FROM NATURE.
BACK TO NATURE.

PAPER INJECTION MOULDING

Injection-molded paper packaging consists entirely of natural and renewable raw materials.

ONLINE AT SOCIAL MEDIA

You can find more information about the rein***papier***®
brand also on the following social media platforms..

DE-PACK
Innovative packaging

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FROM NATURE.
BACK TO NATURE.

PAPER INJECTION MOLDING

reinpapier® THE most environmentally friendly packaging solutions!!

reinpapier® was created to meet the high demands for environmentally conscious packaging. An ingenious idea and an innovative raw material mixture of totally natural ingredients have resulted in one of the most sustainable packaging products of recent years. Together with you, we reduce the environmental impact of packaging to a minimum.

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reinpapier®

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HIGH QUALITY PAPER INJECTION MOLDING TECHNOLOGY

reinpapier® Packages

Current daily reports show that much our fragile ecosystem is already polluted by plastic packaging waste. Unfortunately, the trend is still rising!

So imagine a world where natural packaging safely protects your packaged goods during transport and storage. Packaging that consists largely of potato starch and paper and can be simply composted after use and can completely biodegrade within a few days - completely and without harmful residues. That is why we are taking a first important and responsible step towards a clean future with the packaging brand reinpapier®.

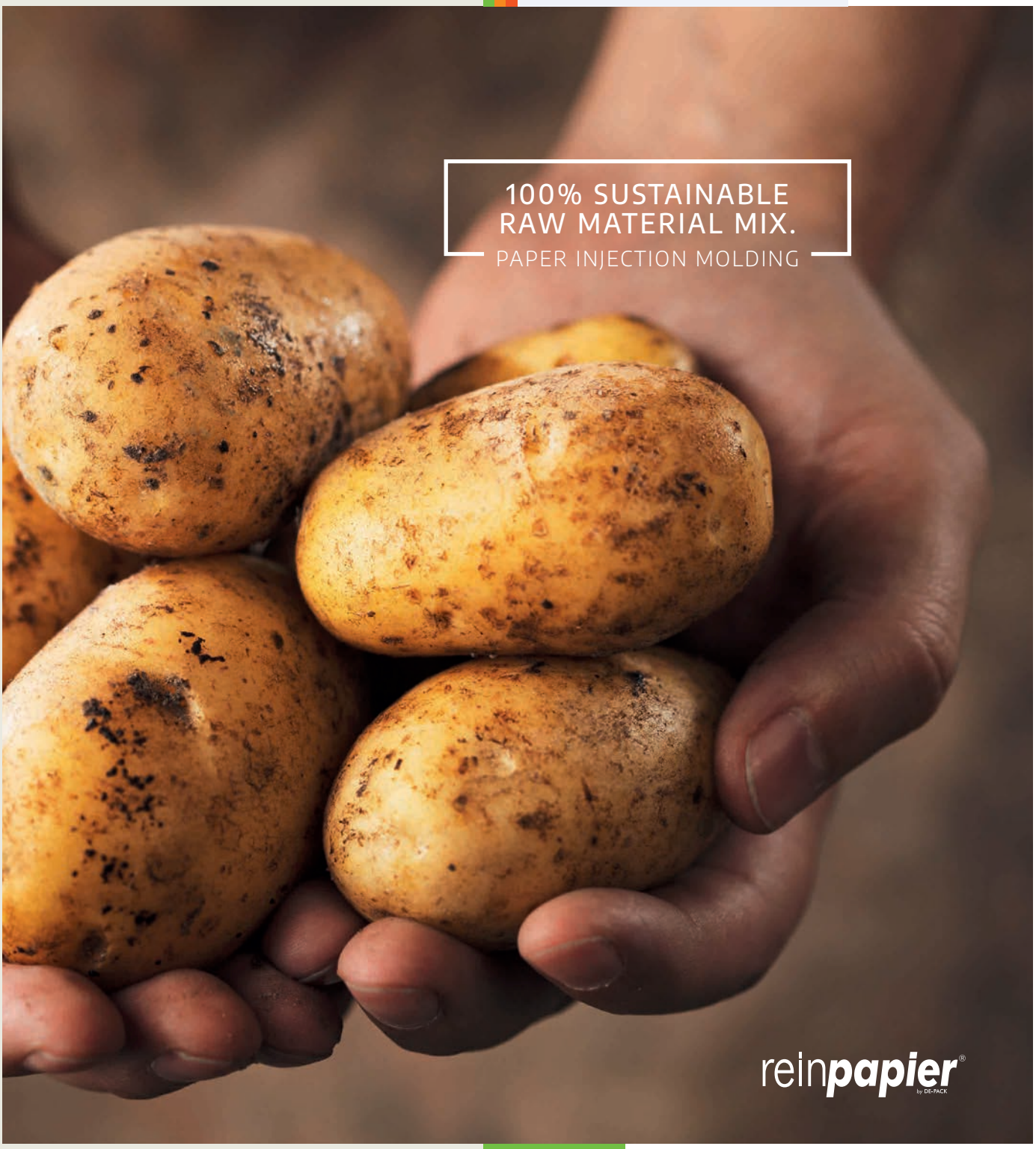
The considerable impact of plastic on our ecosystem is reduced many times over with this original and innovative packaging. reinpapier® is 100% sustainable packaging material that can be used in a wide range of industries.
reinpapier®, paper injection molded packaging, is perfect for use as a single use, disposable packaging because of its excellent recyclability and compostability. Disposable packaging is used for most products on the market.

With reinpapier® we offer you a high-quality, natural and sustainable packaging solution that meets all your requirements and needs.

Your Advantages >>

+ Made from renewable raw materials
+ Conserving resources - From FSC® certified forest
+ 100% recyclable - Disposal with waste paper
+ Biodegradable and compostable according to EN13432
+ Non-toxic, food safe and environmentally friendly
+ Can be safely sterilized via gamma irradiation
+ Low Global Warming Potential (GWP) value
+ Low CO_2 emission production
+ Low water and energy consumption during production
+ Resistant and dimensionally stable
+ Excellent surface and scratch and scratch protection (packaged goods can be packed without polybags)
+ High/deep embossing of logos or text possible
+ Precisely fitting and securing of products or product sets
+ reinpapier® is ultra-light and offers a potential weight reductions of up to 40% compared to conventional products.
+ Molded parts can be nested and stacked
+ Unlimited color possibilities
+ Industry-independent application possibilities

WE THINK CREATIVELY



REINPAPIER®
AN ECOLOGICAL PRODUCT.

Natural recources

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UNPRECEDENTED PLASTIC FREE PACKAGING

Made from renewable ingredients

reinpapier® is paper injection molded packaging made from natural and renewable raw materials. With its 100% ecological material composition, the reinpapier® brand offers the unprecedented possibility of plastic-free packaging. In addition, reinpapier® is a packaging material with excellent malleability and stability and is 100% compostable at the end of use.

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for an ecological environment

The renewable raw materials of reinpapier® paper mix include industrial starch (from industrial potatoes), long and short paper fibers, water, and an all-natural premix. The resulting paper mixture is then used for the injection molding process.
Industrial potatoes are cultivated on lands that are not suitable for conventional or table potatoes. Conventional or table potatoes are neither cultivated for nor used in reinpapier®. As a result, precious resources or land that could be used for growing food are not wasted.

reinpapier® packages have no negative impact on the environment (e.g. on water, soil or air, climate, animals, plants or micro-organisms) because reinpapier® is made of 100% ecological materials. reinpapier® does not cause short or long term hazards or damages to the environment.

reinpapier® Packages have no negative impact on the environment

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Industrial starch | Natural fibers | Water | Premix

Raw material composition

For the production of reinpapier® we only use renewable raw materials:

70% Industrial starch
The required starch is obtained from conventional industrial starch (from industrial potatoes), which can be dynamically used as a renewable resource for reinpapier®. This means that the production or the cultivation focus is not dependent on food resources -- food waste is avoided. Industrial potatoes (much larger and thicker than table potatoes) grow on a wide variety of arable lands and contain almost no sugar (carbohydrates). In contrast to table potatoes the relative production yield is higher. Industrial potatoes can also be used for natural adhesives but are not suitable for consumption!

12% Natural fibers
The paper fibers consist of a mixture of long and short paper fibers. These are FSC® ™ certified fresh fibers. This guarantees a highly efficient ecological production chain from cultivation to the end product.

Important NOTE!
Paper fibers from waste paper recycling are not used for the production. .

18% Water and premix
These two substances ensure the binding of the paper mixture.

What does premixing mean?

The special premix is made from natural ingredients that serve as a binder for the final paper mix. No chemicals or other impure substances are used for this purpose!

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reinpapier® – Unlimited color possibilities!

We use environmentally friendly food coloring

Depending on customer requirements, almost all colors are possible for the packaging design. Add attractive visual touches to your product with bright, luminous color accents or use recurring color schemes for easier recognition of your product lines.

We use only food colors for coloring packaging. Therefore reinpapier® does not contain substances harmful to health or the environment as defined in Directive 67/548/EEC. reinpapier® contains no substances subject to occupational exposure limits. reinpapier® is almost odorless and theoretically the packaging is even edible.

Special pretreatments can be used to create smooth or marbled surface effects which can be optimally incorporated into the design of a packaging solution.

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TOP VALUES IN THE CLIMATE BALANCE

The CO_2 footprint of reinpapier® is 85% is lower than that of comparable plastic, cardboard or paper pulp (pulp) packaging.
This is the result of using renewable raw materials as a base, low water consumption during production, reduced packing weight, high energy efficiency in logistics and production and non-toxic waste disposal.

CO_2
Low emission

CO_2-LOW EMISSION PRODUCTION

CLIMATE-NEUTRAL PAPER INJECTION MOLDING

Since the beginning of industrialization, the atmosphere has been increasingly polluted by man-made emissions. Gases, especially carbon dioxide (CO_2), encircle the earth like a shell and create a home-made greenhouse effect, which leads to climate changes with potentially very stressful to catastrophic consequences. We need to try to minimize or stop the further increase of greenhouse gas concentration and to lower the already reached CO_2 concentration, with the help of nature (oceans and forests/plants). PrimaKlima finances and promotes reforestation measures as an important contribution to the reduction of the greenhouse effect. Every tree extracts CO_2 from the atmosphere during its growth phase.

The principle of photosynthesis (the basic biochemical process in all green plants) is already many millions of years old: trees split the CO_2 in the air, store the carbon (C) in their biomass and release oxygen. A 30m high beech tree removes about 10t of CO_2 from the air in the course of its growth period. The significant increase of the global forest area would lead to a strong relief of the greenhouse gas problem and alleviate the climate problem.

With reinpapier® we reduce CO_2 emissions and ensure top values in the climate balance.

WE THINK CREATIVELY

Optimize existing solutions simply by reinpapier®

Case study based on car kilometers driven:
The following chart shows the effects of replacing initial packaging materials with reinpapier®.

It's impressive and so simple! Contact our experts for detailed Life Cycle Assessment studies and to learn how you can further contribute to a sustainable future together with us.

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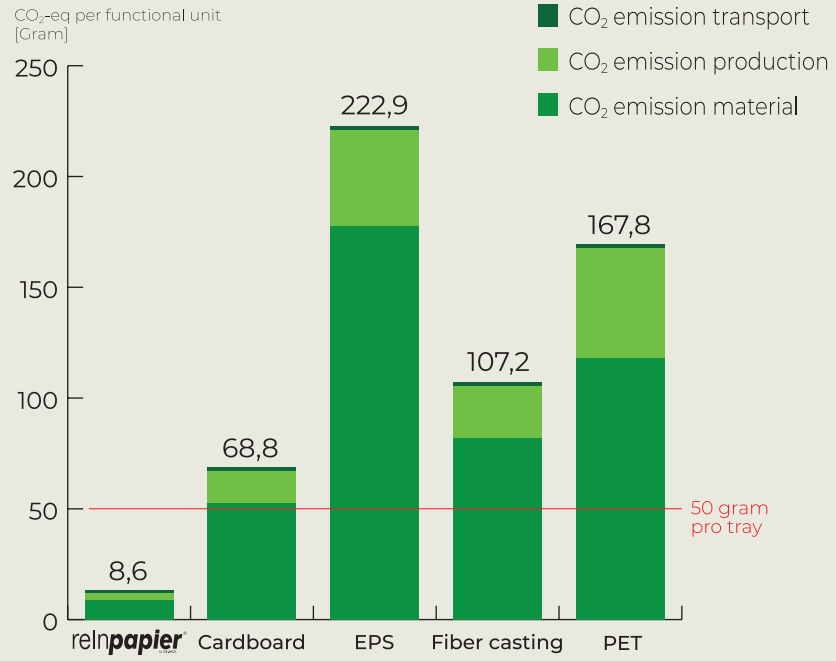
Comparison of reinpapier® emissions with traditional packaging materials

The CO_2 footprint of reinpapier® is 85% is lower than that of comparable thermoformed plastic, corrugated cardboard, fiber castings or EPS packaging. This is the result of our environmentally friendly production process.

This is a giant ecological step forward towards a low-emission future.

CO_2 emission pro tray



CO_2 emission	reinpapier	Cardboard	EPS	Fiber casting	PET
Gram per tray	50	50	50	50	50
By material	5,1	52,4	177,8	81,9	117,9
By production	1,7	14,6	43,3	23,6	49,7
By transport	1,8	1,8	1,8	1,8	1,8
Total	**8,6**	68,8	222,9	107,2	167,8

Comparative example:
Bioplastic PLA (polylactide) is much more expensive to produce than reinpapier® and has a 97% higher CO_2 emission during the production cycle.

Polylactid	3,24 kg CO_2-eq	Output per kilogram of packaging
reinpapier®	Nur 0,08 **kg** CO_2-eq	Output per kilogram of packaging

In addition, bioplastics (PLA) can only be composted industrially and not at home. If bioplastic packaging ends up in the ocean, the decomposition process takes more than 100 years.
reinpapier®, however, dissolves completely in the ocean within a few days! There are no harmful substances to contaminate the ocean or in the environment!

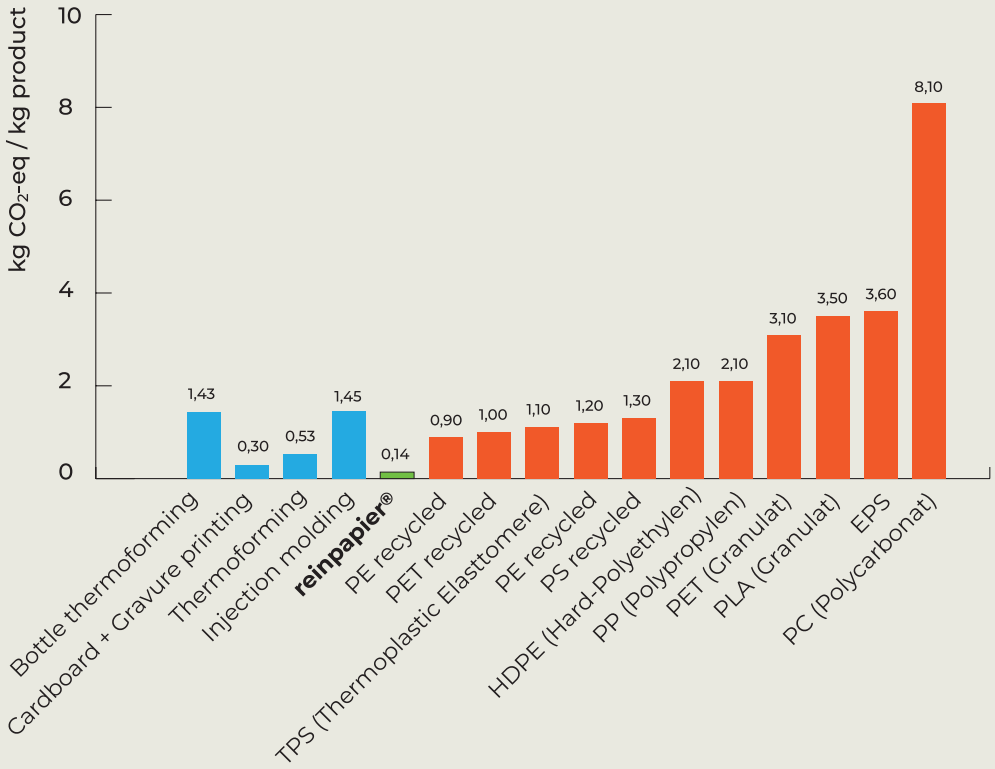
LOW
GLOBAL WARMING POTENTIAL VALUE

Major contribution to climate protection.

We achieve a drastic reduction in climate-damaging CO_2 emissions with reinpapier® during manufacturing and all associated production processes. This means our global warming potential (GWP) value is only 0.14 kg per kg of reinpapier®.

This is an extremely low value compared to other packaging materials (see diagram).

GWP100 For comparable processes and materials



Quelle: Idemat 2015

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GWP – GLOBAL WARMING POTENTIAL.

PAPER INJECTION MOLDING

GWP
Global warming

OUR RELATIVE CONTRIBUTION TO THE GREENHOUSE EFFECT.

What is the GWP value actually?

The GWP value (CO_2 equivalent value) assesses the potential contribution level of any gas to global warming. The value also describes the global warming effect over a certain period of time (100 years).

ENVIRONMENTAL POLLUTION REDUCED THROUGH RECYCLING

Recyclability cycle

reinpapier® is 100% recyclable, so the end user can dispose of packaging parts at home together with waste paper and thereby return the material to the recyclability cycle.

The paper fiber content of the packaging can even be reused in the paper manufacturing process. The additional new fibers even improve the quality of the paper produced.

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reinpapier® packages are 100% organic

i.e. as a waste product they do not represent any burden to the environment or to the entire ecological cycle.

Recyclable

WE THINK CREATIVELY

ENVIRONMENTALLY FRIENDLY. RECYCLABLE.

PAPER INJECTION MOLDING

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RESPONSIBLE USE OF RESOURCES

The recycling process

Recycling means returning used raw materials to the economic cycle in order to again create high-quality products.

Material recycling is particularly suitable for materials such as paper or cardboard. Sorting and separation of various types of recyclable materials is the beginning of the process. The 100% recyclable paper injection molded packaging from our product portfolio is ideal for recycling because one of the main components of this environmentally friendly packaging is paper fiber.

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Recycling by DE-PACK

We actively engage in finding ways to recapture the raw materials in our packaging and reintegrating them in our production processes. Product development and design play a decisive role in this process right from the start. Our corporate philosophy includes intelligent packaging designs with minimal use of materials and guaranteed product protection.

By using recyclable packaging material, we at DE-Pack make a significant contribution to our environment. Raw materials are used and reused in a cycle without diminishing packaging quality or product protection.

Sustainable use of our environment means acting responsibly. DE-PACK is totally committed to take on this responsibility.

100%
Compostable

The high starch content and the power of nature help to break down the material efficiently (under aerobic conditions).

WIR DENKEN KREATIV

A product is then considered to be compostable or biodegradable, ...

... if it consists of raw materials that are naturally compostable and can decompose with other bio-waste by conventional means in the garden or in industrial composting plants.

A material is defined as “compostable“ when at least 90% of that material can be biodegraded within six months under aerobic conditions or in an industrial composting plant or in the final compost (standard EN 13432), namely until decomposition and loss of visibility (absence of visible contamination). The duration of the biodegradation process here depends predominantly on environmental influences such as temperature, humidity and the time factor.

With our environmentally friendly reinpapier® packaging, these conditions are fully met because the contents are 100% compostable! The high starch content and nature itself helps the material to decompose efficiently within a few weeks - toxin-free and without pollutants.

In order to realize an optimal composting of the material, a correct aggregate state is essential, i.e. moisture and temperature values including bacteria must be correct. It should be noted that if it does not rain, the conditions of optimal composting are not given.

ENVIRONMENTAL COMPATIBILITY WITHOUT COMPROMISE

reinpapier® is our most sustainable, ecological packaging solution.

The key to our success lies in the raw materials used - i.e. small requirement, big effect! reinpapier® injection molding packaging is made of 70% industrial starch.

Starch is a natural and renewable biopolymer that is stored in the form of starch granules as an energy storage material in the cells of plants. Starch can be chemically modified in various ways and thereby available for use in a wide variety of projects, due to the good binding properties of the biopolymer. The great advantage here is that we continually and efficiently use a renewable raw material for our reinpapier® packaging solutions. The starch in its original form is obtained from conventional industrial potatoes. Industrial potatoes have a high starch content and the tubers are considerably larger and thicker than table potatoes. This ensures a much higher economic yield.

Some may question the cultivation of industrial potatoes and their impact on the food industry. Industrial potatoes grow on a wide variety of arable lands that would not be suitable for table potatoes. This means that the production or the cultivation focus is not dependent on food resources -- food waste is avoided

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Aerobic decomposition process of paper injection molding packaging

The adjacent pictures show the decomposition process of two reinpapier® packaging trays under aerobic conditions.

The packaging completely degraded within 60 days without leaving any harmful residues in nature.

reinpapier® in comparison to polylacid (PLA)

reinpapier® is often compared with bioplastics (PLA), which are also biodegradable. However, PLAs require certain environmental conditions that are usually only found in industrial composting facilities. In nature, the decomposition process of PLA material takes at least 80 years and also contributes to environmental pollution due to considerable microplastic content.

Quelle: https://www.youtube.com/watch?v=7WZOUYQa_Ek&feature=emb_logo

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NATURE COMPATIBILITY WITHOUT COMPROMISE

Recyclability cycle

Materials that come in contact with food, under normal circumstances, are generally not allowed to transfer material particles or residues to the packaged foods. If any transfer occurs, such transfers shall be so small that:

+ the consumers health is not endangered.
+ there is no adverse change in the composition of the foodstuff.
+ the smell or taste of the food are not tainted.

In this reinpapier packaging inlay, the chambers were filled directly with chocolate by machine.

The glass fork symbol, which is accepted throughout the EU, identifies materials that are suitable for food contact. For example, spatulas, bread boxes or plastic tableware that are marked with the glass fork symbol do not release any harmful substances into food.

This symbol can be found on the items or on the packaging or labels. If that is not possible, due to the small size of the products, the information can be displayed in the immediate vicinity of the items where it is clearly visible to the consumer.

This logo does not have to be placed on items in which food is already packed or which are obviously intended for food contact use (tableware, cutlery).

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REINPAPIER® DECLARED SAFE AND COMPATIBLE FOR USE IN THE FOOD INDUSTRY

Food safe

The glass fork symbol, which is valid throughout the EU, identifies materials that are suitable for food contact.

The reinpapier® brand was tested by the research and testing company ISEGA and was designated as SAFE and therefore compatible for use in the food industry. reinpapier® can now be used as packaging for food without hesitation.

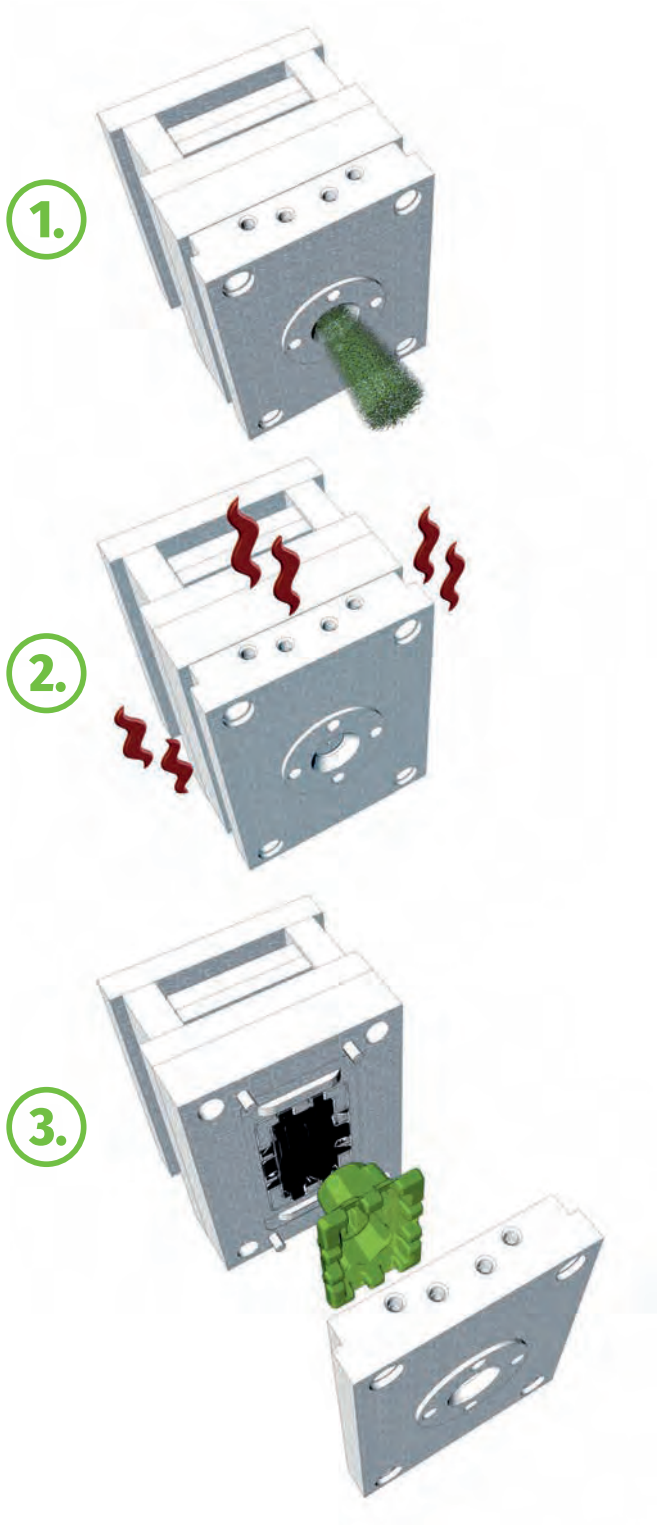
Packaging is produced 100% organically, does not contain any toxic or harmful substances and is GMO-free (free of genetically modified organisms).

WIR DENKEN KREATIV

ECOLOGICAL PRODUCTION

Our superior quality products are realised through a high degree of creativity, technical innovation, and a great deal of know-how.

Form stable



We use a patented process in which no chemical additives are used during the production process. This leads to our ecological end result.

We also pay close attention to the economical use of raw materials during production, including the efficient use of energy and low water consumption during production.

Step 1.

Injection

The paper mix is produced and injected into an aluminum mold by means of a specially developed injection molding process.

Step 2.

Baking process

The paper mixture is "baked" in the specifically designed mold at a constant temperature of approx. 200 °C.

Step 3.

Demolding

The finished product is removed from the mold. The use of specific molds will assure that the finished product will conform precisely to the contours of the product being packaged. This manufacturing process also assures smooth surfaces and increased strength in the finished product.

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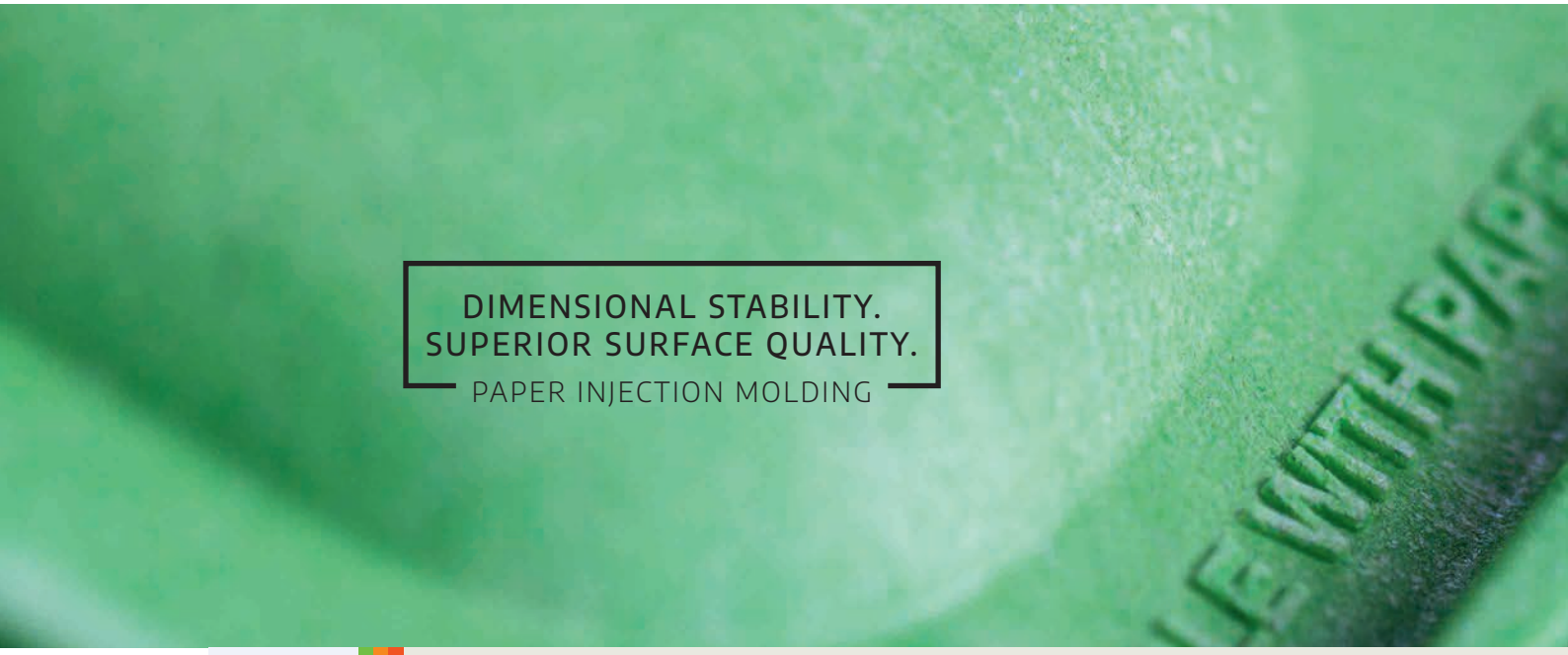

DIMENSIONAL STABILITY. SUPERIOR SURFACE QUALITY.

PAPER INJECTION MOLDING

reinpapier® by DE-PACK

Are you looking for quality and versatility?

Using a specially developed injection molding process, the paper compound from the production is injected into an aluminum mold. The mold contours inside are finished by anodizing. For this purpose, a hard aluminum layer is applied.

The paper mixture in the mold is „baked“ into the final packaging molded part by means of a targeted temperature effect. The molded part is then removed from the mold.

By using aluminum molds, an excellent level of detail and a high degree of shape fidelity to the packaging contours are achieved. The special feature of this injection molding process is the fine surface structure and the increased strength of the material.

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Technical specifications

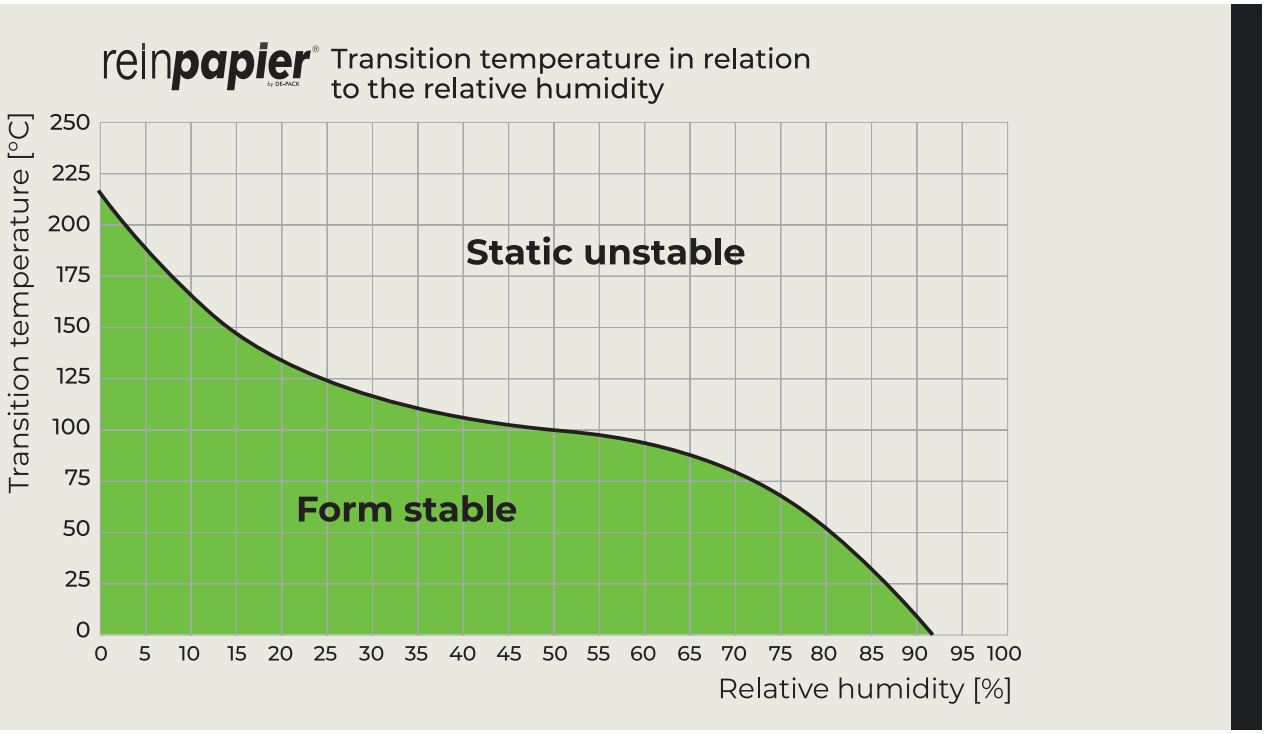
The permissible material tolerances for reinpapier® are between -1% and +1.5%. and +1.5%. In practice, however, the tolerances are usually less than 0.5%.

The maximum shape or size of reinpapier® packaging is limited due to technical production constraints. Packaging dimensions can be individually requested.

A minimum thickness of 2.2 mm to 3mm are required. As a rule we plan a material thickness of 2.5 mm, which is used for 75% of our produced packaging we produce.

Are reinpapier® packagings temperature resistant?

The following diagram shows the relationship between temperature and relative humidity, namely the time when the material changes from the dimensionally stable state to the unstable state.



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ECOLOGICAL DIVERSITY

Low weight

reinpapier® packaging is ultra-light. This leads to possible weight reductions of up to 40% compared to conventional products.

This reduces fuel consumption, cuts greenhouse gas emissions and reduces shipping costs. It also helps reduce the amount of waste produced.

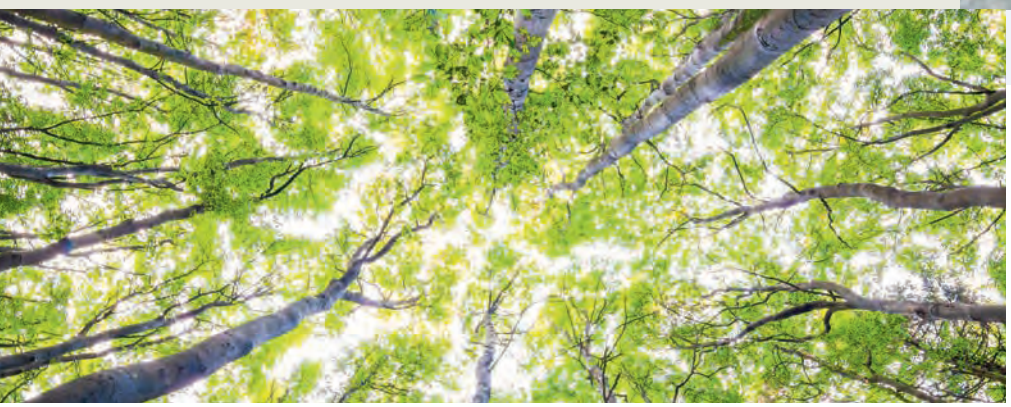
High demand & shape variety

Variety, ecological standards and unique packaging design. This is what our reinpapier® packaging stands for. We develop ecological, individual and high quality packaging.
You can also perfectly place your own trademarks or messages on the packaging and give your packaged goods a great design.

Product certifications

Trust in our product quality! The brand reinpapier® is certified in in the following properties:

1. bio-based (USDA, Vinçotte, BCC)
2. biodegradability/compostability (EN13432, ASTMD6868, TÜV Austria)
3. paper recyclability 99% (UL)
4. ISEGA - declaration of SAFE as a food packaging



From FSC® certified forest

Preserving our forests for future generations is the goal of the **Forest Stewardship Council®**. To achieve this, the FSC® develops standards for responsible forest management.

With our reinpapier® brand, we assume responsibility for the origin of the raw materials and make an active contribution to the responsible forest management and higher environmental and social standards in forests.

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