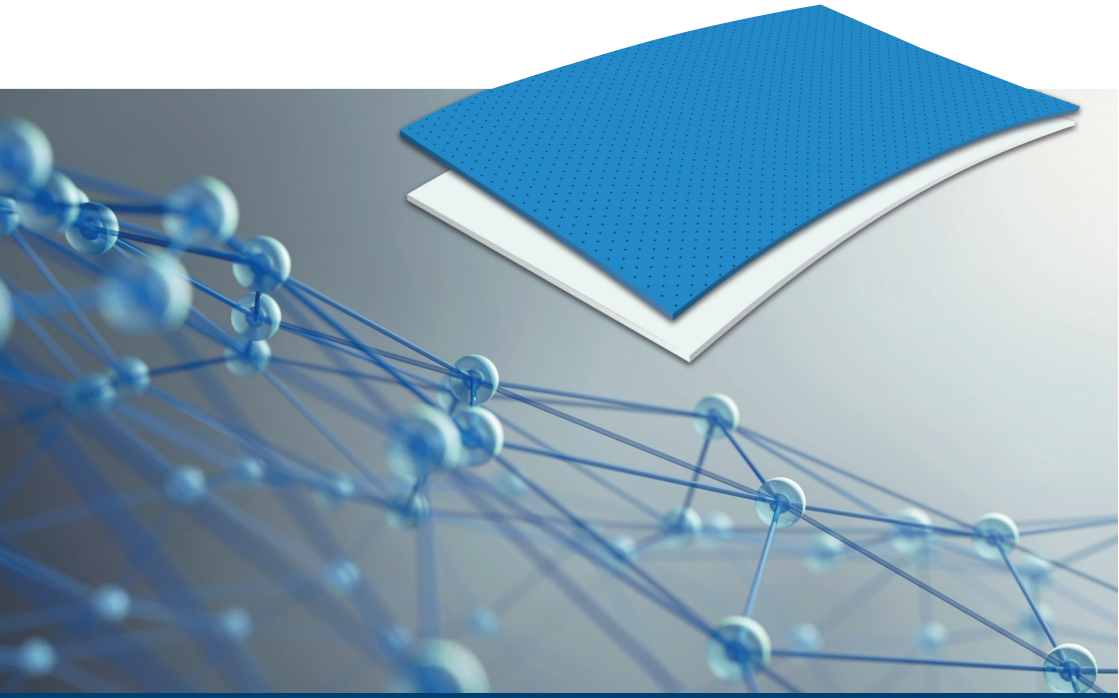
nora® LUNATEC FUSION

Permanently bonded without any adhesive ...



EVA solutions for health and industry

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nora® by Interface®

Lunatec fusion is a global innovation in the area of expanded EVA materials which ensure a reliable, permanent bond **without the additional use of adhesive.** This allows fast, clean, environmentally friendly and healthy work at the highest level of quality that's made in Germany.

Lunatec fusion 30 and **Lunatec fusion 40** mark the first step towards a new, contemporary way of working that allows manufacturing without adhesives. These unique new materials create an **immediate bond*** during processing and bond with each other solely as a result of **heat, time** and **pressure.**

In concrete terms, this means: These materials bond with each other through thermoplastic moulding. During the cooling phase, the surfaces literally melt together and fuse to create a permanent bond.

There is no need to apply adhesive, thus avoiding contamination, later discolouration, tangible hardening and long drying times.

The advantages are clear: Massive savings on time and costs as well as clean, environmentally friendly working, without any adhesive at all.

** immediate bond = bonded directly to each other, without intermediate layer and without adhesive*

nora® Lunatec fusion 30

EVA expanded sheets, smooth and perforated, trimmed edges

Hardness:	Density:	Format:
approx. 30 Shore A	approx. 0.17 g/cm³	approx. 1000 x 700 mm // 39.4" x 27.5"

▼ SMOOTH

Colour:	Thicknesses:
378 blue	2|3|4|6 mm

▼ PERFORATED

Colour:	Thicknesses:
378 blue	2|4 mm

Properties:

Lightweight, dimensionally stable, flexible and elastic, good elastic recovery, comfortable walking. Vegan and free of latex. Thermoformable at approx. 130 °C // 266 °F. Can be washed and disinfected completely hygienically because of the closed cell structure.

nora® Lunatec fusion 40

EVA expanded sheets, smooth and perforated, trimmed edges

Hardness:	Density:	Format:
approx. 40 Shore A	approx. 0.22 g/cm³	approx. 1040 x 625 mm // 40.9" x 24.6"

▼ SMOOTH

Colour:	Thicknesses:
09 white	4|8|12 mm

▼ PERFORATED

Colour:	Thicknesses:
09 white	4|8 mm

Properties:

Lightweight, elastic and dimensionally stable, good recovery capability, comfortable walking. Vegan and free of latex. Thermoformable at approx. 130 °C // 266 °F. Can be washed and disinfected completely hygienically because of the closed cell structure.

nora® LUNATEC FUSION

Permanently bonded without any adhesive ...

- Global innovation
- Bonding without adhesive
- Processing instructions
- Application examples
- Wide range of possibilities
- Comprehensively certified
- Made in Germany

Global innovation

Lunatec fusion 30 and **Lunatec fusion 40** mark the first step towards a new, contemporary way of working that allows bonding **without adhesives.** In addition to offering valuable **savings in terms of time and costs,** this also has **health and environmental benefits.**

The formula for these special EVA materials presented our research & development department with a particular challenge. The result of many years of development work is a **global innovation** that allows orthopaedic insoles and orthopaedic aids to be made without any need to work with adhesive. **Heat and pressure** are enough to bond these materials permanently during the manufacturing process.

As the inventors of the **Lunatec combi** vulcanised composite sheets, we are going a step further with this development. Whilst, with composite sheets, the layers are selected in the manufacturing process, with **Lunatec fusion,** the flexible choice of materials for the classic sandwich design or individual structure is shifted back to the workshop. And in spite of this, **fast working** is possible, **without adhesive** and with massive **reductions in time and costs.** The cut individual materials can be **heated next to each other in the oven** and moulded directly on the last in a straight vacuum press.

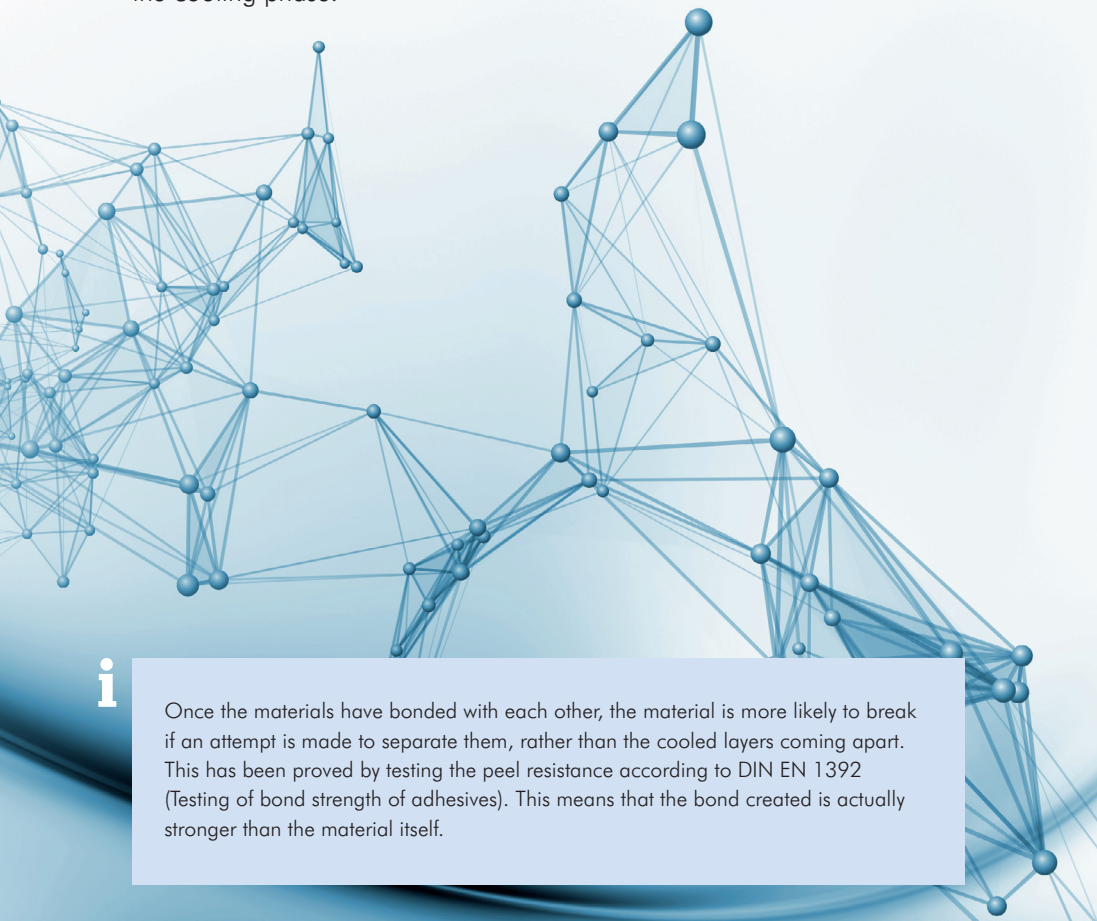
In addition to various material layers, individual blanks, e.g. for reinforcing the arch, can be positioned flexibly and bonded to each other in a single deep drawing process.

Lunatec fusion 30 and **Lunatec fusion 40** are just the first step – we're working on more materials ...

Bonding without adhesive

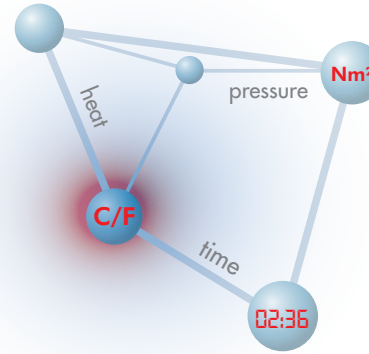
The principle of „fusing" on the basis of EVA is well known in the industry and in the world of hand-crafting, and also from hotmelt adhesives. The EVA polymer provides stability here and ensures optimum bonding. **Lunatec fusion** works in a similar way.

The principle is both simple and complex:
The heated materials bond together permanently under pressure during the cooling phase.



Once the materials have bonded with each other, the material is more likely to break if an attempt is made to separate them, rather than the cooled layers coming apart. This has been proved by testing the peel resistance according to DIN EN 1392 (Testing of bond strength of adhesives). This means that the bond created is actually stronger than the material itself.

Processing instructions



For reliable bonding:

- **roughen** smooth materials
- use **a perforated** material
- stick to the **recommended times**
- **oven setting:** 130 °C // 266 °F
- **Rule of thumb:** Heating time x 2 = ideal cooling time

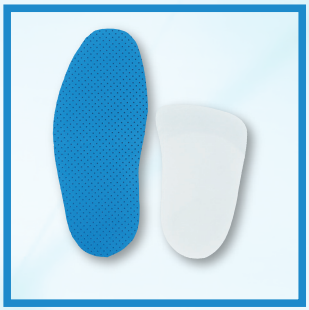
Recommended heating and cooling times for Lunatec fusion 30 and Lunatec fusion 40 (smooth):

Material thickness	Heating time	Cooling time
2 mm	45 seconds	1.5 minutes
3 mm	1 minute	2 minutes
4 mm	2 minutes	4 minutes
6 mm	3 minutes	6 minutes
8 mm	4 minutes	8 minutes
10 mm	5 minutes	10 minutes
12 mm	6 minutes	12 minutes

With **perforated materials,** the heating time can be shortened by about a third as the heat spreads through the material faster.

Because vulcanised EVA sheets consist of closed cells, the process works best when the material is **roughened by sanding** before processing. This opens up the cell walls and increases the size of the surface for full-surface bonding. A similar effect is achieved by **perforation,** which also prevents the formation of air bubbles.

Application example 1



Soft cushioning insole (perforated)

Lunatec fusion 30 perforated
Thickness: 4 mm
Function: Base and cushioning layer for long sole insole

Lunatec fusion 40 smooth
Thickness: 8 mm
Function: Stabilisation in rearfoot area

1. Roughen and heat

Roughen both materials in contact areas, sand rearfoot stabilisation to wedge shape and then **heat** in oven at 130 °C // 266 °F.

Heating times:
8 mm approx. 4 minutes
4 mm approx. 1.5 minutes

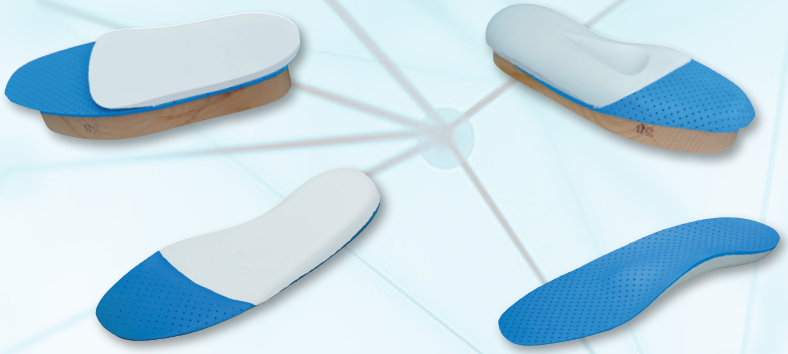
2. Deep draw and allow to cool

Place materials on last, deep draw and make sure that sufficient pressure is applied to the drawing bladder. Press material firmly during the deep drawing process to prevent air insertions.

Cooling time: approx. 8 minutes

3. Grinding

Grind insoles to shape.



Tip: Depending on the treatment, a thermoplastic reinforcing material (EVA-based) can also be inserted between the layers, e.g. for heavier body weights or higher loading.

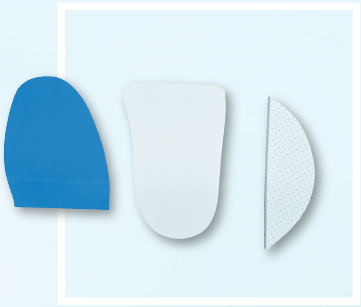
Application example 2

Soft cushioning insole

Lunatec fusion 30 smooth
Thickness: 6 mm
Function: Forefoot cushioning

Lunatec fusion 40 smooth
Thickness: 8 mm
Function: Stabilisation in rearfoot area

Lunatec fusion 40 perforated
Thickness: 8 mm
Function: Stabilisation with high arch



1. Grind and heat

Grind **Lunatec fusion 30** well in contact area and grind **Lunatec fusion 40** (smooth) in wedge shape to avoid edges and then heat in oven at 130 °C // 266 °F.

Heating times:
8 mm approx. 4 minutes
(slightly less with perforated material)
6 mm approx. 3 minutes

2. Deep draw and allow to cool

Place all materials correctly on last, deep draw and make sure that sufficient pressure is applied to the drawing bladder. Press material firmly during the deep drawing process to prevent air insertions.

Cooling time: approx. 8 minutes

3. Grinding

Grind insoles to shape.

Tip: With this type of insole manufacture, it is important to cleanly sand the contact surfaces of the half sole wedge-shaped to avoid edges and ensure ideal bonding.

Application example 3

Soft cushioning insole (smooth)

Lunatec fusion 30 smooth
Thickness: 4 mm
Function: Base and cushioning layer for long sole bedding

Lunatec fusion 40 perforated
Thickness: 8 mm
Function: Stabilisation in rearfoot area

1. Roughen and heat

Roughen both materials in contact areas, grind rearfoot stabilisation to wedge shape and then **heat** in oven at 130 °C // 266 °F.

Heating times:
8 mm just under 4 minutes
4 mm approx. 2 minutes

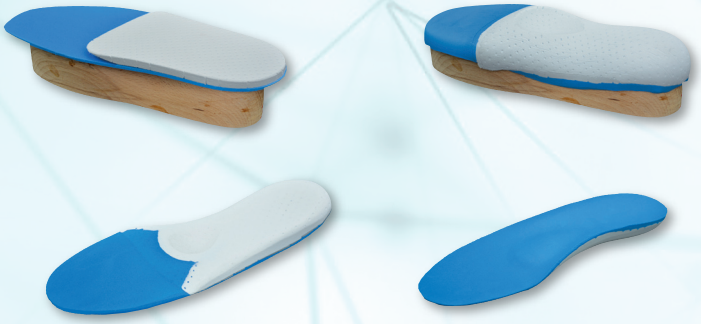
2. Deep draw and allow to cool

Place materials on last, deep draw and make sure that sufficient pressure is applied to the drawing bladder. Press material firmly during the deep drawing process to prevent air insertions.

Cooling time: approx. 8 minutes

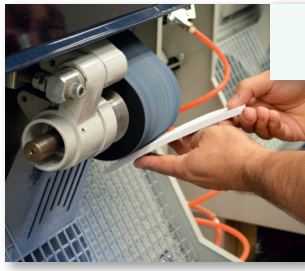
3. Grinding

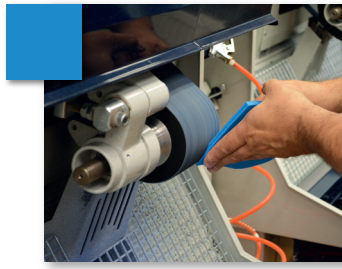
Grind insoles to shape.

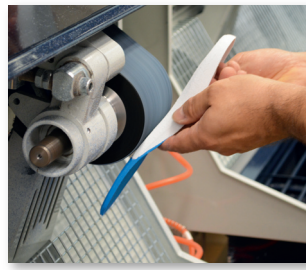


Tip: Depending on the treatment, a thermoplastic reinforcing material (EVA-based) can also be inserted between the layers, e.g. for heavier body weights or higher loading.

Wide range of possibilities







Lunatec fusion 30 and **Lunatec fusion 40** mark the first step towards a new, contemporary way of working that allows bonding without adhesives. Our technicians have worked with practitioner's, testing a wide range of possible uses, but we are certain that there are many more application areas in the orthopaedic shoe engineering and in prosthetics and orthotics.

Further versions are already being planned, which means that it will be possible to make softer beddings and treatments requiring greater stabilisation with **Lunatec fusion** in the foreseeable future.

Depending on the treatment, for example, a classic thermoplastic reinforcing material (EVA-based), which is available from various manufacturers, can also be inserted between the layers to increase stability.

Please talk to our technical supports in the field!

Comprehensively certified

As a **manufacturer in Germany,** we assume particular responsibility for consistent quality, innovative product developments, practical diversity and the highest possible reliability and safety. As the basis, ISO 9001:2015 certification safeguards the **unvarying quality** of our products.

Continuous in-house quality control is supplemented with extensive external testing and certifications, for **uncompromising quality assurance** far beyond the statutory requirements.

Lunatec fusion is …

- free of constituents posing toxicological and carcinogenic risks as specified in EU Regulation 2017/745 and suitable for use in **Class 1 medicinal products.**
- **SG pollutant-tested** by the PFI test and research institute in Pirmasens.
- tested for **dermatological skin compatibility** by the Dermatest Institute.
- **free from phthalates and latex** and made solely from **vegan** constituents.
- **completely & hygienically washable and disinfectable** due to the **closed-cell** material structure and surface. This minimises the risk of any health hazard caused by residual germs and bacteria.

The corresponding declaration of clearance and ISO 9001: 2015 certificate can be downloaded from www.nora-material.com. On request, we can also provide you with the SG certificate, the dermatological report and the biological risk assessment of medical products.

Lloyd's Register
ISO 9001:2015

SCHADSTOFFGEPRÜFT

ORIGINAL SEHR GUT dermatest®
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100% VEGAN

ISO 14001:2015

Geprüfte Qualität

Our **certified brand articles** are used in orthopaedic shoe engineering, prosthetics and orthotics, the shoe industry, shoemaker craft and in a wide range of industrial applications.
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nora systems GmbH is a German manufacturer of certified brand-name products, designed for orthopaedic shoe engineering, prosthetics and orthotics, shoe industry, bespoke shoemakers, shoe repair, and many other industrial applications.

nora systems GmbH produces and markets materials made of closed cell EVA, rubber and expanded rubber. Headquarters and production site is in Weinheim, Germany.

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