



## Bonding solutions for Wearables applications

Skin-friendly materials and adhesives tailored to your requirements.



Cleanroom manufacturing available at our sites in Orange (VA), USA and Remscheid, Germany.

# Your reliable partner for smart and safe adhesive solutions for the medical industry



Lohmann develops, produces, coats and die-cuts adhesive solutions that have been used for clinical and precise diagnostic products for more than 20 years. Regardless of whether a customer-specific design or standard products, we deliver innovative products that are precise, stable, biocompatible and ideal for short- or long-term use. Providing in-house state-of-the-art capabilities, which include adhesive formulation, polymerization and coating as well as cleanroom capabilities and die-cutting, we are well-placed to support the needs of the market, both today and into the future.

We offer our customers a solution-orientated "Smart Bonding Approach". With our fully integrated value chain, a project management methodology that promotes and utilises tools such as FMEA (Failure Mode and Effects Analysis), risk assessment, design of experiments and IQ (Installation Qualification), OQ (Operational Qualification), PQ (Performance Qualification) validation, and a quality management system that operates in accordance with EN ISO 13485, Lohmann is your first choice partner for the design, development and commercialization of products for the Medical market.

## Adhesion to skin: Bonding solutions for challenging surfaces

There is probably no area in the adhesive industry that is more demanding than adhesion to skin. As a living organ, the skin is subject to constant change and fluctuating external influences, e.g. low surface energy, rough texture or sweat. With our "Smart Bonding Approach", we customize our solutions to your individual application and requirements.

Our biocompatible high-performance products cater to the needs of sensitive and stressed skin (elderly people, children or athletes), offering high breathability, water resistance as well as a residue-free and painless removability.

## NEW: 28+ days wear time adhesive tape system for wearables

Meeting the growing demand of the medical market for longer wear times of stick-to-skin products, adhesive solutions with a wear time of 28 days are currently the state of the art demanded by the industry. This demand is especially requested by the Continuous Glucose Monitoring (CGM) market, where device manufacturers and end users are looking for a product that will last one month on the skin.

DuploMED® 85300 is especially designed for multi-layer bonding solutions, offering excellent adhesion to the skin surface, while providing reliable bond to the device tape.

Lohmann's new DuploMED® 85300 28+ days long wear product meets and exceeds the requirements of the CGM market. Offering comfort, conformability and durability.

## The entire value chain of PSAs and die-cuts – from a single source



R&D of adhesive

We tailor the properties of our medical adhesives to the requirements of the wearable application offering a wear time of 3-days, 7-days, 14-days, 21-days and 28+ days.



Die-cutting

With precise die-cutting machines, that are used to create high-quality, dimensionally accurate products, we meet the increasing demands of the market.



Coating

Acrylic and rubber-based adhesives are coated onto web materials such as nonwovens, films and paper. Reactive crosslinking adhesive formulations offer increased mechanical or physical strength in your application.



Testing

With elaborate inspection and testing procedures in our laboratories, we ensure that our products meet and maintain the quality requirements.



Converting

We convert coated materials into rolls, spools and sheets in many dimensions according to your requirements.



Applying

We support our customers with application tools and help with the detailed engineering: from manual, semi or fully automatic application aids to cutting equipment.



Laminating

We laminate a variety of materials, creating individual product designs for specific applications.



Pick & Place

Application technology specialists support you in integrating our adhesive systems into the production process by fully automated pick & place solutions.

# Wearables

## Skin bonding solutions

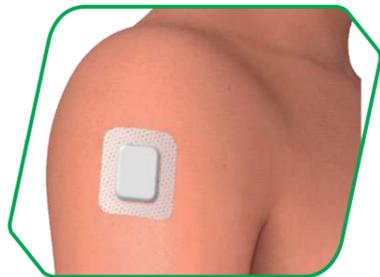
Health Patch



Large Volume Injector



Continuous Glucose Measurement (CGM)



Continuous Temperature Measurement



Insulin Patch Pumps



# Application in detail

## Health Patch

When using health patches over a longer period of time, e.g. for measuring cardiac telemetry, precise positioning of the device is necessary. For this application, Lohmann offers medical adhesive tapes that allow painless and residue-free removal and repositioning to ensure optimal measurement results.

### Your benefits:

- High tack of the adhesive to skin to ensure a strong bonding from the first touch
- Flexible material to improve the patient's comfort
- Double-sided tape with a thin PET carrier acts as a barrier film to protect the skin from the printed electronics
- Advanced functional integration and manufacturing technologies

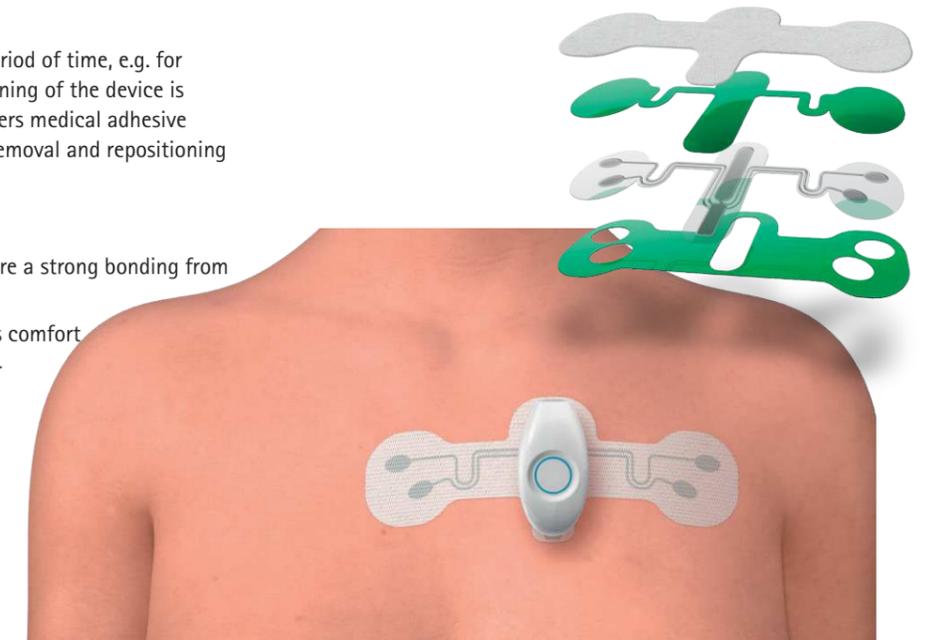
### Products:

Skin patch:

- DuploMED® 45150
- DuploMED® 22791

Device tape:

- DuploMED® 8171
- DuploMED® 8411
- DuploMED® 22507



## Continuous Glucose Measurement (CGM)

CGM devices require a reliable and durable stick-to-skin patch to provide reliable results over a long wear time. Lohmann offers a solution for this requirement: a skin adhesive with a wear time of 28+ days, improving the overall wearing comfort and the customer experience.

### Your benefits:

- High tack of the adhesive to skin to ensure a strong bonding from the first touch
- Strong bonding to ensure a long wear duration up to 28+ days
- Very flexible backing to allow the patch to adapt to the movement of the skin to reduce the skin irritation during the wear time
- Good breathability of the skin tape as well as the device tape to allow moisture to escape

### Products:

Skin patch:

- DuploMED® 85300
- DuploMED® 22791

Device tape:

- DuploMED® 22507



## Insulin Patch Pumps

A key requirement for bonding of insulin patch pumps is zero movement of the bond during injection. By combining flexibility and reliable skin adhesives, Lohmann fulfills this industry need. Our breathable adhesive tape solutions ensure the maximum comfort for the patient, with a wear time of up to 72 hours.

### Your benefits:

- Flexible material to improve the patient's comfort
- Double-coated device tapes to create a strong bonding between device and skin tape
- Good breathability of the skin tape to allow moisture to escape and let the skin breath
- Good shear resistance of the adhesive to prevent movement of the patch during injection

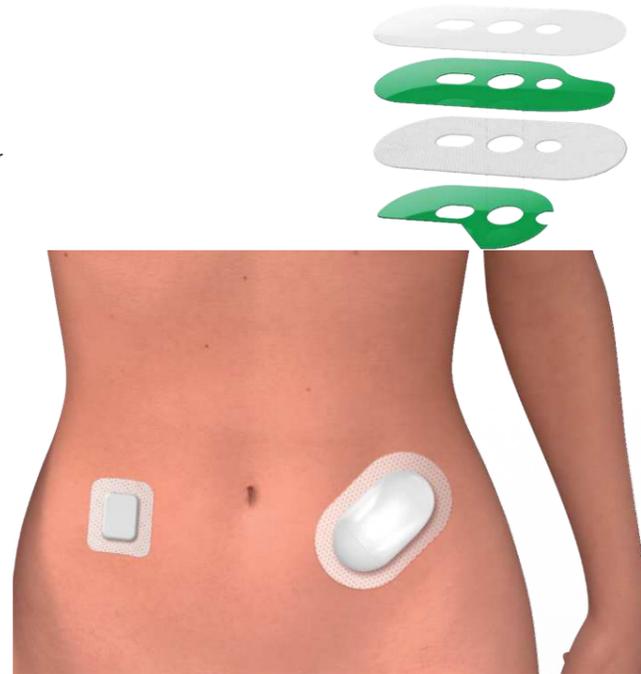
### Products:

Skin patch:

- DuploMED® 22260
- DuploMED® 45150

Device tape:

- DuploMED® 8171
- DuploMED® 8411
- DuploMED® 22507



## Large Volume Injector

Our single-use patch solutions for large volume injectors are equipped with repositionable tapes, ensuring a comfortable use for the self-injection of liquid drugs (e.g. for cancer treatment) at home. Depending on your application, our product offers wear durations from 10 minutes to 2 hours.

### Your benefits:

- High tack of the adhesive to skin to ensure a strong bonding from the first touch
- Low peel strength for easy removal after use
- Repositionable tapes to ensure the best bonding
- Good shear resistance of the adhesive to prevent movement of the patch during injection

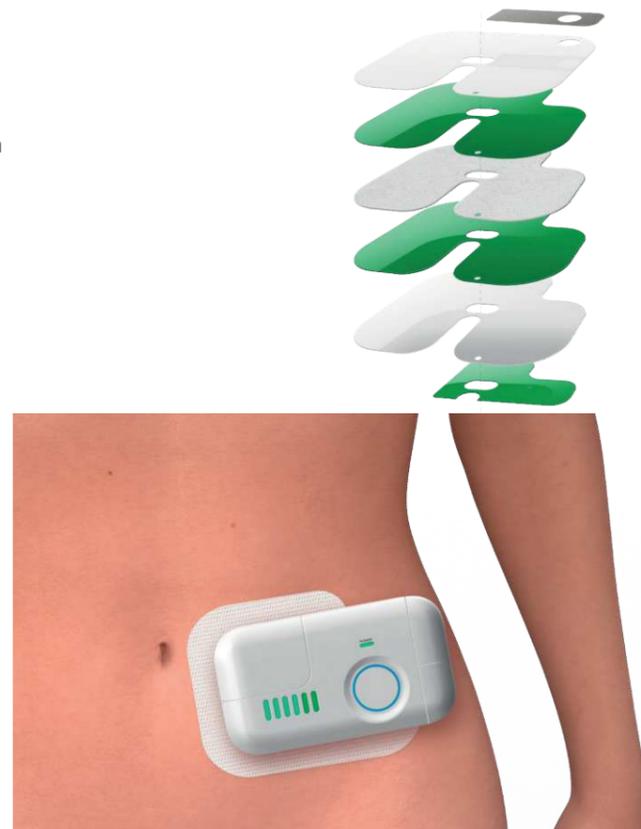
### Products:

Skin patch:

- DuploMED® 62201
- DuploMED® 22260
- DuploMED® 45150

Device tape:

- DuploMED® 8171
- DuploMED® 8411
- DuploMED® 22507



## Continuous Temperature Measurement

Devices which continuously monitor body parameters, such as temperature, especially require a reliable bond. While ensuring the close contact of the sensors to skin, our skin-friendly bonding solution have also an integrated barrier film to the printed electronics for skin protection.

### Your benefits:

- DuploMED® 8411: adhesive to the skin side, including a thin PET carrier, acts as a barrier film to protect the skin from the printed electronics
- DuploMED® ELE 77300 / DuploMED® 22260: barrier to protect the electronics from external factors such as temperature and water

### Products

Skin patch:

- DuploMED® 45300
- DuploMED® 8411

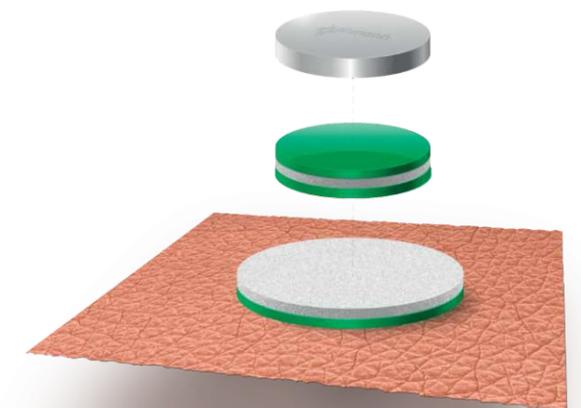


## Couldn't find your specific wearables application?

We always have your individual requirements in mind for every adhesive bond. As a qualified development partner, we are at your side right from the start. For us, your inquiry is the beginning of customized and professional engineering. Our international project teams work closely with you across countries and locations. Our experience and deep understanding of comfort and functional properties of wearables will shorten your time to market.

### Your benefits:

- High tack of the adhesive to skin to ensure a strong bonding from the first touch
- Low peel strength for easy removal after use
- Repositionable tapes to ensure the best bonding
- Good shear resistance of the adhesive to prevent movement of the patch during injection



## From prototyping to full-scale production: We are your partner for design & manufacturing of medical wearables.

Lohmann's Bonding Engineers, as a partner for the medical industry, offer a partnership at eye level, providing prototyping and production at different scales. Whether you require prototyping, small-scale production, or large-scale production, we have you covered.

- For prototyping (1 – 1,000 pcs), we offer individual die-cuts and manual assembly, ensuring meticulous quality control throughout the process.
- In small-scale production (1k – 100k pcs), we employ automatic die-cutting methods along with semi-automated assembly and quality control processes.
- When it comes to large-scale production (> 100k pcs), we achieve a high degree of automation and even offer cleanroom production capabilities. Additionally, our pick & place technology allows for seamless component integration.



Within our partnership, we provide numerous benefits, including being your development and manufacturing partner at once. We offer deep vertical integration, encompassing material selection, processing, and packaging. Our streamlined processes allow for a short time to market, leveraging our established material and process toolbox. Moreover, our long-term experience in ensuring skin comfort is a valuable asset. Quality assurance is vital to us, ensuring error-free and smooth functioning of your medical wearables. We maintain geometric tolerances in the micrometer range and focus on functional excellence.

To further cater to the specific needs of the medical industry, Lohmann's Bonding Engineers have cleanrooms available at our locations in Europe and the USA.

### Our die-cut manufacturing possibilities:

- Flatbed die-cutting (wide range of materials)
- Rotary die-cutting (low tolerances, multilayered geometries, inline measurements and printing)
- Full metal dies (very narrow tolerances)
- Laser cutting (precise die-cuts roll-to-roll)



### Get in touch

With decades of know-how in the medical industry, we happily accompany you throughout your entire process and answer all your questions.

Get in touch with us by simply scanning the qr-code or visit our website.

[www.lohmann-tapes.com/wearables](http://www.lohmann-tapes.com/wearables)



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