epicite hydro

epicite hydro – The hydro-active dressing for advanced wound management in burns

Apodan

ORSKIN
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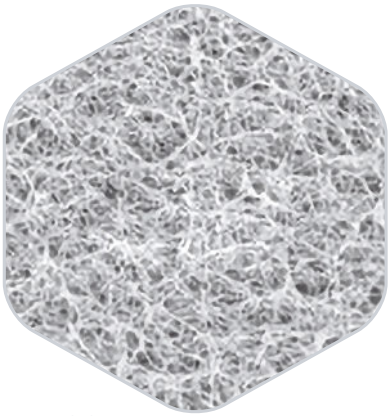
epicite hydro – the hydro-active dressing for an ideal wound healing environment

The biotechnology derived cellulose provides unique properties to the wound dressing epicite hydro. It contains a minimum of 95% isotonic saline solution due to its very dense and homogeneous structure.

epicite hydro

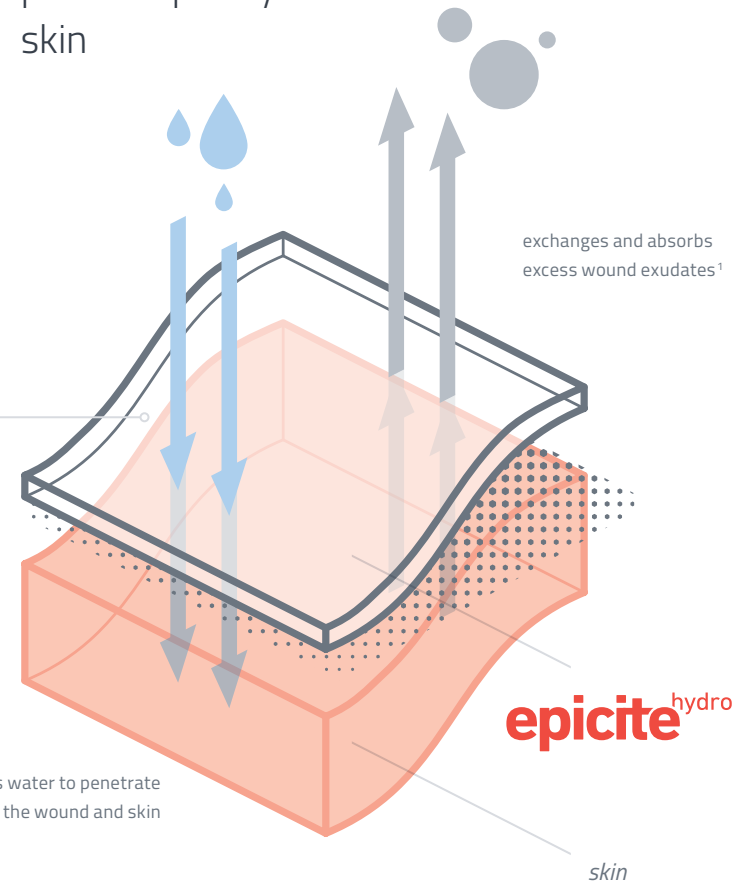
- Creates a supportive moist environment to the wound with a favorable hydrobalance and water vapor permeability.
- Absorbs excess wound exudates.[1]
- Provides an immediate cooling effect after its application.[2]
- Adapts easily to all types and shapes of wounds and can be cut to a sizable fit.
- Dries out during the healing process and after successful epithelization can be peeled off easily and nearly pain-free.
- Easy to store (5 – 30°C).



epicite hydro

SEM = Scanning Electron Microscopy
at magnitude of 3,00 KX
Ø Fibers: 60 – 90 nm
Ø Pores: 1 – 4 µm

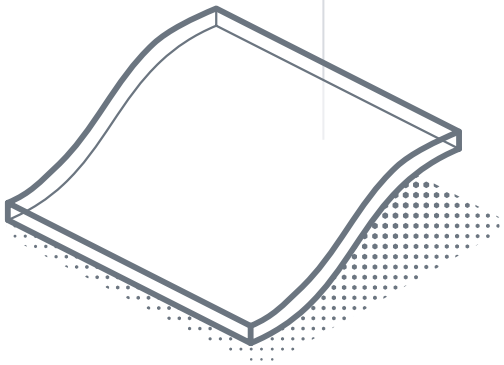
The unique structure of epicite hydro provides plenty of moisture to the skin



Indications

epicite^{hydro} has been developed to support the healing of acute dermal wounds.
It is proven for superficial and deep partial thickness wounds with a slight to moderate level of exudate.

- Superficial and deep partial thickness thermal or chemical burn wounds (1st and 2nd degree)
- Scalds
- Skin graft donor sites
- Abrasions
- Lacerations

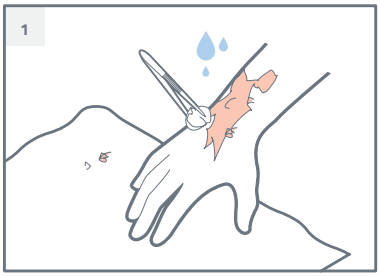


epicite hydro

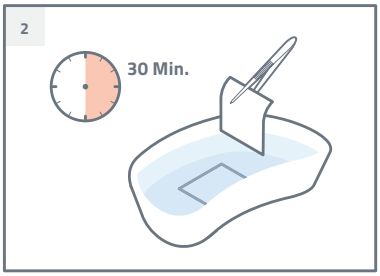
epicite^{hydro} sets new standards for an advanced wound management

- Less pain and stress for patients due to the reduced number of dressing changes
- Can optionally be soaked with antiseptic solutions and is easy to apply
- Reduces nursing time and shortens hospital stay

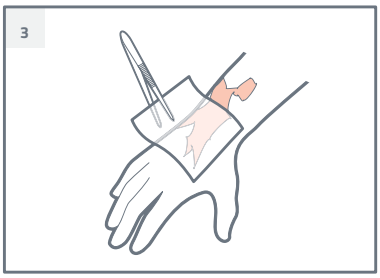
epicite^hydro – Application



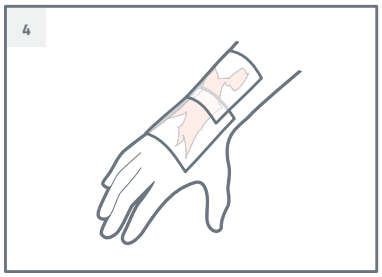
Wound debridement
Ensure a good hemostasis
Assessement of wound depth.



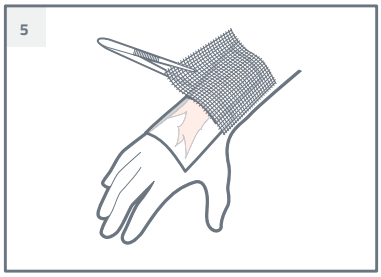
Optional step: epicite^hydro can be soaked for approximately 30 minutes in commonly used antiseptic solutions (like Octenidine or PHMB):



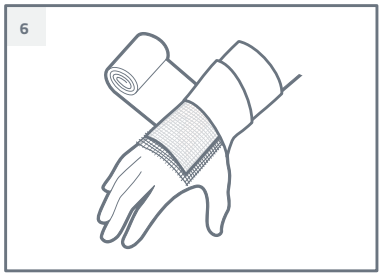
Apply epicite^hydro on the wound.
It should cover the surrounding healthy tissue by at least 1-2



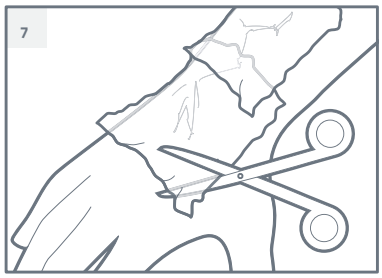
For larger wounds, apply further epicite^hydro dressings with overlaps of 1-2 cm.
epicite^hydro can be cut to fit any size of wound.



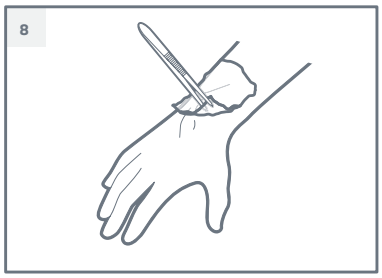
Apply one layer of fatty gauze.



If necessary, put material to absorb the wound exudate like a gauze compress on the fatty gauze for the first three days. Then use a fixation bandage.



The healing process is successful, when epicite^hydro is dried out and the edges begin to peel.



The detached material should be cut off during each wound assessment until the entire dressing has come off (same principle as a natural scab).

A wound dressing assessment should be done at least every 48 hours: epicite^hydro and the fatty gauze remain on the wound.

For superficial burn wounds (2a degree): no dressing change required.

For mixed superficial and deep partial thickness burn wounds (2a & 2b degree) a dressing change may be required:

-
- Rehydrate epicite^hydro for an easy and nearly pain-free removal.

epicite^{hydro} – is suitable for combined use

In an *in-vitro* study we have analysed the use of epicite^{hydro} with common antiseptics. The uptake of antiseptics into the wound dressing, its release and its inhibition profile against *Staphylococcus aureus (S. aureus)* were determined.

epicite^{hydro} shows a fast and efficient uptake of antiseptic solutions

Among the six antiseptic solutions tested, five wound dressings had an uptake of more than 40% of the active compound after soaking 30 min only *(Fig. 1B)*. [3, 4]

	Percentage in epicite^{hydro} in comparison to starting solutions			
Antiseptic [Active compound]	10 min	**30 min**	60 min	120 min
Lavanid® 2 [PHMB]	31%	**60%**	66%	76%
Prontosan® [PHMB]	27%	**53%**	64%	76%
Mafenid [Mafenid]	37%	**58%**	72%	90%
Octenisept® [Octenidine]	48%	**70%**	82%	110%

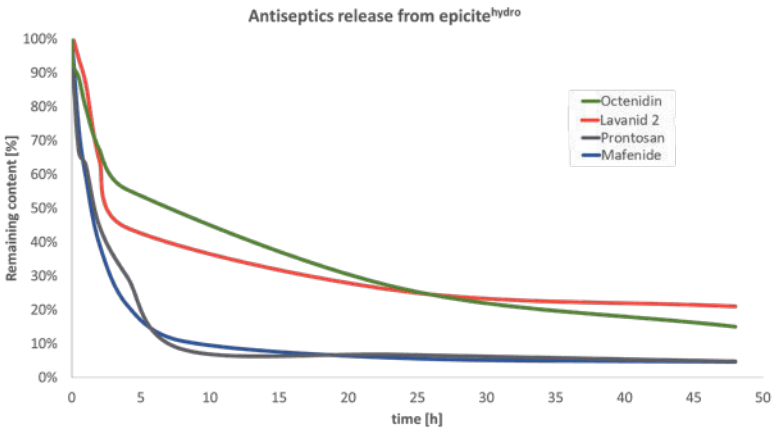
Figure 1. *Uptake of antiseptic compounds into epicite^{hydro}*

In order to mimic the use in a clinical setting, two 10 x 10 cm sheets of epicite^{hydro} were soaked in 200 ml of an antiseptic solution in a kidney dish (fig 1A). 6 different antiseptics were tested, and the concentration in each sheet was determined after 10, 30, 60 and 120 min and compared to the concentration of the starting solution (fig 1B).

epicite^hydro allows a controlled release of antiseptic solutions

Octenidine and Lavanid 2 show a sustained and prolonged release from epicite^hydro, whereas Prontosan and Mafenide have a faster release kinetic *(Fig. 2A)*.[3, 4]

The epicite^hydro dressing loaded with Betaisodona® (demonstration case) shows an efficient release over a period of 24 hours, while the release of the commercially available Betaisodona® Wundgaze is no longer visually detectable after more than 6 hours *(Fig. 2B)*.[3]



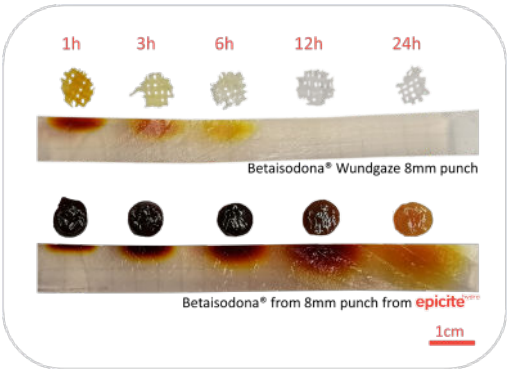


Figure 2. *Release of antiseptics into agar matrix*

A: Punches of epicite^hydro loaded with different antiseptics were placed on an agarose matrix for 1, 3, 6, 12 and 24 hours and the remaining amount of antiseptic in the punches was determined and compared to the starting concentration.

B: To compare the diffusion profile of Betaisadona® solution within epicite^hydro to the Betaisadona® Wundgaze, 8 mm punches of the commercially available Betaisodona® Wundgaze were placed on agarose gel. Due to its strong

epicite^hydro loaded with antiseptics is efficient against *Staphylococcus aureus*

All six antiseptics in the study showed a good or even better inhibition of the growth of *S. aureus* compared to commercially available products.

A loading time of only 10 minutes of the epicite^hydro with Octenisept® yielded similar results to the commercially available Octenisept® gel. The inhibition capacity of Betaisodona® was always higher compared to the commercially available Betaisodona® Wundgaze.

epicite^{hydro} provides an efficient cooling effect and reduces intradermal damage [2]

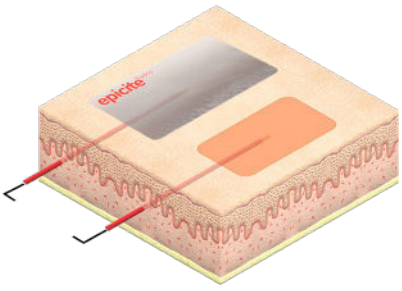
Burn wound progression is a significant problem as burns initially thought to be superficial can actually become full thickness over time. Cooling is an efficient method to reduce burn wound conversion. However, if the cooling agent is below room temperature, the patient could be at risk for hypothermia, depending on the size of the wound.

In a human *ex-vivo* study we investigated the effect of cooling on intradermal damages from a contact burn of 100°C. For cooling by evaporation, we used non-precooled epicite^{hydro} which is composed of

epicite^{hydro} reduces the intradermal temperature

Intradermal temperature in the burned skin is reduced significantly when covered with epicite^{hydro} compared to the non-cooled skin samples. [2]

- A short term cooling effect of maximum 6,4°C after 2 minutes reduces burn wound conversion.
- A mean temperature difference of 2°C after 30 minutes.
- A 1 - 2°C cooling effect remaining stable over 24 hours.



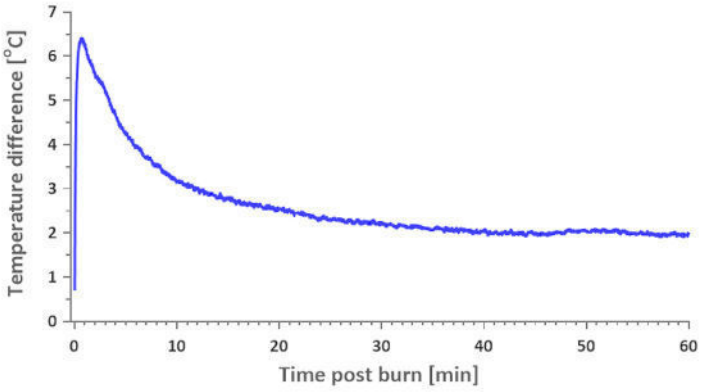


Figure 3. *Intradermal temperatures of epicite^{hydro} cooled wounds*
In a human ex-vivo model, skin explants underwent contact burns using a 100°C hot steel block. The burned areas were divided into two groups of which one was cooled with epicite^{hydro}. Intradermal temperature was measured as shown in fig.3A in cooled and uncooled burn sites over 24 hours. Fig 3B shows the temperature difference (uncooled-cooled) calculated for the first 60 min.

epicite hydro reduces the intradermal damage of the skin

The histologic results comparing cooled to uncooled samples of burns showed major differences especially in the first hour after burn. The burn wound cooled with epicite hydro shows [2]

- Significantly less oat cell degeneration & necrosis
- Less dermal-epidermal separation
- More vital cells

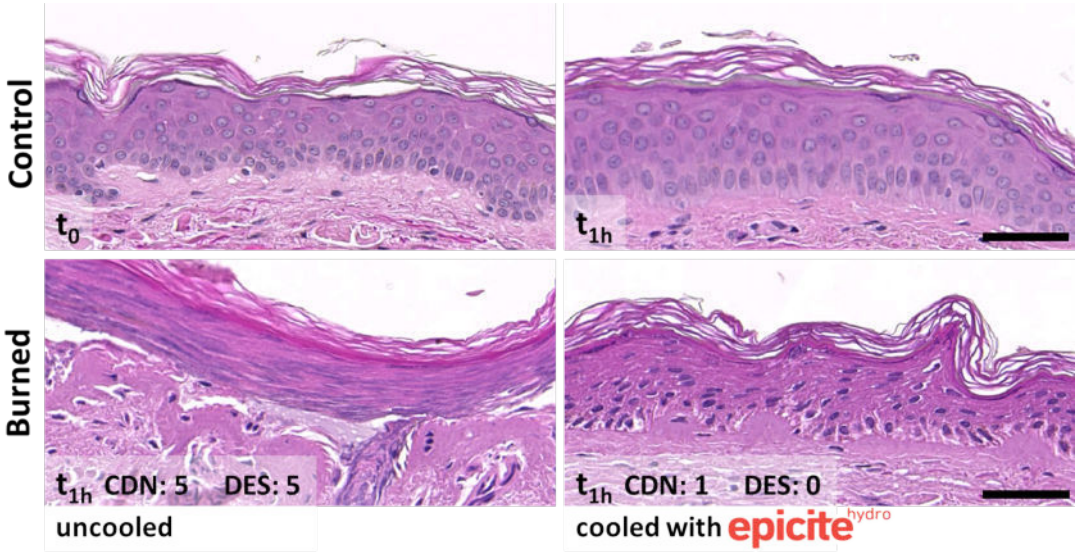


Figure 4.

Histological images of unburned (control), uncooled and cooled burned skin

Biopsies of the burned areas were taken at different time points and histologically scored for the grade of oat cell degeneration & necrosis (CDN; 0= no – 5=high) or dermal-epidermal separation (DES; 0= no – 5=high)

Burn injury, face

Gender	Male
Age of patient	48 years
Indication	Mixed second degree burn of face
Ethiology	Explosion of an alcohol bottle
Therapy	epicite[hydro]
Remarks	Conservative, no surgical treatment

Day of trauma

Day of trauma

Day of trauma, application of epicite[hydro]

3 days after trauma

5 days after trauma

9 days after trauma

Reference: Prof. Frank Siemers, MD / Ina Nietzschmann, MD – Burn Unit BG Klinikum Bergmannstrost Halle, Germany

Pediatric scald injury, face, neck, thorax, upper abdomen,

Gender	Male
Age of patient	1 Year, 11 month
Indication	Scald injuries 2a und 2b/Superficial and Deep Partial Thickness
Ethiology	Cup of hot tea accidentally dragged from table. Immediately cooled.
Therapy	Initial treatment: Polihexanid-Gel/Fatty-Gauze, 2. day: epicite hydro Dexpanthenol ointment.

Day of trauma

2 days after trauma

2 days after trauma, application of epicite hydro

2 days after trauma, application of epicite hydro

4 days after trauma, change of outer dressing without anesthesia

4 days after trauma, change of outer dressing without anesthesia

Pediatric scald injury, face, neck, thorax, upper abdomen,

5 days after trauma

7 days after trauma

7 days after trauma

9 days after trauma

10 days after trauma

24 days after trauma

43 days after trauma

Reference: Karl Bodenschatz, MD, - Paediatric Surgery - Children's Department, Klinikum Nürnberg Süd, Germany

Burn of leg

Gender	female
Age of patient	32 years
Indication	Mixed 1st and 2nd degree burn
Ethiology	Flame burn due to gas explosion
Therapy	epicite hydro
Remarks	Brownish discoloration of epicite hydro on day five due to the use of povidone iodine as antiseptic solution.

Day of Trauma

Day of Trauma. Application of epicite hydro

Day of Trauma. Application of epicite hydro

Day of Trauma. Application of epicite hydro

5 days after trauma.

5 days after trauma.

Reference: Francis Fortune Tegete, MD - Bugando Medical Center, Mwanza Tanzania

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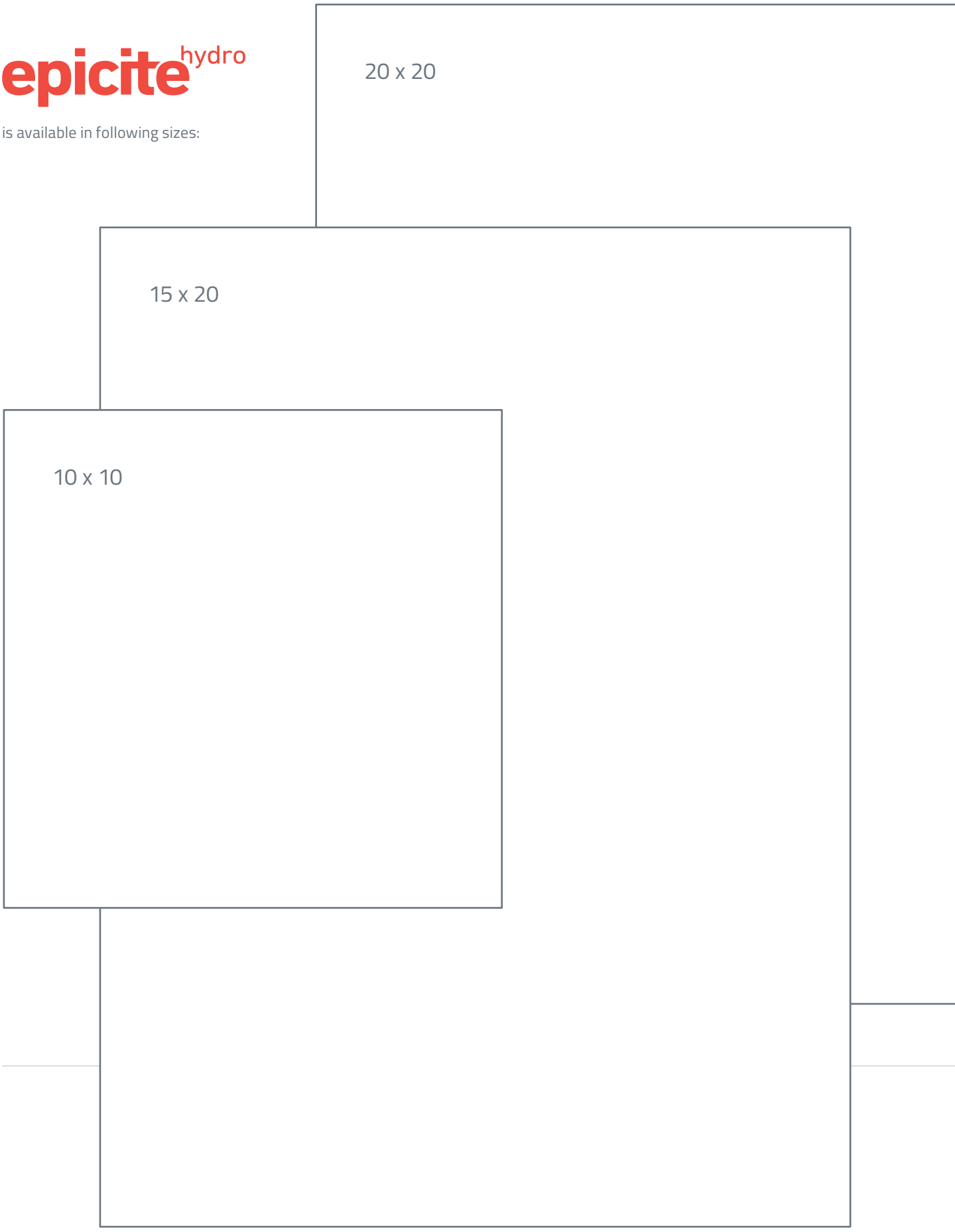
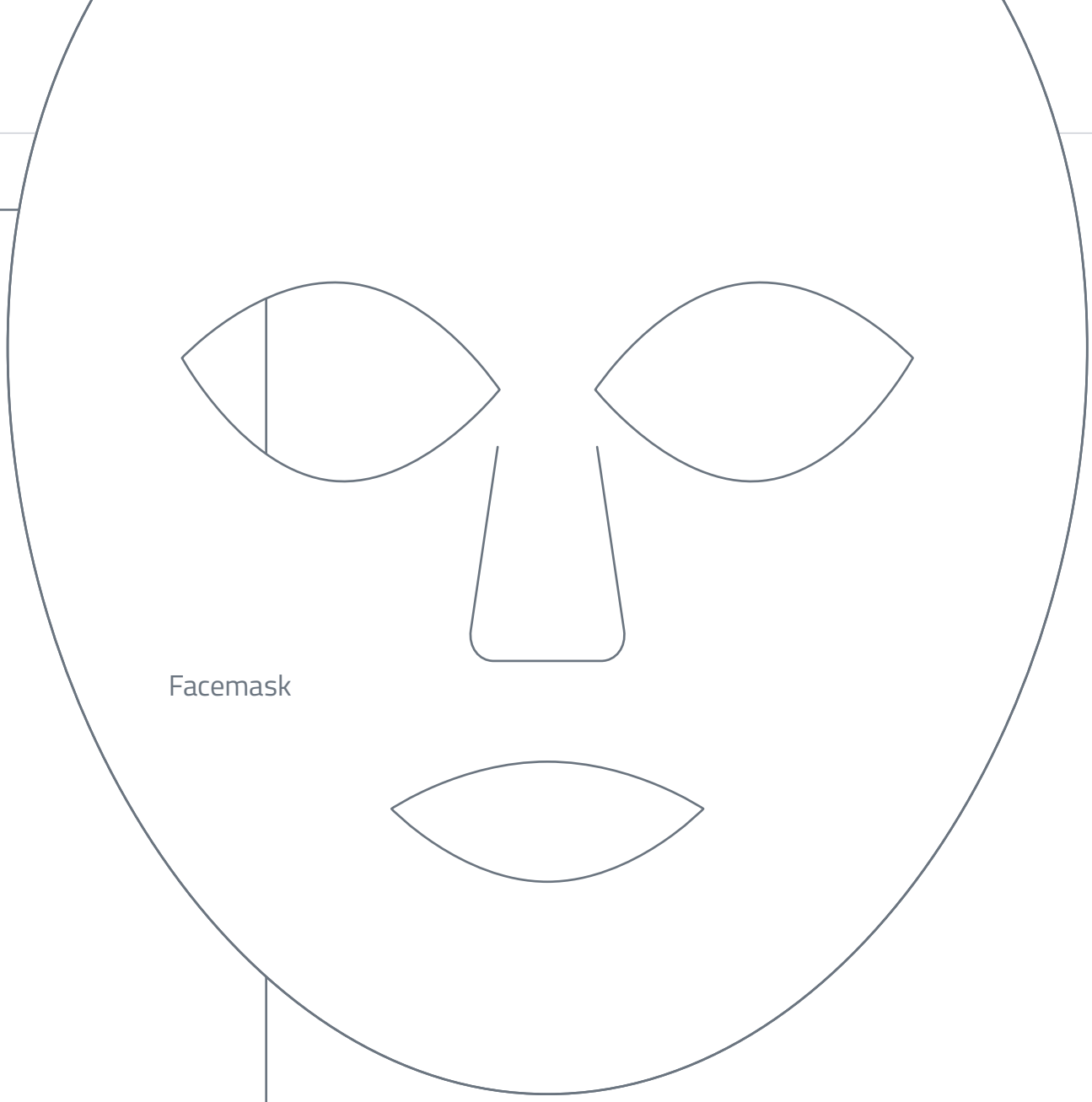
epicite hydro

is available in following sizes:





Facemask

Size in cm	REF-No.	Shipping units (pces.)
10 x 10	800003-M02B	1 (10)
15 x 20	800003-M06B	1 (10)
20 x 20	800003-MO9A	1 (5)
Facemask	800003-MO10A	1 (5)

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QRSKIN GmbH is an international medical device company based in

Skin is our passion: our mission is to develop and manufacture innovative and highly effective wound dressings for children and adults who suffer from acute wounds such as burns, abrasions, lacerations, skin graft donor sites and for chronic wounds.

Our main focus is on burns: we offer innovative wound dressings for patients as well as products and solutions for medical personnel in burn units. Our management team has a profound background in the Health Care Industry and more than 15 years of experience in burn treatment.

QRSKIN has a strong network of burn and plastic surgeon specialists around the world and is currently distributing its products in more than 25 countries.

Our innovative and high quality products are developed and manufactured in Germany.

QRSKIN's R&D department is working on new projects in close cooperation with leading organizations and renowned medical specialists from burn centers around the world.

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