Advancing the science of wound bed preparation

drawtex®

A Hydroconductive Wound Dressing with **Leva***Fiber*™ Technology

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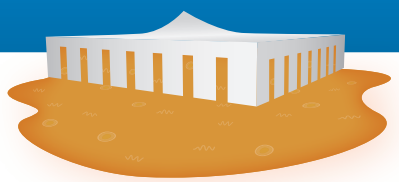
How Drawtex® wound dressing works

Leva*Fiber*™ Technology provides three different types of action.

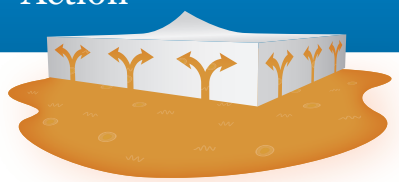
Mechanisms of Action

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, inter-molecular 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 that 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 **Leva***Fiber* 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 and serves as a possible alternative to passive absorptive products like calcium alginates, hydrofibers, foams and super absorbers.[1]

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Drawtex meets each requirement for effective wound bed preparation.

Wound bed preparation is the management of a wound in order to accelerate endogenous healing or to facilitate the effectiveness of other therapeutic measures.[2] Recent data have been published showing how wound treatment with Drawtex meets the complex challenges of wound bed preparation[3]:

• Facilitates removal of debris

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.[4]
- Drawtex helps to selectively remove debris from the wound by drawing out adherent fibrin and slough, while leaving healthy granulation tissue in place.[4]

• Decreases 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.[5]

• Decreases the tissue bacterial level

- 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.[6]
- 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.[7]

• Removes harmful MMPs

Chronic wounds have excessive inflammation, increased pro-inflammatory cytokines, increased proteases such as MMPs, and decreased growth factors.[8-10] 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.[11]
- Another similar study showed that both MMP-9 and MMP-1 were drawn out of chronic wounds with Drawtex wound dressings, as well as a concomitant rise in MMPs in the Drawtex dressings.[7]

• 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 removed.

*iCLR Technology® powered by Elixr®

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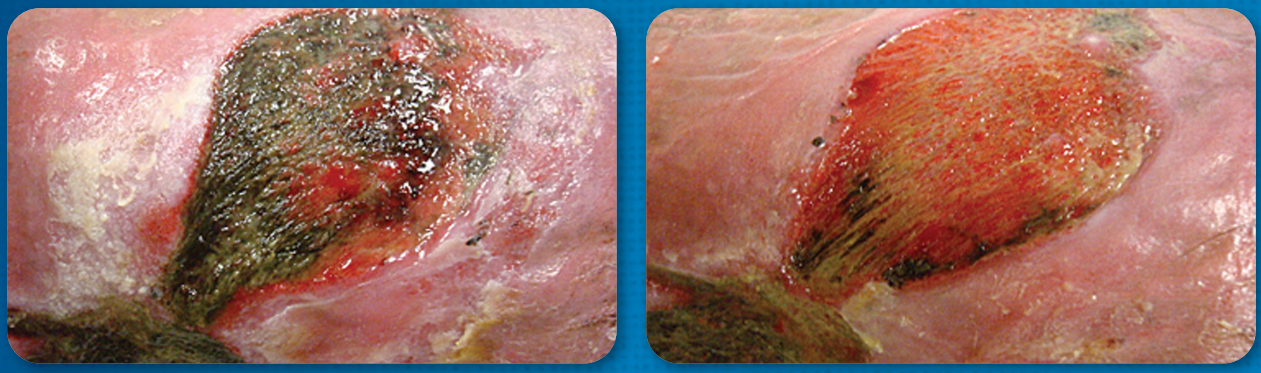
How Drawtex helps meet the complex challeng

Case Study (I)

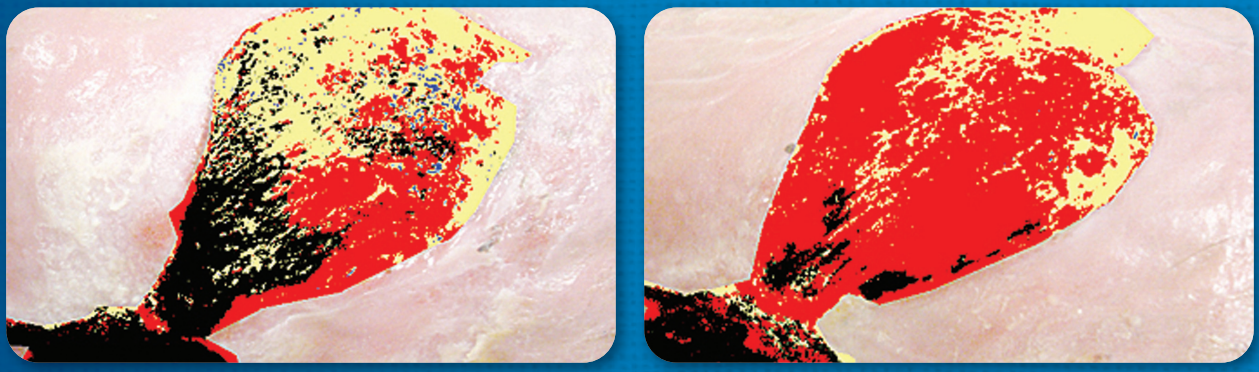
This wound on a 42-year-old male was of venous and autoimmune etiology. Drawtex therapy with multilayer compression was used for one week; no other debridement techniques were employed. The wound bed initially consisted of 15% granulation, 85% slough and eschar. After 7 days of hydroconductive debridement, the wound bed consisted of 41% granulation and 59% slough and eschar.



Before

After

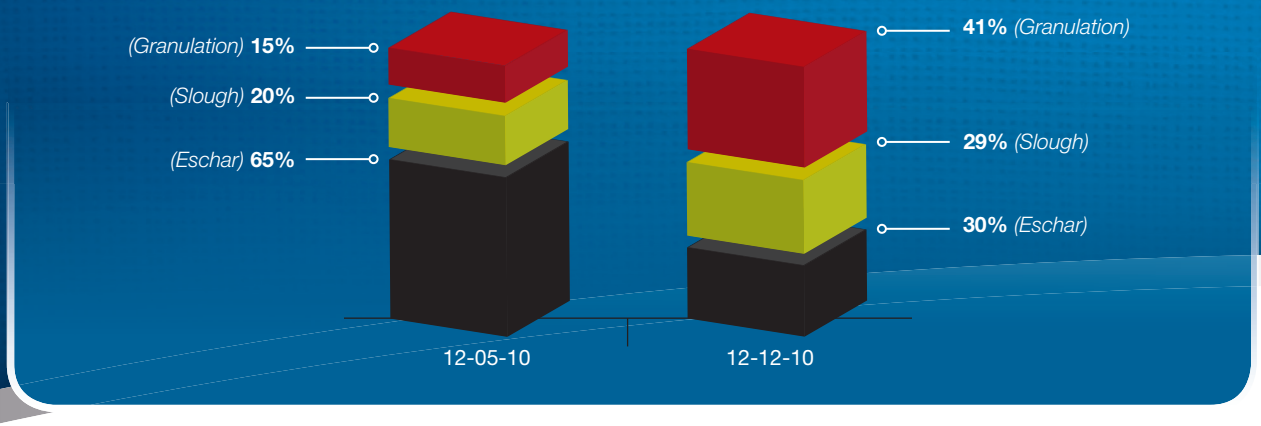
iCLR Technology® powered by Elixr®*



Before

After

Effect of Drawtex After One Week



*iCLR 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).

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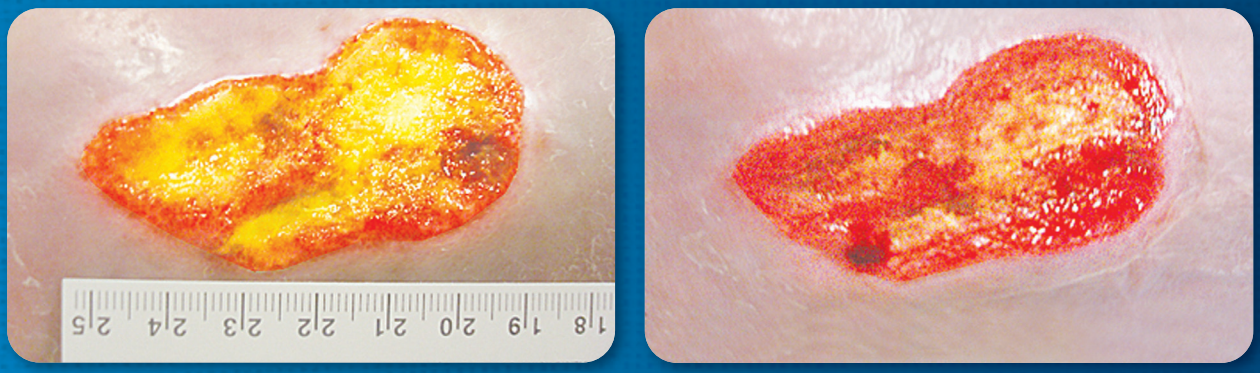
es of wound bed preparation

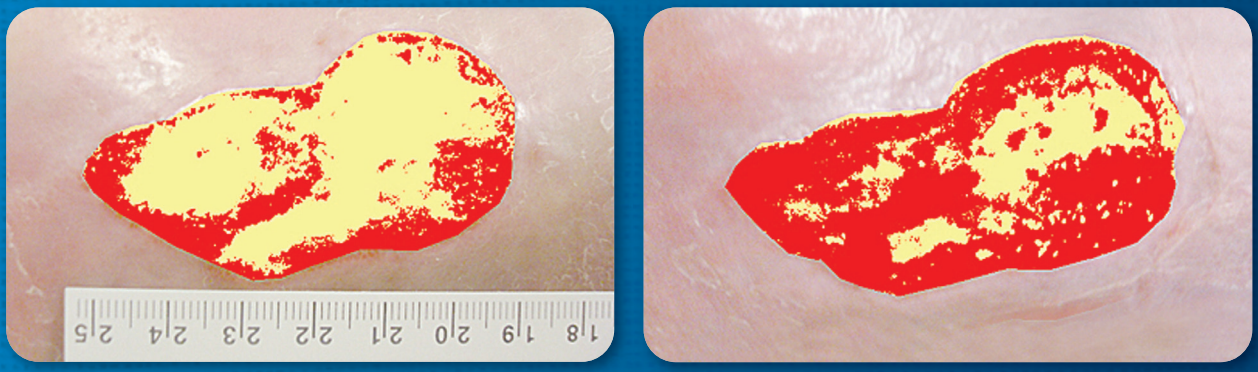
Case Study (II)

This 72-year-old male exhibited a wound of mixed venous and arterial etiology. A Drawtex dressing was placed on the wound with light compression; no other debridement techniques were employed. The wound bed initially consisted of 29% granulation and 71% slough. After two weeks of hydroconductive debridement, the wound bed consisted of 65% granulation and 34% slough.



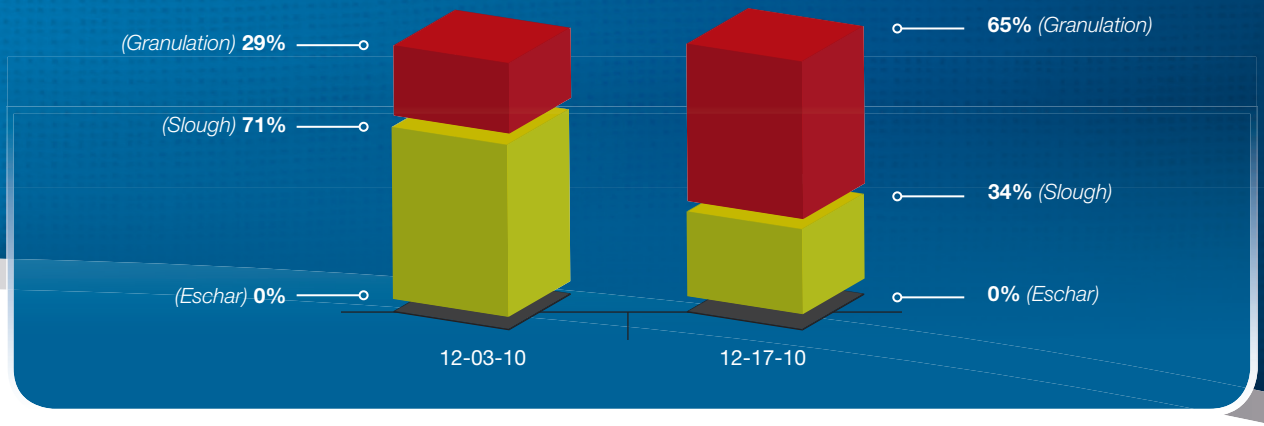
Before | After

iCLR Technology® powered by Elixr®*



Before | After

Effect of Drawtex After Two Weeks



Case Study (III)

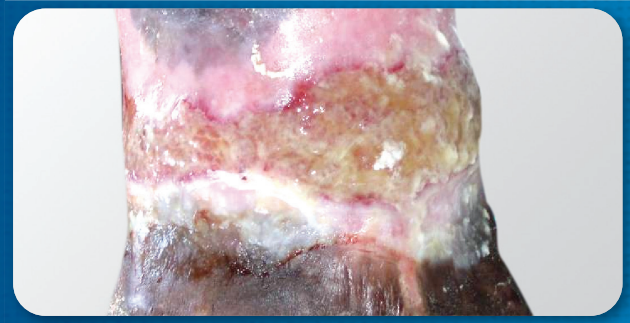
This 68-year-old male presented with a venous ulcer that had been present for 35 years. During that time, it had been treated with a hydrogel dressing covered by short stretch bandaging changed twice weekly. Drawtex was applied directly onto the wound and short stretch bandaging continued. After six days of treatment with Drawtex, the ulcer had decreased in size 30% to 50%.

Before

After 6 Days

Case Study (IV)

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

After 5 Days

Case Study (V)

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 improved blood circulation. 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

After 7 Days

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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)

NOTE: Drawtex is contraindicated for arterial bleeding.

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 low exudating or dry wounds, apply a nonadherent (perforated) dressing before applying Drawtex. For best results, ensure dressing has direct contact with wound bed.

Layer
For moderate to highly exudating wounds, apply Drawtex directly to wound bed. For heavy exudate, apply additional layers as necessary.

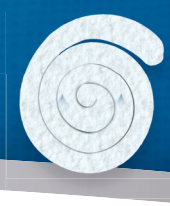
Cover
Cover with a secondary dressing or bandage of choice.

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.

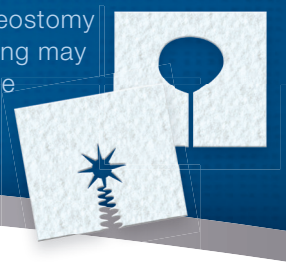
Drawtex can be easily cut and shaped to fit each type of wound.

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

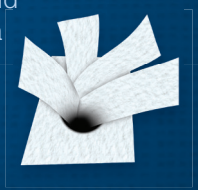
Spiral shape
To fill cavities or cover amputations.



Stoma 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.



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Drawtex mechanisms of action lift and move exudate, wound debris, bacteria and harmful MMPs away from the wound bed, achieving effective wound bed preparation.[1-11]

- Drawtex facilitates removal of wound debris.[4]
- Drawtex decreases exudate, tissue bacterial levels, and harmful MMPs.[1-11]
- Drawtex sets the stage for endogenous healing or wound closure procedures.
- Drawtex mechanisms of action differentiate it from other standard dressings.[1]

Drawtex Product Information

Catalog #	Size	Carton Qty.	Shipper Qty.
00300	2 x 2 in (5 x 5 cm)	10 Dressings	10 Cartons (100 Dressings)
00301	3 x 3 in (7.5 x 7.5 cm)	10 Dressings	10 Cartons (100 Dressings)
00302	4 x 4 in (10 x 10 cm)	10 Dressings	10 Cartons (100 Dressings)
00303	6 x 8 in (15 x 20 cm)	10 Dressings	10 Cartons (100 Dressings)
00304	8 x 8 in (20 x 20 cm)	10 Dressings	10 Cartons (100 Dressings)
00305	3 x 39 in (7.5 cm x 1 m)	5 Rolls	4 Cartons (20 Rolls)
00306	4 x 39 in (10 cm x 1 m)	5 Rolls	4 Cartons (20 Rolls)
00307	8 x 39 in (20 cm x 1 m)	5 Rolls	4 Cartons (20 Rolls)
00310	4 x 4 in TRACHEOSTOMY (10 x 10 cm TRACHEOSTOMY)	10 Dressings	10 Cartons (100 Dressings)

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5. Wolcott RD, Cox S. The effects of a hydroconductive dressing on wound biofilm. *Wounds*. 2012;24(9) (Suppl):14-16.
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10. Mast BA, Schultz GS. Interactions of cytokines, growth factors, and proteases in acute and chronic wounds. *Wound Rep Regen*. 1996;4:411-420.
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Beier Drawtex® Healthcare
Patented and other patents pending

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