

# PAINLESSLY OVER THE LINE

Endurance sports such as triathlons are becoming very popular. Less popular are the painful, weeping wounds caused by clothing chafing against the skin for hours on end. However, help is at hand in the guise of dressings made by a Belgian company called ReSkin that are based on SILPURAN® ultrapure silicones.



## PODCAST



You can listen to and download an audio version of this article at our Podcast Center at: [www.wacker.com/podcast](http://www.wacker.com/podcast).



The Hawaiian Ironman: as in all triathlons, the first event is swimming.

The world's toughest triathlon is said to be the Hawaiian Ironman. Every year, the lava fields of Big Island attract some 2,000 extreme sports competitors vying for the title of World Champion. The effort involved is enormous: they must swim their way through the Pacific swells, defy severe

cross-winds on the bike course and run a marathon in temperatures of 35 degrees Celsius.

To become top dog in this discipline takes years of grueling training – as Frederik van Lierde knows only too well. The Belgian is one of the world's best triathletes and a regular on the starting line in Hawaii. "I sometimes train three times a day for the competitions, and often spend up to six hours in the saddle," he says. His body suffers a great deal. And eventually the T-shirt, shoes and sports pants rubbing against his sweating skin leave their mark. "During intensive bike training, the skin in the pelvic and groin regions tends to chafe the most. That can also be very painful when I'm running and swimming," explains the veteran sportsman.

**ABSORBING FRICTION**

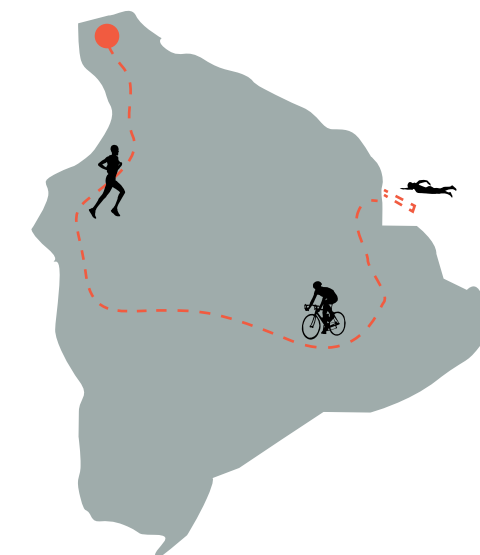
So, when he heard that a Belgian company called ReSkin makes silicone-based dressings that are inserted between the skin and the sports clothing, he sat up and took notice. "I tried out ReSkin' dressings for the first time when I was training in New Zealand. They made cycling much more comfortable. I didn't experience any skin irritation or pain, not even after weeks of intensive cycling," reports the triathlete.

What makes ReSkin' dressings so special is that they are very soft, elastic and pliant. "Each dressing acts like a cushion, absorbing the frictional forces and then dissipating them elsewhere. That reduces mechanical stress on the affected skin," explains Stany Haentjens, Product & Business Development Manager Medical, at ReSkin.

The benefits of ReSkin' dressings are provided by two functional layers: an upper layer of Lycra' and a second layer which is in contact with the skin and made of soft SILPURAN' silicone from WACKER, an ultrapure silicone that satisfies the high medical requirements imposed. The silicone is very compatible with the skin, has good adhesive properties, can be removed atraumatically, is gas and water-vapor permeable, and is biocompatible.

**RESISTANCE TO TEARING AND PULLING**

The special purity is achieved by production to WACKER's Clean Operation Standard. This means that the A and B components of the silicone rubber are produced in a gray room, i.e. a production zone in which elevated standards



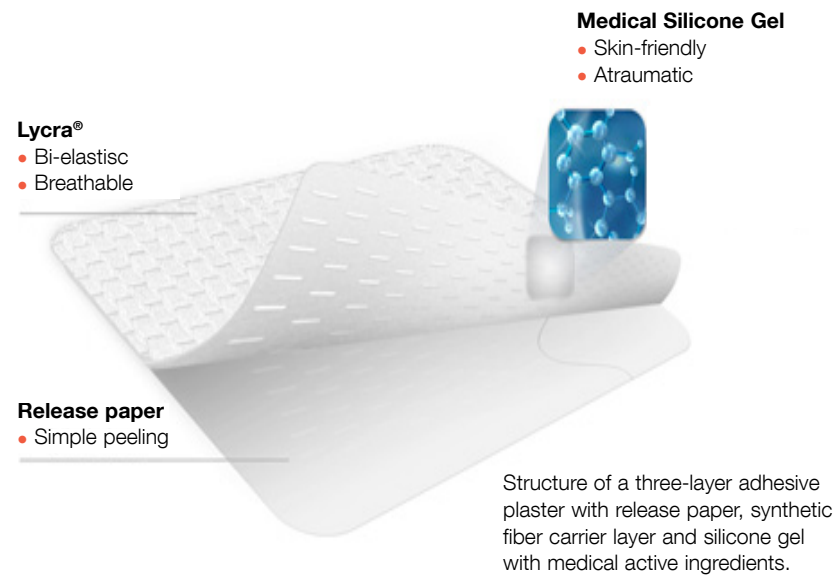
**IRONMAN HAWAII, USA**

Ironman is a name given to triathlon endurance competitions. The first competition this type was held in Hawaii in 1978. An Ironman consists in swimming 3.86 kilometers, cycling 180.2 kilometers and running 42.2 kilometers in quick succession. The Hawaiian Ironman is regarded as being particularly tough because of the natural elements involved (sea currents, wind, topography).

**CONTACT**

For more information on this topic, please contact:

**Dajana Westenberg**  
Marketing Manager Health Care  
Rubber Solutions  
Tel. +49 89 6279-1612  
dajana.westenberg@wacker.com



## RAPID HEALING

Medical wound dressings such as SPYCRA™ PROTECT prevent chafing and lesions in sensitive and aged skin, which is very thin. The silicone dressing acts like a self-adhesive compress and is easy to remove atraumatically. This makes it gentle on the skin. The SPYCRA™ CONTACT product series from ReSkin comprises specialty silicone plasters. The polymer layer lies directly on top of the damaged skin, creating a damp milieu that allows the injury to heal faster and prevents scarring. Unlike the case for dry wounds, no scabs are formed that could impede skin cells during wound healing. ReSkin also produces wound dressings for coping with daily tribulations, such as mosquito bites. The silicone products provide immediate cooling, suppressing itchiness and eliminating the urge to scratch. ReSkin products can also prevent or treat foot blisters. The silicone dressings stick to the skin for a long time, do not peel off, and can be reapplied after temporary removal.



A damp milieu is created under silicone plasters that boosts the healing process.

of cleanliness apply. The product is filtered and packaged, and then transported into a Class 8 cleanroom.

## WATERTIGHT, YET BREATHABLE

“When the two components are mixed together, an addition reaction takes place that doesn’t produce any byproducts. The outcome is crosslinked silicone gel,” explains Dr. Andreas Bacher, who runs an applications laboratory for medical silicones at WACKER in Burghausen. Since the addition reaction proceeds at room temperature, the products in the series are classified as room-temperature-vulcanizing, two-component (RTV-2) systems. The quality and biocompatibility of SILPURAN® products are regularly assessed by third-party testing labs against the requirements of USP Class VI and selected ISO 10993 tests.

Silicone dressings made from SILPURAN® are extremely gentle on the skin because of their high level of purity. This has been confirmed by a clinical trial conducted at the University of Leuven in Belgium which examined the risk of contact allergy to silicone dressings. “Another reason why the dressings have good compatibility is that they are breathable. The small holes in the Lycra® and SILPURAN® fabric allow the sweat to pass through,” explains Haentjens.

At the same time, the skin dressings are also water-impermeable, because silicones and Lycra® are hydrophobic. This water-repellency



Competitors must cycle 180 kilometers in the Ironman.

is a boon for van Lierde when he is competing. “I can swim 3.8 kilometers, cycle 180 kilometers, run a marathon and then take a hot shower, and still the ReSkin® dressing won’t have budged,” he says, delighted.

## CLOSE FITTING

The silicone dressings are also popular for their good adhesive properties. The material is very soft and pliant and conforms with the irregular surface of the skin. This has the advantage of vastly increasing the area of contact between the silicone and skin – as well as boosting the adhesive forces. “Other adhesives such as polyacrylate and hydrogels are less flexible and are unable to conform to the surface of the skin as readily,” says Haentjens. Consequently, to deliver the same level of adhesion as the silicones, these materials need more adhesive. The corollary is thicker wound

dressings and more resistance and friction during repetitive movements. In contrast, skin dressings made of silicone are very thin and generate very little friction. “I have emerged from training sessions and competitions free from any skin irritation or pain, thanks to ReSkin® skin dressings,” says van Lierde.

The developers of ReSkin® know what is important about their products. The company ReSkin was spun-off from Bioracer, a sports firm founded by Raymond Vanstraelen, an ex-professional cyclist. Bioracer specializes in the production of functional sportswear, is market leader in the Benelux countries and fits out various national cycling teams. It was Vanstraelen, too, who first addressed the problem of chafing in cycling. Together with scientists from the University of Ghent in Belgium, he spent years researching a solution before they finally identified silicone as the optimum

material: not only is it easy to apply to the skin, but it can also be removed again atraumatically, i.e. without injury and with little pain.

## RELIABLE QUALITY

Bioracer and the University of Ghent subsequently founded ReSkin as a joint venture in 2011 and set about finding a reliable silicone supplier. “WACKER is an acknowledged specialist in this material, and has a reputation for reliability and quality,” explains Haentjens. ReSkin is now market leader with its ReSkin® Bike line of products and has been asked about preventing chafing in other sports.

Triathlete Frederik van Lierder finally has made it to the top. In 2013, after spending a season preparing under ideal conditions with the aid of ReSkin® dressings, he won the Hawaiian Ironman in eight hours, thereby becoming the king of the triathletes. ■