F.O.A.M

Concepts and designs developped for products made out of ecovio® EA – a compostable particle foam as an alternative to conventional Styropor®

HBKsaar Product Design in partnership/cooperation with BASF designfabrik®

F.O.A.M

In view of the occasion there are major efforts to develop new sustainable and biobased plastics which could lower the burden on the environment in comparison to conventional materials. In this context twelve students evaluate the compostable and expandable particle foam ecovio® EA developped by BASF in the Project F.O.A.M.

Visions show the most suitable usage for this material such as temporary furniture or furniture components, products and accessoires. The designing happens in cooperation with the experts from BASF designfabrik® and the know-how of the BASF specialists für ecovio® EA.

The concept growth and design process was continuously accompanied by an intense research of the topic sustainability. Material studies and numerous pratical analysis with the material as well as the potential cycle of the material reveal a solid base to develop reliable concepts and ideas.

The drafts were realised to a scale of 1:1 and they are shown at imm cologne 2018 — at this point the bigger products were implemented in conventional Styropor® with an integrated inlay made out of ecovio® EA.

ECOVIO EA

ecovio® EA is the first closed -cell foam, that is compostable and biobased. It consists of the organic plastic ecoflex® and polylactic acid that is obtained from corn, or other sugar-generating plants like manioc.

The patented bead foam is sustainable for transportation packaging like fragile goods, that need strength and shock resistance.

The characteristics of the material are similar to EPS. Putting it on impact stress it shows good recovery. It also has a very good energy intake. The high biobased proportion and the compostability make ecovio® EA attractive not only within the transportation sector. Furthermore it is a solution today and in the future for going away from fossile materials to biobased and compostable product solutions.

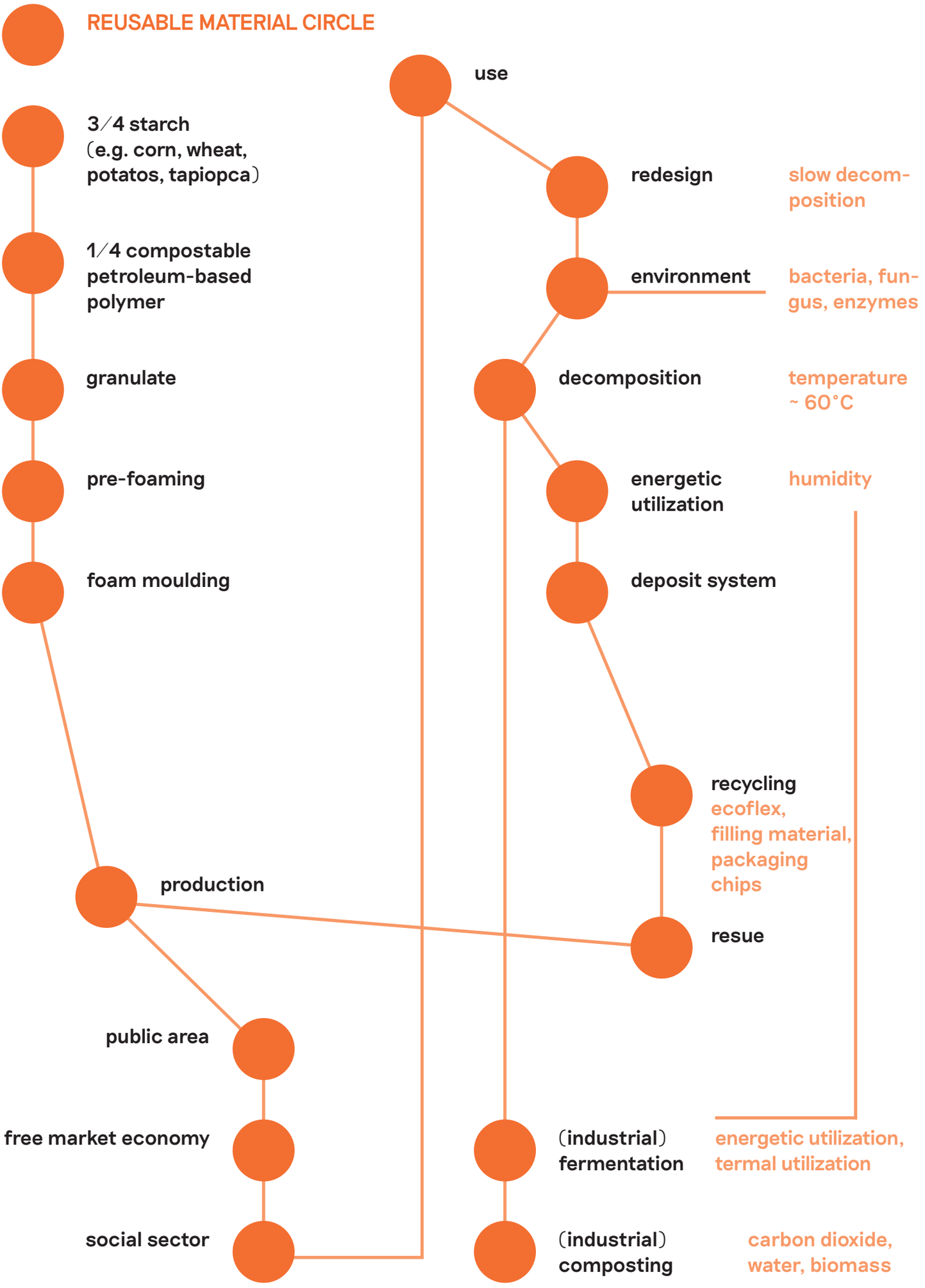
At this point the students of HBKsaar examine in their drafts and concepts new product approach in the context of packaging and moreover.

Properties of the material ecovio® EA:

- an expandable granulate, similar to EPS
- can be formed in conventional machines for EPS in complex geometries with different types of tightness
- it has an excellent crushing resistance that affords good protection in context of packaging and moreover
- has better chemical and thermal resistance than the fossil EPS
- it is compostable in modern composting plants without residues

Properties to consider at ecovio® EA:

- needs a recognition value for being separated from the fossil EPS
- is not compostable in the nature, only in a composting plant
- the product application should be either long lasting or included in a consequently composted


REUSABLE MATERIAL CIRCLE
3/4 starch
(e.g. corn, wheat,
potatos, tapiopca)
1/4 compostable
petroleum-based
polymer
granulate
pre-foaming
foam moulding
production
public area
free market economy
social sector
use
redesign
slow decom-
position
environment
bacteria, fun-
gus, enzymes
decomposition
temperature
~ 60°C
energetic
utilization
humidity
deposit system
recycling
ecoflex,
filling material,
packaging
chips
resue
(industrial)
fermentation
energetic utilization,
termal utilization
(industrial)
composting
carbon dioxide,
water, biomass

1

2

1 watering and swelling of the pre-foamed ecovio® EA beats

2 foam moulded samples of ecovio® EA like plates and transportation boxes

3 testing of mechanical connections

4 foam moulding of beats

5 tests of fillin for the product Dreamer by Tobias Turco

3

4

5

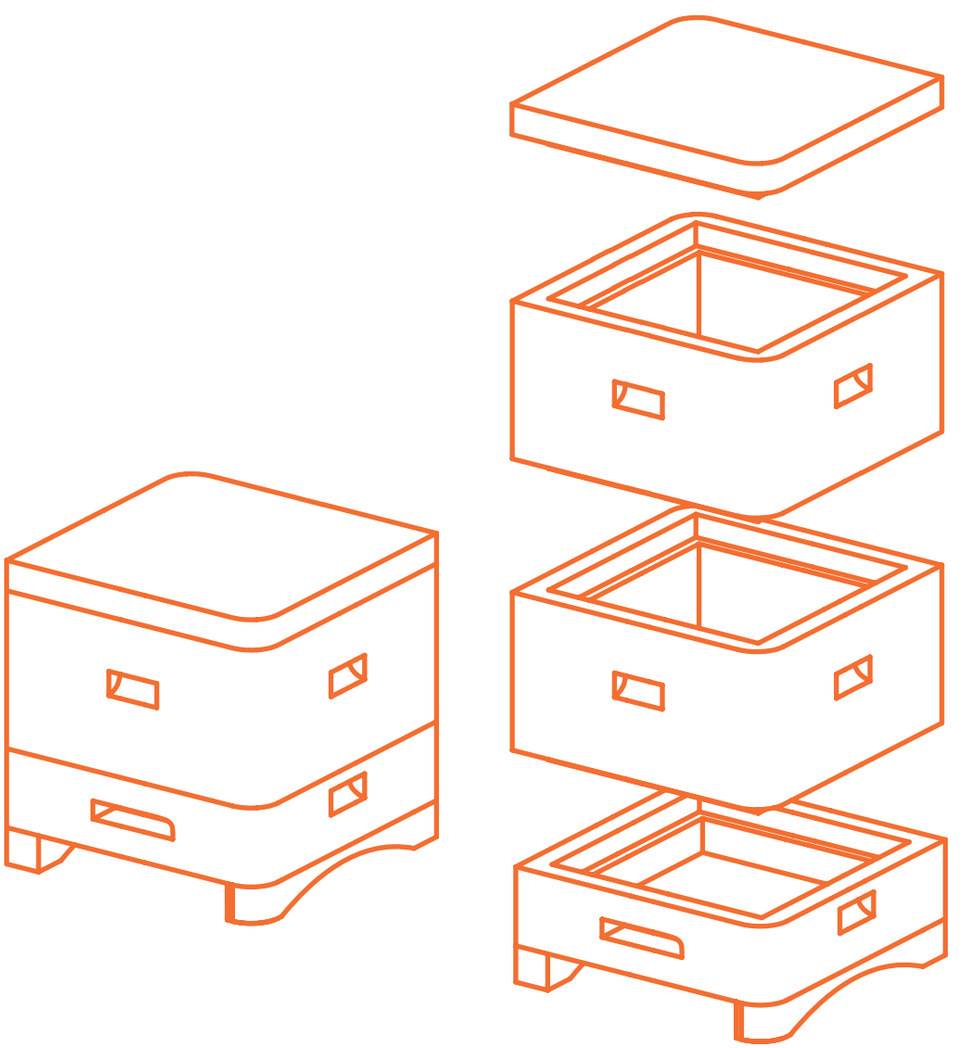
MAJA
Nico Burgard

Organic is trend — and honey is one of the most used organic products. The beekeepers still use wooden beehives to produce them in an ecological way.

They are heavy and because of bad wheather conditions they need a lot of maintenance. The non-ecologic alternative until now was styrofoam, it is resistant and portable.

Maja is a Beehive made of ecovio® EA. The fabrication complies with the ecological directives of organic honey and the beekeeper benefits from the advantages as well as it is compostable.

We don't know if the bees are happier in Maja, but we reduce our daily ration of microplastics during breakfast.



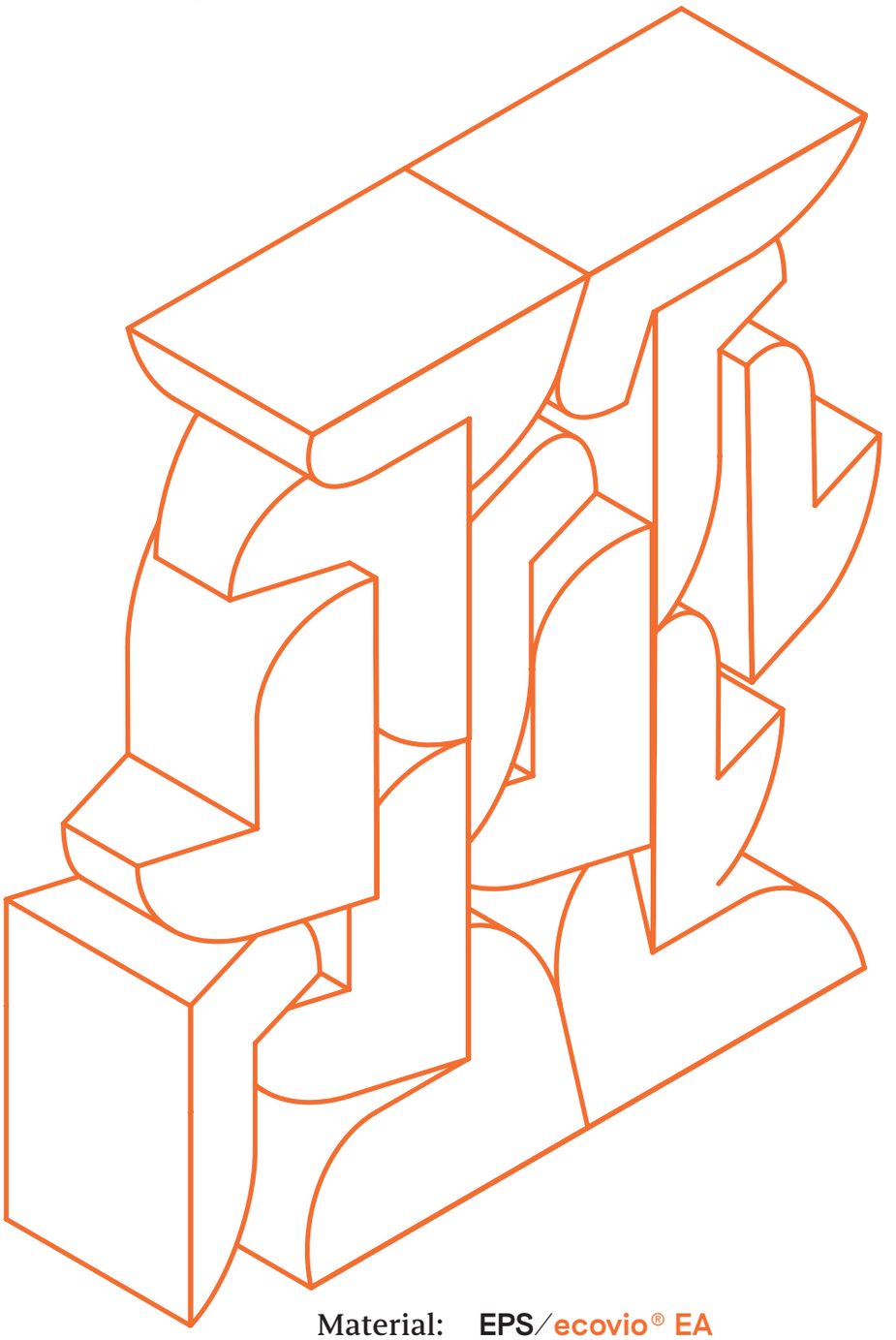
Material: EPS/ecovio® EA
Maße: 500 mm × 500 mm × 1000 mm

PUCAN
Catharina Drees

Crowded rooms are exhausting and hectic at fairs or other big events. The modular partition wall Pucan gives the possibility to create a space in many different ways.

The parts connect to graphic walls and show a contrast to the happening.

Now it is easier to relax. Pucan will be leased by a company that is located at a fair or an event location. Used objects can either be used again or recycled and composted.



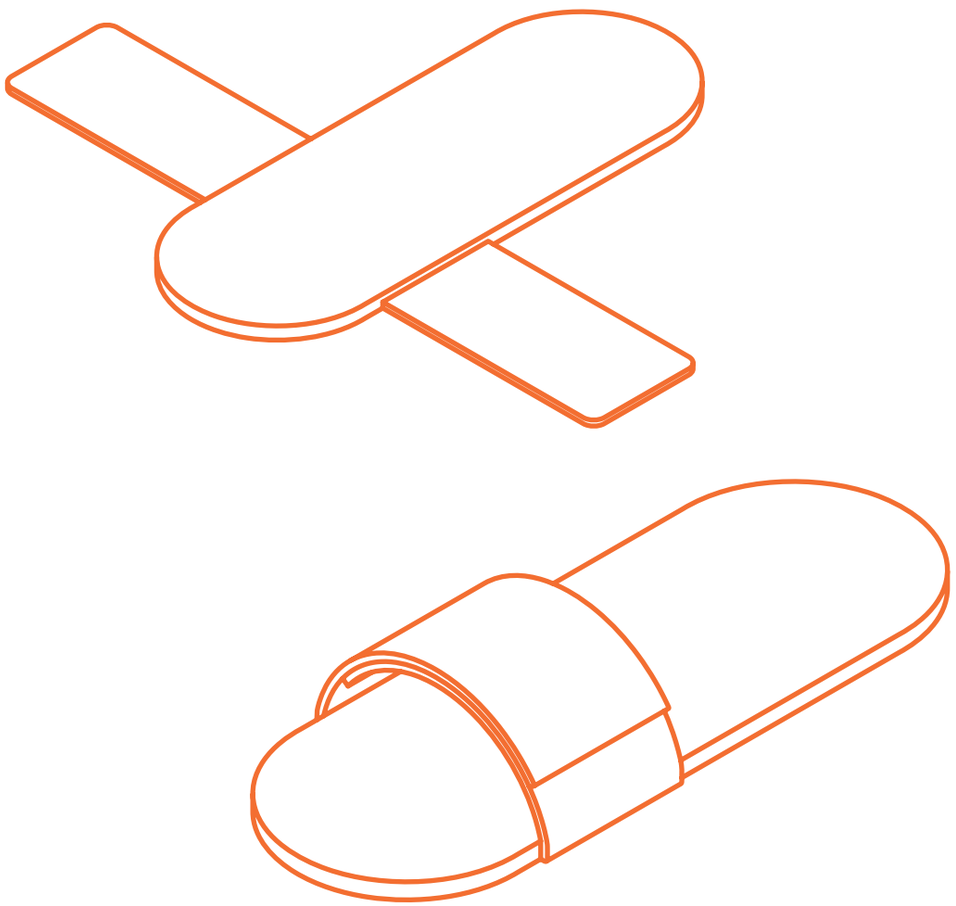
Material: EPS/ecovio® EA
Maße: 500 mm × 700 mm × 400 mm

ECOLETTE
Lukas Maximilian Hartz

Most disposable products lead to a bad life cycle assessment, because their use is temporary and the resuable material cycle is not closed. After using, the product goes in the trash and will be burnt and precious resources will be lost.

Ecolette is made of the compostable ecovio® EA and takes the next step by going back to the resuable material cycle.

The slipper is designed for a hotel in two sizes. The soft and thermal insulating foam will be formed by the individuality of the foot. That makes Ecolette a highly comfortable slipper with an organic footprint.

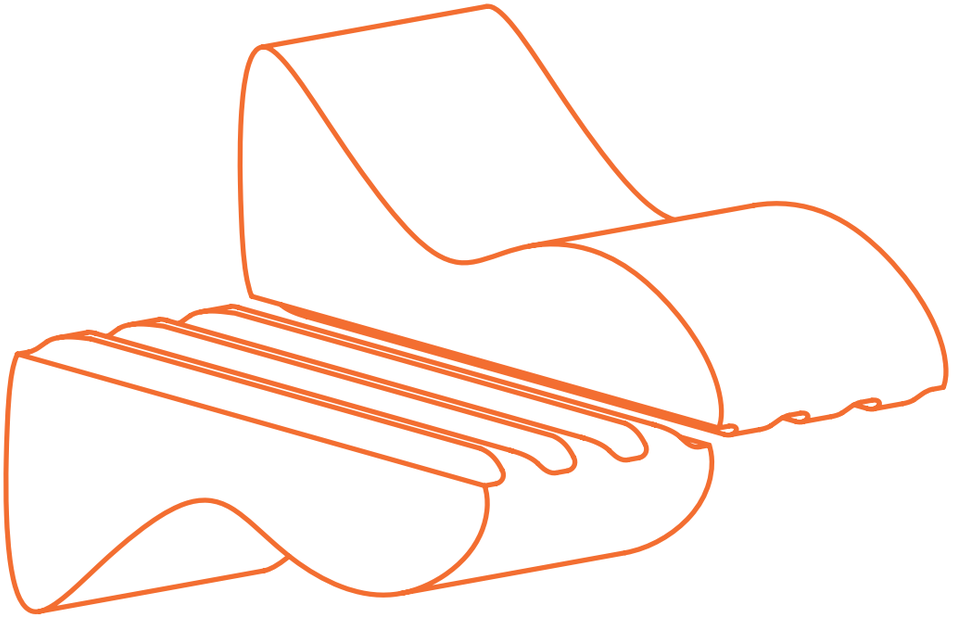


Material: ecovio® EA
Maße: 270 mm × 100 mm

WAVE
Julian Hoffmann

Wave **is a sunbed that can be used on the floor and on the water. The bottom is like a flat boat and improves the swimming qualities of the sunbed.**

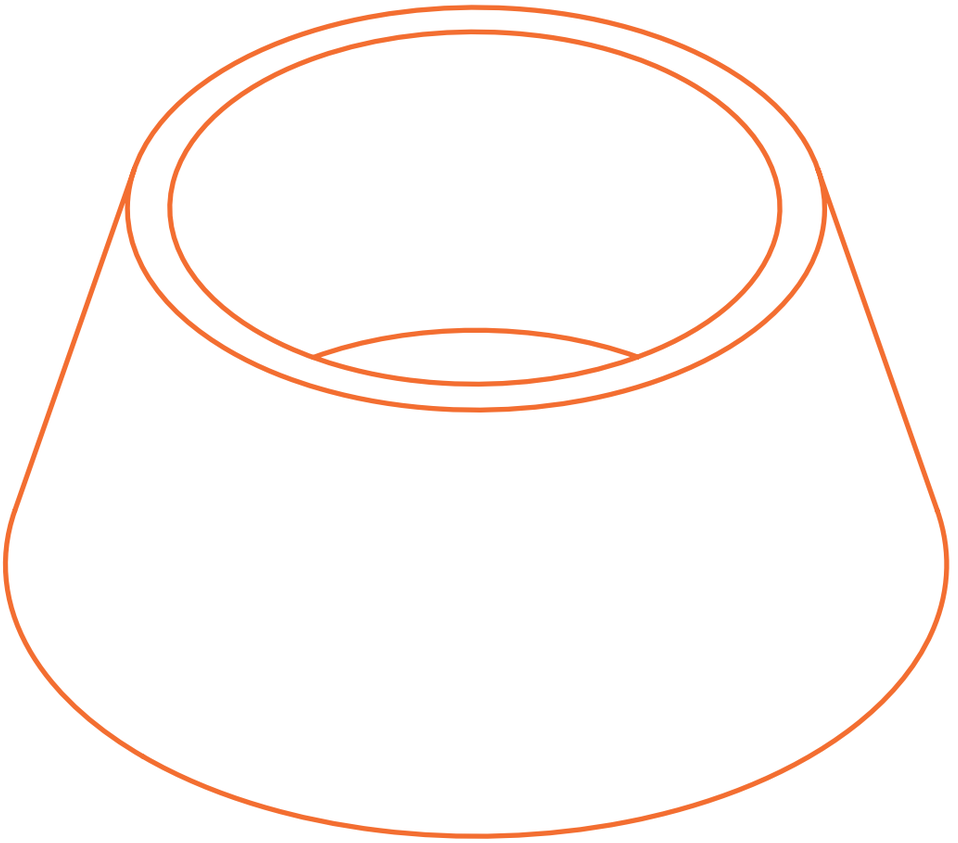
The ergonomic shape results in a high resting comfort. The light weight of the material is very useful in this product.



Material: EPS/ecovio® EA
Maße: 2000 mm × 720 mm × 900 mm
Sitzhöhe: 300 mm

BLUMENHUT
Hui Jin

Imagine we costume the bollards of the streets in the cities with a small hat and flowers. Every bollard of the streets would gently say hello to the people. When the warm seasons are over and the plants in the Blumenhut are wilted, the product can easily be composted with the plant and the soil. And for the next year we have fertile soil for the flowers of the bollards in the next year.



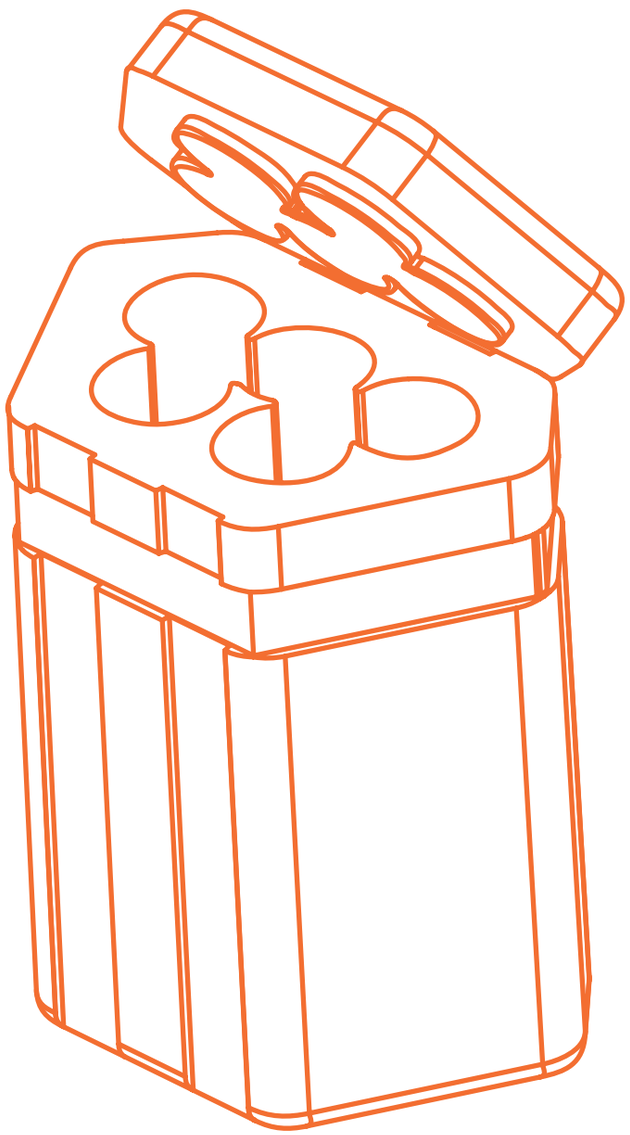
Material: ecovio® EA
Maße: 110 mm × 160 mm

HOCKBOX
Frederik Joachim

On a Festival a cold drink is everyone's desire. Hockbox combines the clever cooling solution, easy transportation and relaxed sitting on a cold box.

For transportation Hockbox can be carried on the back by a belt system.

If the box is worn out, the belts can be removed easily and the material will be recycled.



Material: EPS/ecovio® EA
Maße: 400 mm × 300 mm × 200 mm

E10²
Marvin Köth

E10² would be the first surfboard on the market, that is completely organic. The blank consists of ecovio® EA a natural fiber and a natural epoxy resin based renewable recources. The allround high performance-shortboard is made for every type of swell.

Its shpae brings a lot of lift and flexibility, the channel at the squashtail gives extra speed.

Eco meets Performance.

Material:	EPS/ecovio® EA
Maße:	1778 mm × 486 mm × 58 mm
Volumen:	31,5 l

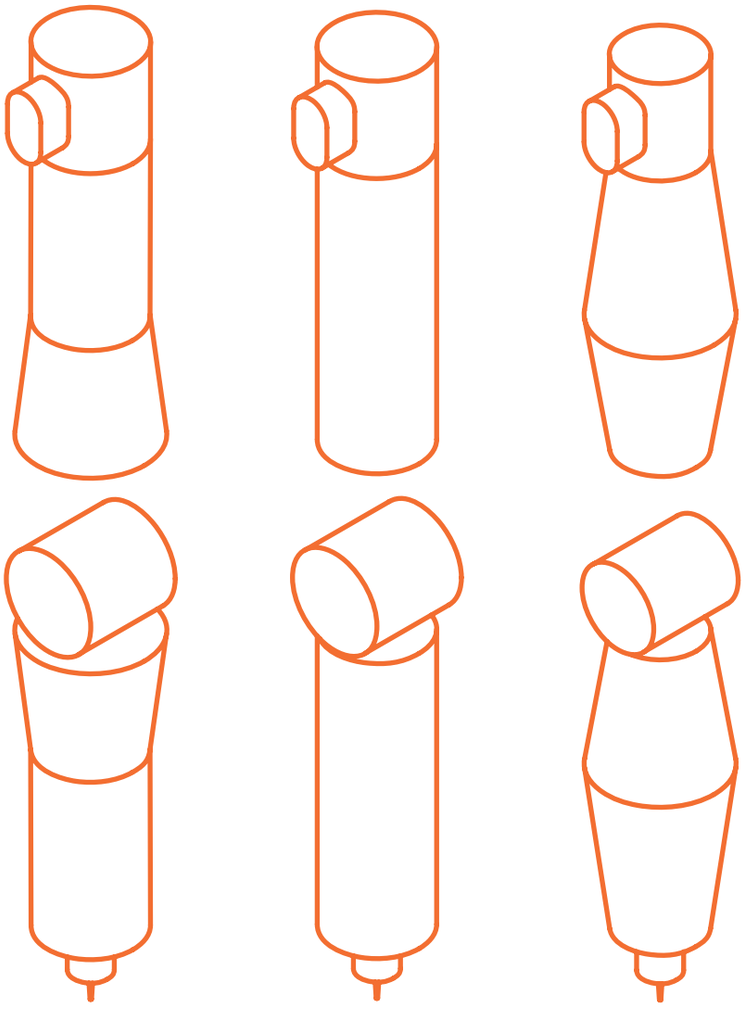
TANZSTIFT
Ran Mo

Pens are known as everyday objects. This pen brings more fun while writing with it, because it's dancing! For using the Tanzstift, take off the cap and put it on its bottom.

The cap looks like the head and the tip of the pen like the feet. Writing looks like the movement of a ballet dancer.

The material ecovio® EA gives a new feeling to the writer. It is special to grip and impact resistant. The shape is easy to produce made of less material components than common pens.

Is Tanzstift worn out, the refill can easily be separated from the ecovio® EA and recycled.

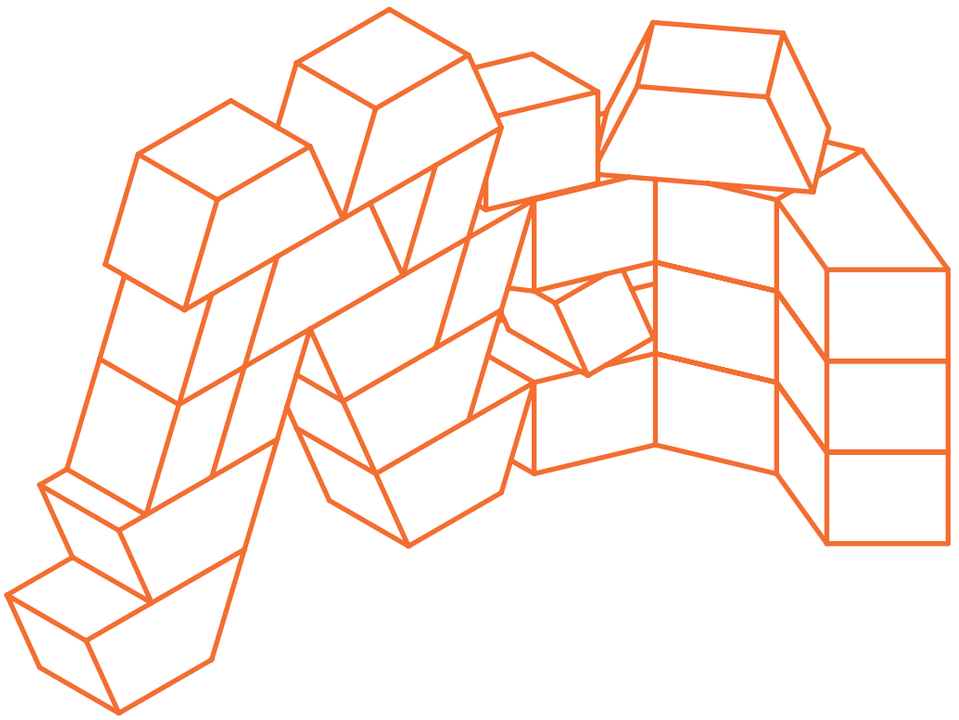


Material:	ecovio® EA, Mine
Maße:	
Stehen:	135 mm × 40 mm × 40 mm
Schreiben:	160 mm × 40 mm × 40 mm

ZIA
Mina Scharff

Playing children are living in their own universe. With ZIA they create a palace, a castle, an igloo, just the place they imagine. The shapes of the buildingblocs present the opportunity to build unconventional structures. Therefore there is no true or false by pilling the blocks, what leads to creativity and motivation during the play.

The textured surface brings grip to the product. Kids have the possibility to create entrances, windows and roofs for their buildings.

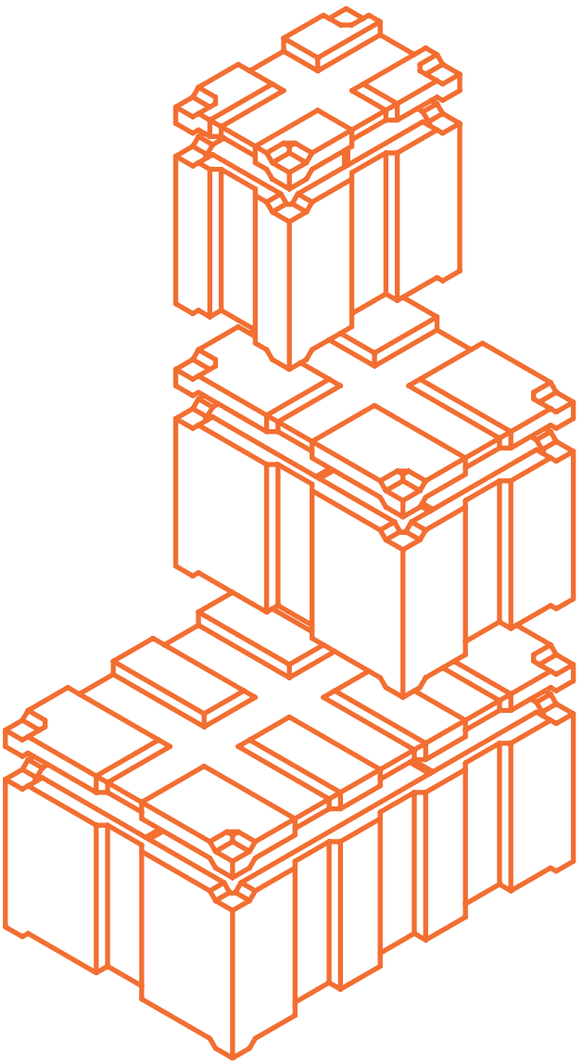


Material:	EPS/ecovio® EA
Maße:	
Trapez:	200 mm × 400 mm × 200 mm
Parallelogramm:	200 mm × 200 mm × 200 mm

BOX3394
Sebastian Sittinger

In 2003 Germany pointed out its forward-looking thinking through implementing obligation pledge for disposable beverage packaging. Nevertheless there is a mass of disposable packaging which is still made out of conventional plastics even if it is used for organic food. By getting rid of the packaging through the plastic bin the majority is used for energetic recovery, viz it is burnt.

The BOX3394 should minimize packaging material as a result of its reusable usability. At best the box will be integrated in the existing pledge-system for a full sorted disposal. Another advantage of the reusable usability is the new usage as modular component.

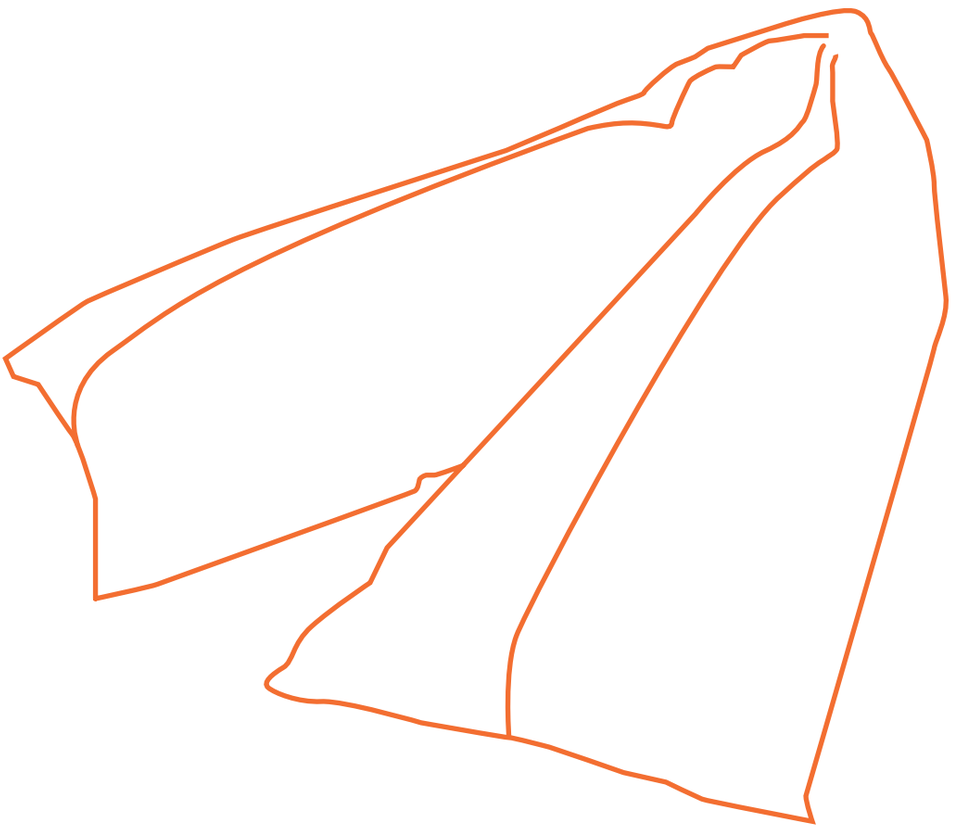


Material: EPS/ecovio® EA
Maße: 300 mm × 200 mm × 250 mm
400 mm × 300 mm × 250 mm
600 mm × 400 mm × 250 mm

DREAMER
Tobias Turco

This neck support is to be a lending product for airplane, bus or train rides. After the temporary usage the product can be reconditioned and reused. For cleaning the outer fabric is separable from the ticking. The ticking consists of micro perforated foil and ecovio® EA micro beads as filler which adapts comfortably to your body.

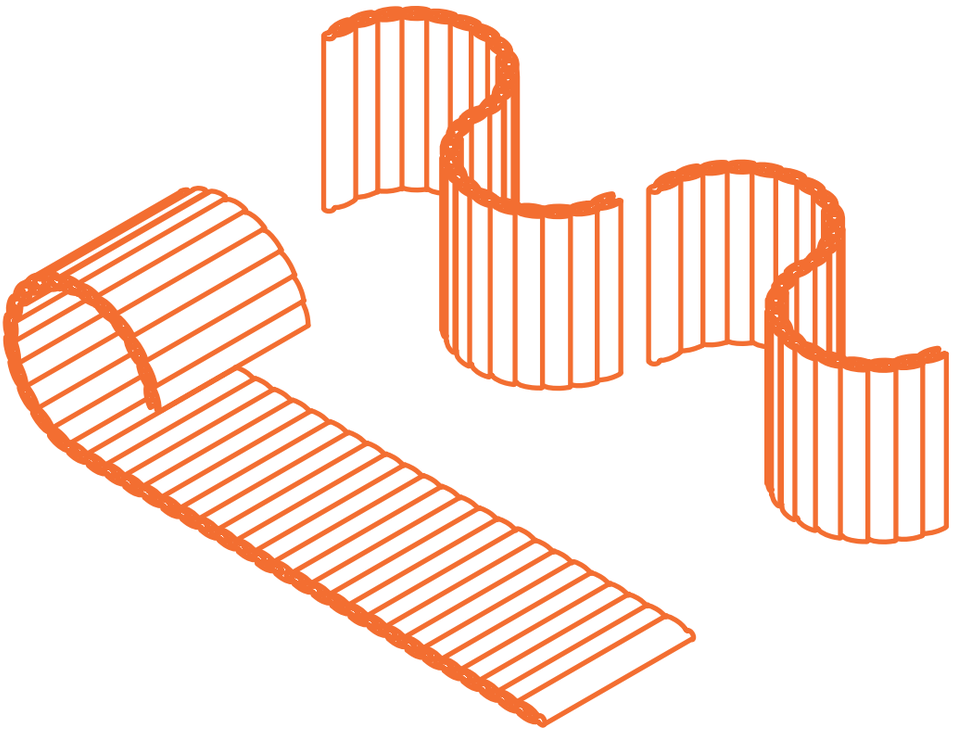
Consequently it is possible to recycle the fill material (biogas, compost, foil) after several times of usage.



Material: ecovio® EA, ecoflex, Textil
Maße: 100 mm × 650 mm

UNIT 15/60
Dean Weigand

Climate change, catastrophe, terrorism. Nowadays life can get out of whack more quickly. That's why it is necessery to provide assistance to victims. Unit 15/60 is a turnable and plugable modul. Unit 15/60 grows to sleeping opportuni ties or partition walls, it connects people but also allows needed privacy. While indoor used it shows the good insulating effect, releases no poisonous substances in the home and it is after wear residue-free compostable.



Material:	EPS/ecovio® EA
Maße:	
einzelnes Modul:	100 mm × 60 mm × 600 mm
Matte:	1800 mm × 600 mm

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1 presentation of the first mock-ups

2 ecovio® EA tests – work in progress

3 introduction to the expandable behaviour of ecovio® EA

CREDITS

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