.¹,²
How to use Drawtex

Drawtex is indicated for wounds with moderate to high levels of exudate, including:

**Acute wounds**
- Complex surgical wounds
- Burns

**Chronic wounds**
- Leg ulcers
- Diabetic foot ulcers
- Pressure ulcers (stage 2-4)

**Protocols for use**

**Cut**
Drawtex may be cut to conform to wound shape. Any side of Drawtex can be used against the wound bed.

**Apply**
For dry or less exudative wounds, apply a nonadherent (perforated) dressing, such as UrgoTul Contact Layer or UrgoTul Ag Contact Layer, before applying Drawtex. For best results, ensure nonadherent dressing has direct contact with wound bed.

**Layer**
For moderately to highly exudative wounds, apply Drawtex directly to wound bed. For heavy exudate, apply additional layers as necessary.

**Cover**
Cover with a secondary dressing or bandage of choice.

**Change**
Change Drawtex every 1 to 3 days, as necessary. Once exudate is under control, dressing may be changed less frequently. If Drawtex is adherent, irrigate with saline for easy removal.

Drawtex can be easily cut and shaped to fit each type of wound.

**Sacral shape**
To fold into heart-shaped wounds, while vertical cuts splay slightly, filling the area.

**Rope shape**
To fill cavities or cover amputations.

**Tracheostomy & Tube shape**
To fit around G-tubes and trach tubes. Drawtex Tracheostomy Dressing may also be used.

**Drain shape**
To drain by way of cutting strips with the opposite end going into a colostomy bag.

NOTE: Drawtex is contraindicated for arterial bleeding.
How Drawtex

The force of gravity allows the exudate to spread on solid surfaces of the wound. However, with the small pores of the dressing, exudate and wound debris are unable to pass through it. Capillary action gives Drawtex a notable advantage. 

**Mechanisms of Action**

Both vertically and horizontally, Drawtex transfers the wound exudate to the dressing to lift, hold, and help control bacteria, and harmful MMPs. 

**Fiber Technology**

- *Leva Fiber* from the roots of a tree to transfer the wound exudate. The Leva Fiber can extract water from wetter to drier, even against a non-porous media. Fluid can move from fluid to flow through porous material, which defines the ability of a wound management product to carry out the hydroconductive action. 

**Hydroconductive Action**

- With the small pores of the dressing, exudate and wound debris are unable to pass through it. 

**Drawtex*, iCLR Technology® powered by Elixr®**

Using an advanced pattern-recognition software algorithm* to analyze digital wound images, researchers calculated wound measurements and analyzed tissue composition of the wound bed. They found:

- Drawtex actively draws fluid away from the wound up to 150 cc/hour, retaining its integrity when moist.
- Drawtex helps to remove debris from the wound by drawing out fibrin and slough, while leaving healthy granulation tissue in place. 

**Draws and absorbs excessive wound exudate**

Another study concluded that the advantages of exudate removal by Drawtex were numerous. Not only was the fluid removed, but nutrients in the exudate that facilitate biofilm production were also drawn off. 

**Draws bacteria from the wound**

- A study that evaluated Drawtex in an infected burn model demonstrated that Drawtex can draw methicillin-resistant *Staphylococcus aureus* (MRSA) from either an inoculated broth or an experimental burn wound eschar. 
- Similar results were reported in patients with chronic wounds, where tissue biopsy bacterial counts decreased from $10^6$ to $10^2$ CFUs per gram of tissue, while at the same time the bacterial counts in the Drawtex dressings increased up to $10^4$ CFUs. 

**Draws harmful MMPs from the wound**

Chronic wounds have excessive inflammation, increased pro-inflammatory cytokines, increased proteases such as MMPs, and decreased growth factors. Removing or decreasing the harmful MMPs is an important aspect of wound bed preparation. 

- One study reported that Drawtex could draw MMP-9 and transport it for a distance up to 7 cm from the wound. 
- Another similar study showed that both MMP-9 and MMP-1 were drawn out of chronic wounds with Drawtex wound dressings, with a concomitant rise in MMPs in the Drawtex dressings. 

**Sets the stage for endogenous healing or wound closure procedures**

With Drawtex meeting the goals listed above for wound bed preparation, obstacles to endogenous wound healing or wound closure procedures are reduced.

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*“iCLR Technology® powered by Elixr®”*

Drawtex®, with its hydroconductive action, lifts and moves exudate, slough, and debris away from the wound surface. Clinical results have shown it to decrease wound exudate, tissue bacterial levels, nutrients for biofilm production, and deleterious cytokine levels such as matrix metalloproteinases (MMP-9). 

Based on these actions, Drawtex® facilitates effective wound bed preparation and serves as a possible alternative to passive absorptive products, like calcium alginates, hydrofibers, foams, and super absorbers. In addition, at times it can replace some enzymatic, antimicrobial, and negative-pressure wound therapy (NPWT).
Drawtex Tracheostomy & Tube Dressing

Drawtex Tracheostomy & Tube Dressing has 3 mechanisms of action to actively manage sputum, enteric or urinary fluid, and other secretions detrimental to skin integrity.  

Advantages:
- Hydroconductive wound dressing technology
- Draws out exudate, debris, bacteria and proteases$^{1,5,8,12}$
- Fits snugly around tube with interlocking closure$^{14}$
- Prevents peristomal maceration$^{14}$
- Easy to use

Catalog # 00310

Drawtex Rope

Drawtex Rope takes the Drawtex technology even deeper, allowing you to reach deeper undermined or tunneled areas in your wounds without fear of losing the dressing due to saturation. It is comfortable to any environment where fluid needs to be removed, managed, or contained.$^{13}$

Effective for:
- Fistula management$^{15}$
- Sinus tracts
- Undermining
- Tunneling
- Packing

Catalog # 00321
How Drawtex helps meet the complex challenges

Case Study (I)
This 32-year-old man was admitted to the Trauma ICU with a gunshot wound. He developed a sacral pressure ulcer that was treated with negative pressure wound therapy (NPWT) prior to the decision to use hydroconductive dressings. Multiple layers of Drawtex were changed on alternate days until wound bed preparation was deemed acceptable. The wound initially was covered by debris and slough. After 8 days of treatment with Drawtex, the amount of slough and debris was greatly decreased.

Before

After 8 Days

iCLR Technology® powered by Elixr®*

Before

After 8 Days

Effect of Drawtex After Eight Days

*CLR Technology® powered by Elixr® is a statistical pattern recognition algorithm that classifies each individual wound color pixel in a wound image, providing a documented variance of only 1% (with flat wound images).
of wound bed preparation

Case Study (II)
This 68-year-old male presented with a venous ulcer that had been present for 35 years. During that time, it had been treated with a hydrogel dressing covered by short stretch bandaging changed twice weekly. Drawtex was applied directly onto the wound and short stretch bandaging continued. After 6 days of treatment with Drawtex, the ulcer had decreased in size by 50%.

![Before](image1.png) ![After 6 Days](image2.png)

Case Study (III)
This female patient had developed a wound after her leg started “itching.” Skin irritation and scratching caused a small wound that grew larger every day. The wound discharged large volumes of fluid, leading to more scratching by the patient. Only 24 hours after Drawtex was applied, the “itching” disappeared completely. The wound bed responded well to the treatment, and the patient experienced no more itching, pain or discomfort.

![Before](image3.png) ![After 5 Days](image4.png)

Case Study (IV)
This patient suffered from a severe burn wound for more than a month, with complaints of incapacitating pain and a bad odor. Skin grafting was not possible because the wound bed was badly infected, with high volumes of exudate. Topical medication along with standard treatment produced very limited success. Drawtex was used along with petrolatum gauze, and after 24 hours the dressings were green with *Pseudomonas*. By Day 7, the Drawtex treatment had reduced the swelling and odor, and blood circulation improved. In addition, enhanced granulation took place, thus creating a healthy wound bed. The wound healed completely within 30 days, and no skin grafting was required.

![Before](image5.png) ![After 7 Days](image6.png)
Drawtex mechanisms of action lift and move exudate, wound debris, bacteria, and harmful MMPs away from the wound bed, facilitating effective wound bed preparation.\textsuperscript{1-12}

- Drawtex facilitates removal of wound debris.\textsuperscript{5}
- Drawtex draws exudate, bacteria, and harmful MMPs.\textsuperscript{1-12}
- Drawtex sets the stage for endogenous healing or wound closure procedures.
- Drawtex combines 3 mechanisms of action to differentiate it from other standard dressings.\textsuperscript{1}

### Drawtex Product Information

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<th>Catalog #</th>
<th>Size</th>
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<th>Shipper Qty.</th>
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**References:**

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Manufactured by: Beier Drawtex Healthcare
(Patented and other patents pending)

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