

CUBO

a project by

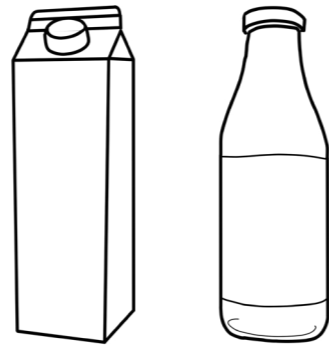
Anton Oberländer &
Luca Ortmann

RESEARCH & FACTS

A comparison of the life cycle assessments of different beverage containers shows that, in terms of sustainability, returnable deposit systems and Tetrapaks are at the top of the list. Nevertheless, there are many problems that stand in the way of them being 100 percent sustainable.

The commercially available Tetrapak is not only made of paper but is usually coated with aluminum and plastic. In addition, the twist cap, which most of those products have, is also made of plastic. Overall, Tetrapak produces about 700,000 tons of plastic per year. Thus, the recycling of this packa-

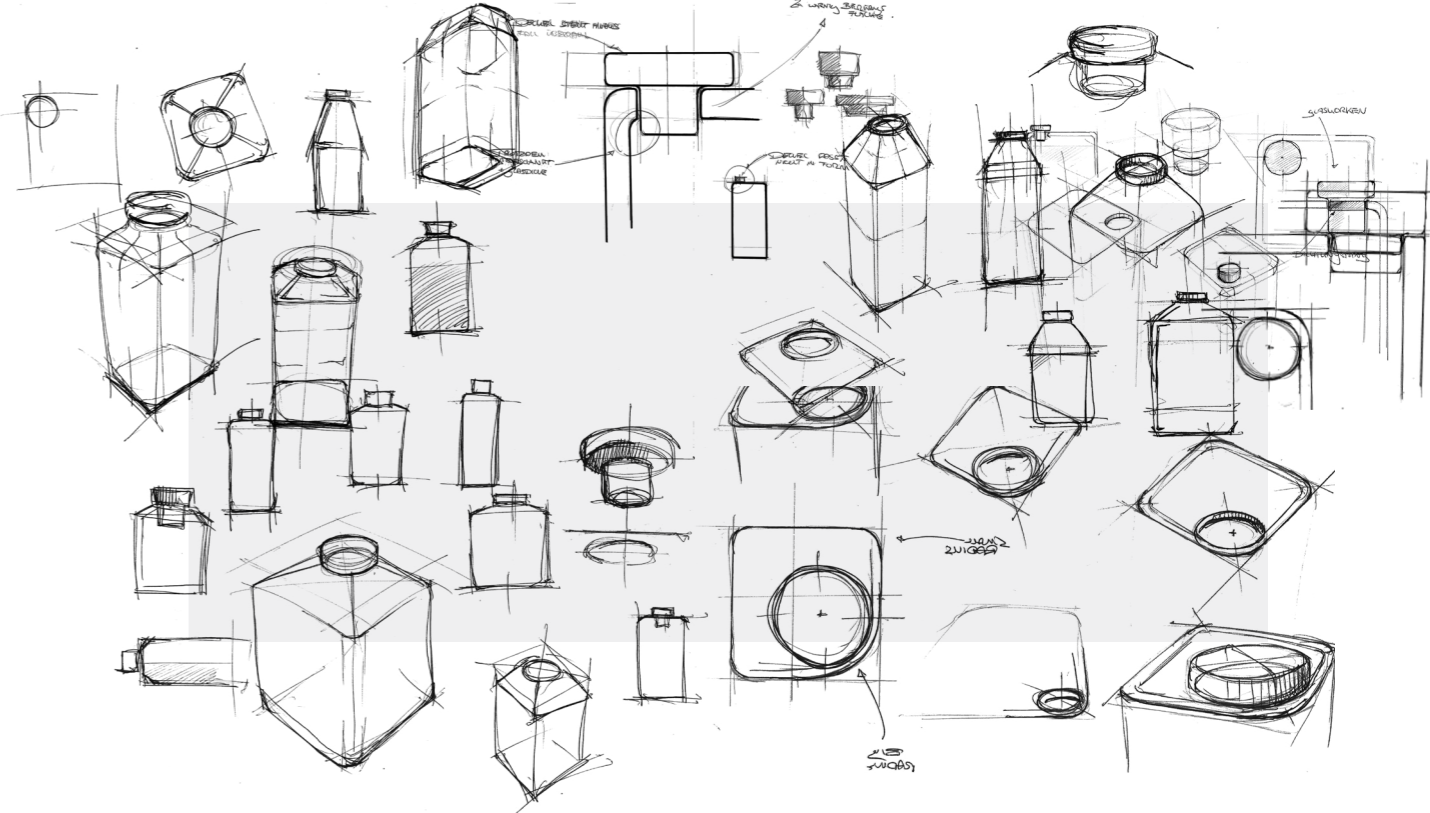
ging is difficult and is therefore not usually done. Only 33 percent getting recycled. In addition, most of the Tetrapaks are thrown into the wrong garbage and thus cannot even be disposed of correctly. The situation is much better with reusable deposit systems. But here, too, the reusable cycle can usually not be completed because often the lids, which are made of sheet metal and are also often coated with plastic, are either not returned or are too difficult to recycle. Both Tetrapaks and conventional glass bottles therefore consist of several materials whose separation in the recycling process is not possible or too expensive.



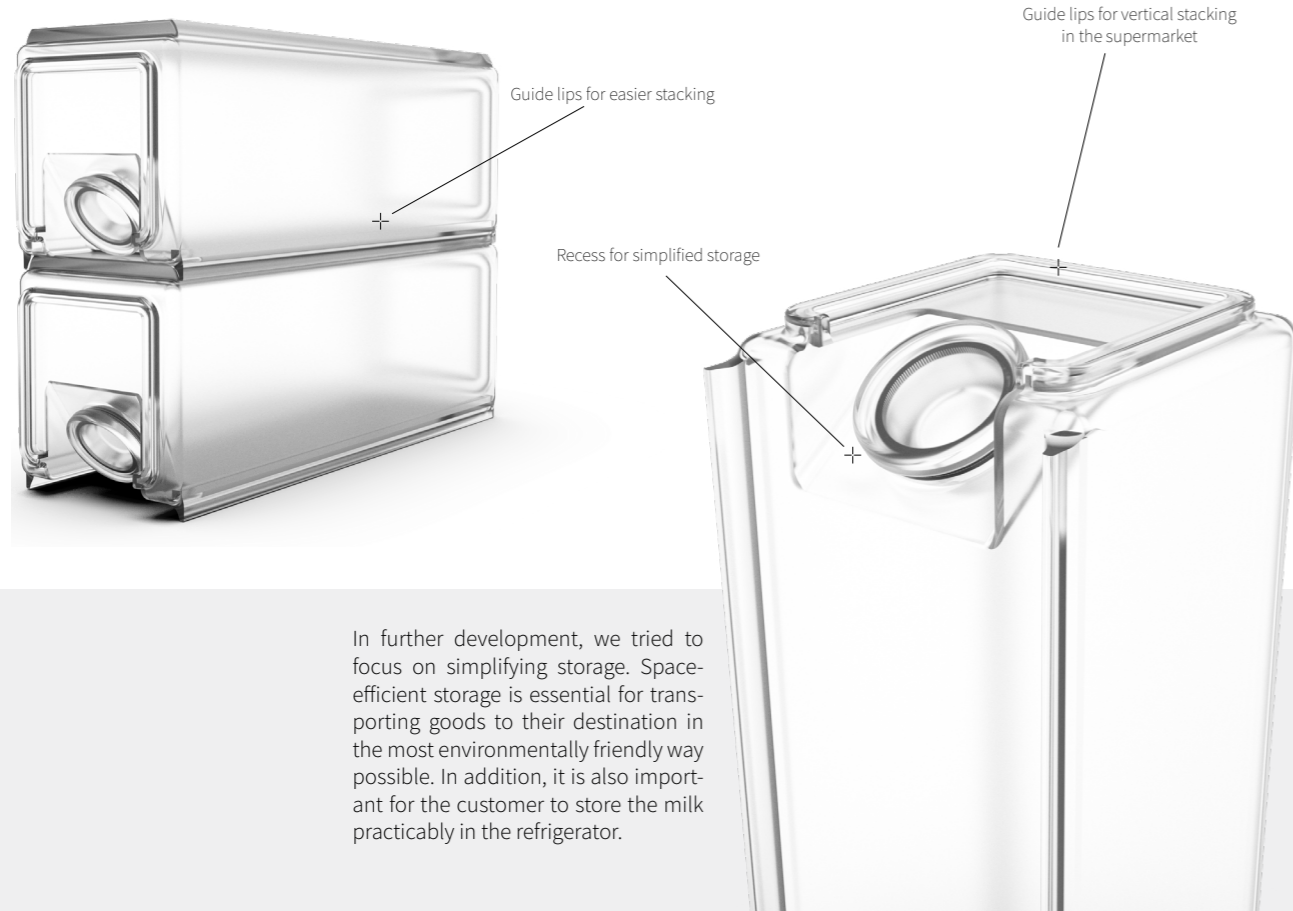
Our goal with CUBO was to design a 100 percent returnable alternative to beverage carton and glass bottles. CUBO is a reusable alternative with the lid firmly attached to the bottle itself. This guarantees that no waste is generated during its entire life cycle. It combines the convenience of beverage cartons with the ecological materiality of existing deposit glass bottles.

FIRST APPROACH

Our first approach was to think about the bottle body and the cap monomaterially from glass. glass corks are already widely used in the wine industry and only require a small replaceable sealing ring.

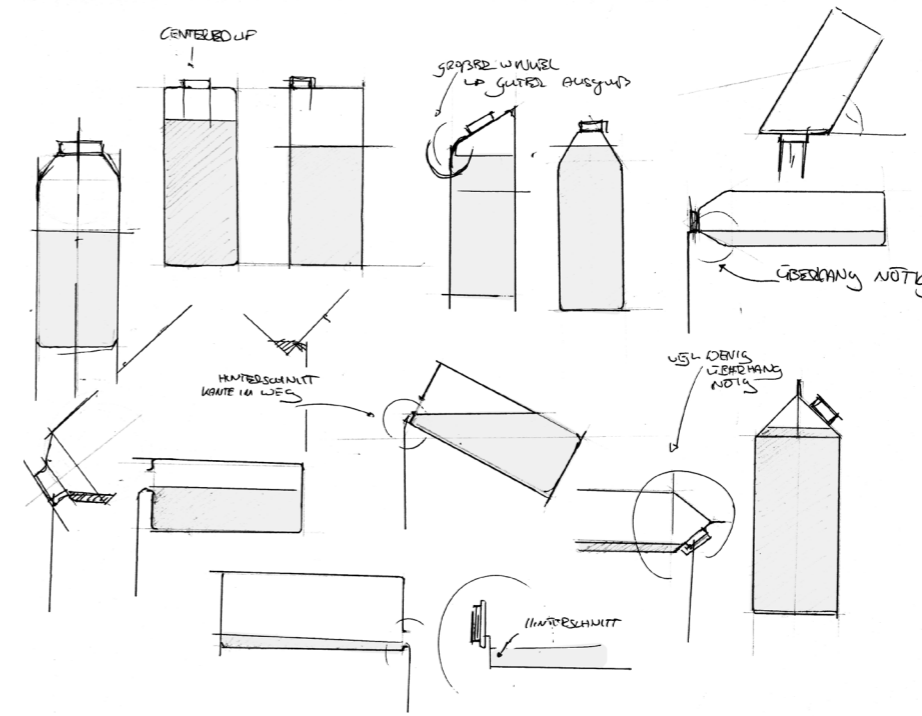


ITERATION .1



In further development, we tried to focus on simplifying storage. Space-efficient storage is essential for transporting goods to their destination in the most environmentally friendly way possible. In addition, it is also important for the customer to store the milk practicably in the refrigerator.

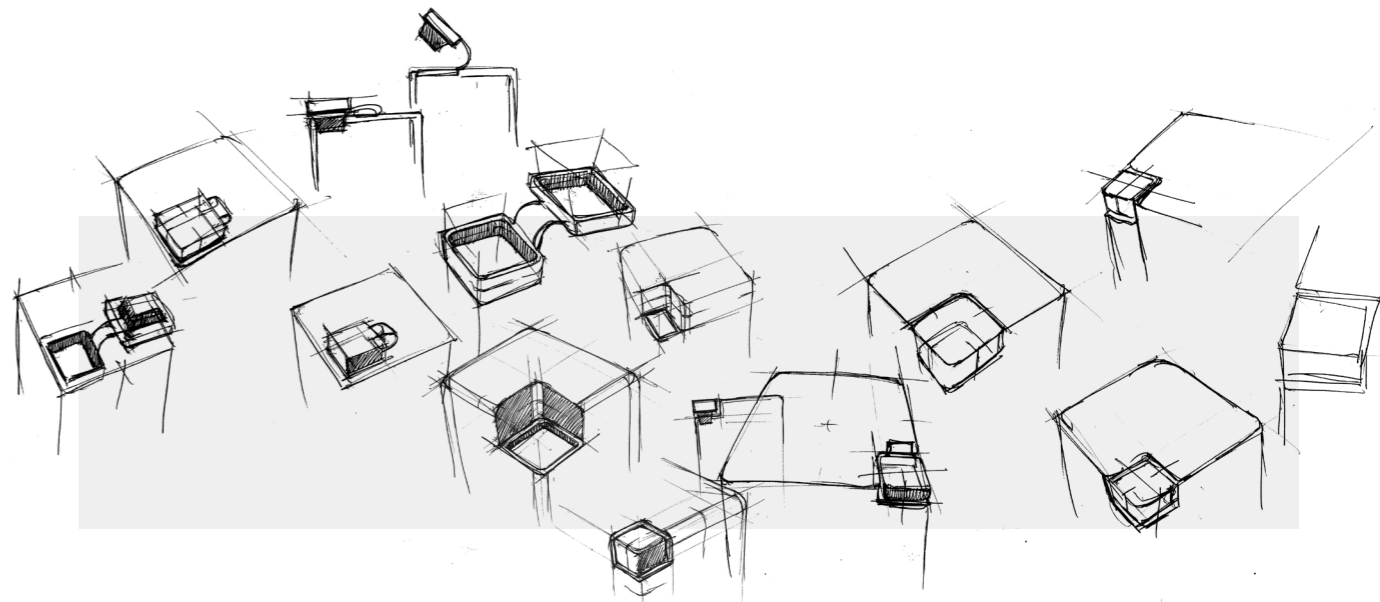
THE PERFECT SPOUT POINT



After analyzing different bottle shapes and positions, the optimum pouring point for a square bottle is probably in one of the corners. In this case, there would be no undercuts. Even with low contents, the bottle could be poured out effortlessly.

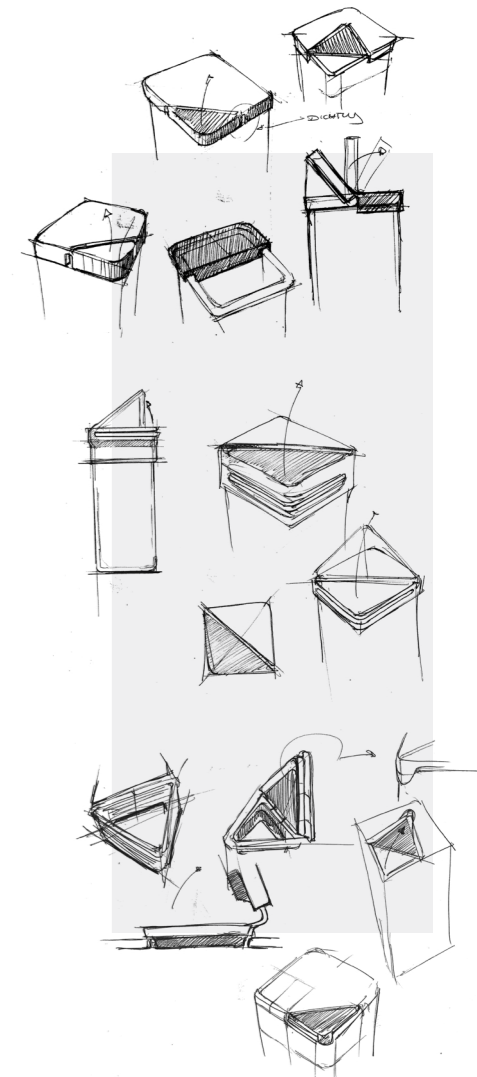
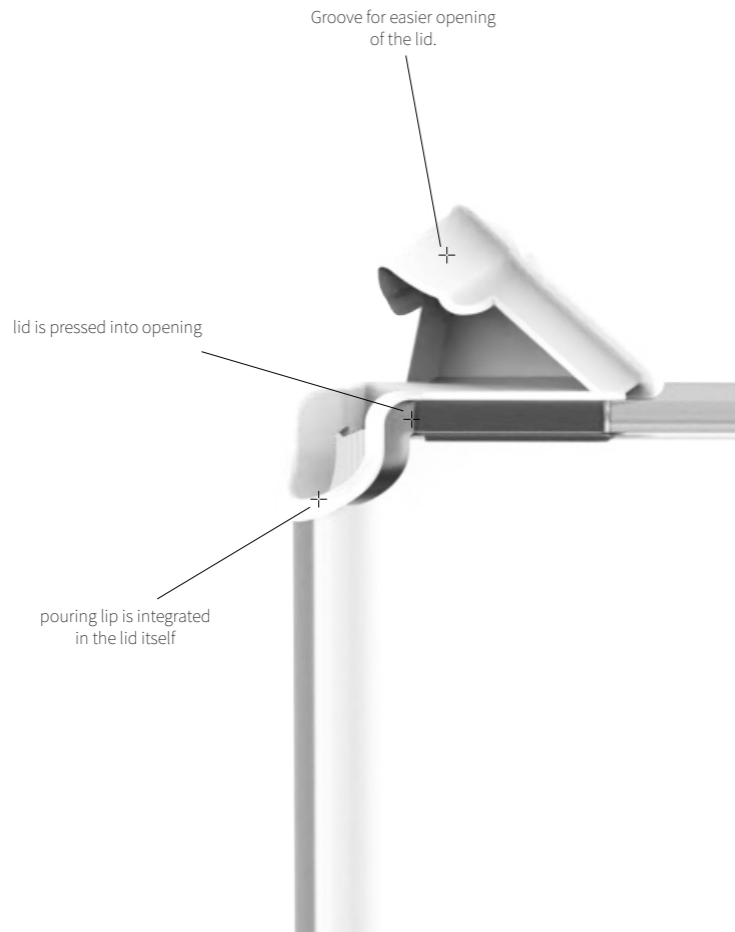
ITERATION .2

Laying a round shutter in a corner is difficult. This only seemed possible with a large radius of the bottle, whereby we would then be back to a round bottle, if the spout should have a certain diameter. The problem could be solved by a square lid or cork. However, square fits are difficult to get tight. In addition, this design would lead to problems with the stability of the glass if one does not want an undercut.



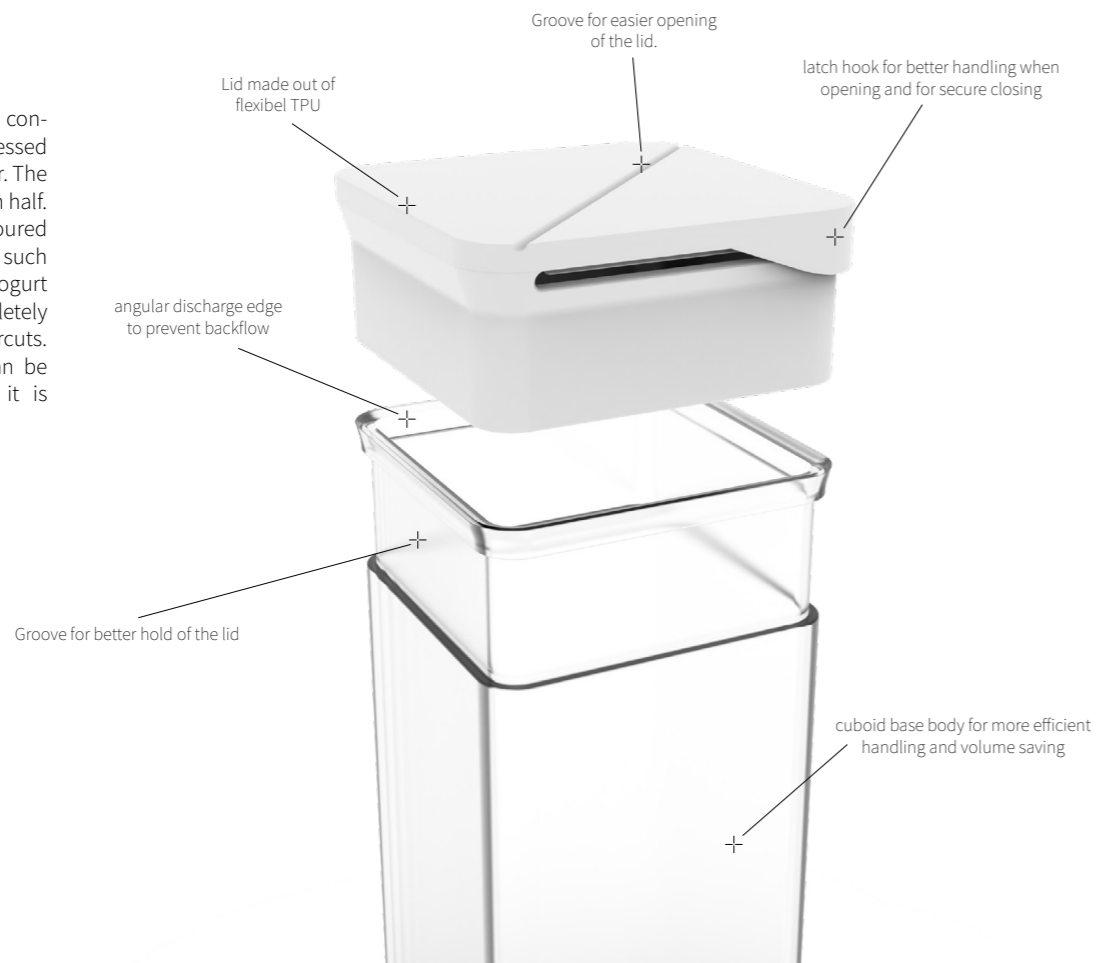
ITERATION .3

In order to make pouring easier by means of a round edge and still retain the cuboid shape, the spout was moved downwards. However, the production of such a glass mold is very complex and a tightness is difficult to produce due to the difficult shape.

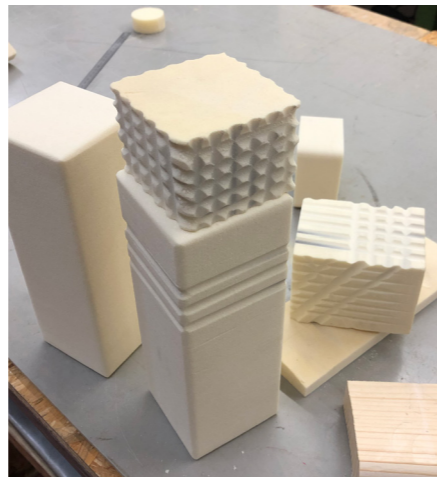
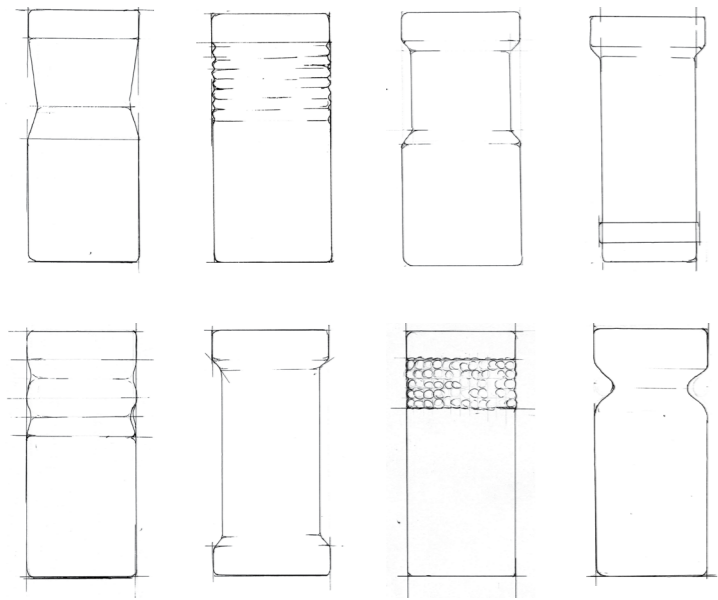


FINAL CONCEPT

this is how we got to our final concept. By case, the lid is firmly pressed onto the glass bottle for the user. The lid can be opened completely in half. Thus, any contents can be poured out comfortably. food products such as viscous dairy products like yogurt can also be conveniently completely consumed by eliminating undercuts. In addition, the glass form can be produced more easily, since it is completely open on the top.



BOTTLESHAPE & GRIP



PROTOTYPING OF THE SPOUT

One problem with handling glass bottles is the lip of the spout. When pouring slowly, the contents usually drip down the neck of the bottle. To protect the glass from breaking, it must be strongly rounded. However, in our design, the edge of the glass is protected by the plastic cap all around, so we can use a sharp edge.



LABELING



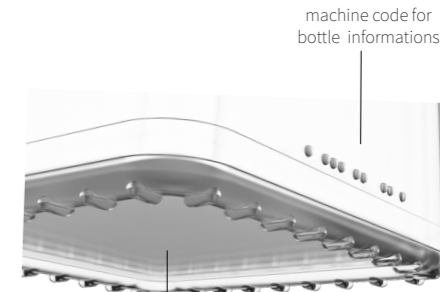
DETAILS & NORMS



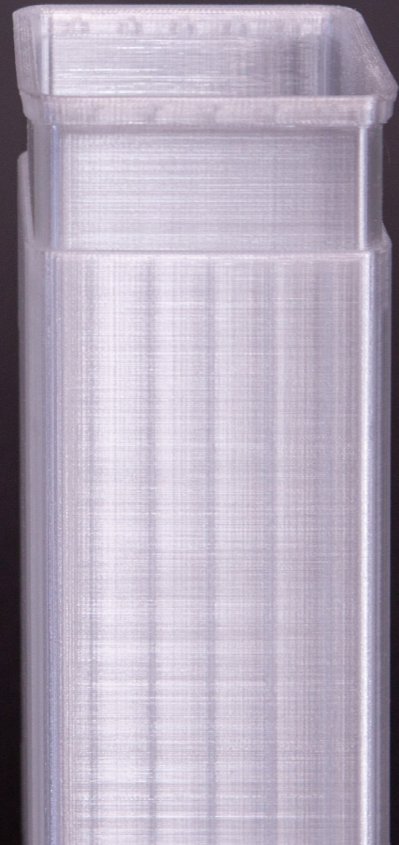
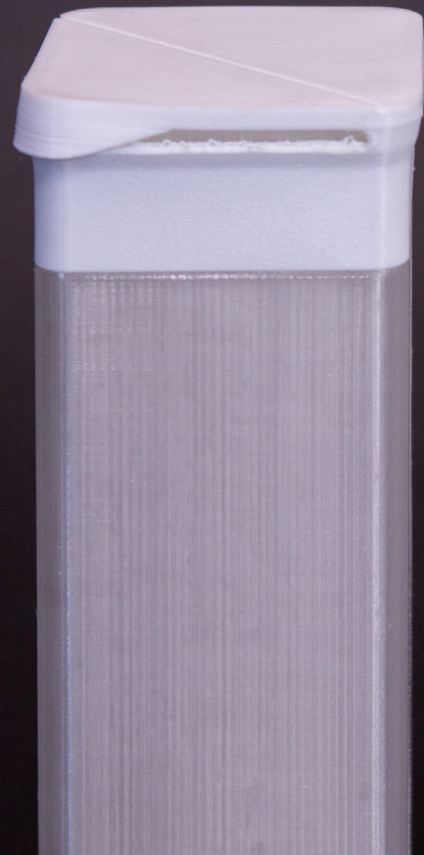
marking of manufacturer year of production distance between nominal volume of filling height and rim height

1 **03** **22:** **1,0l** **52**

form number > 50 ml: M < 50 ml up to 5l: 3 nominal volume in l



notch against vacuum machine code for bottle informations riffling at the lower edge against sucking to the underground



Produktionsdatum: 2023.03.15
Verfallsdatum: 2023.03.22
Produktionsort: D-75398 Bad Godesberg



Frische Bio-Vollmilch 3,8% Fett
homogenisiert, pasteurisiert
Die Bio-Milch wird durch ein
Sonderverfahren hergestellt und
enthält keine chemischen Zusatzstoffe, die
Schadstoffe bei diesem Verfahren
enthalten.



Menge	Prozent des Referenzwertes*
350 g	100%
Energie	320 kJ / 77 kcal
Kohlenhydrate	4,8 g
Eiweiß	3,8 g
Fett	3,8 g

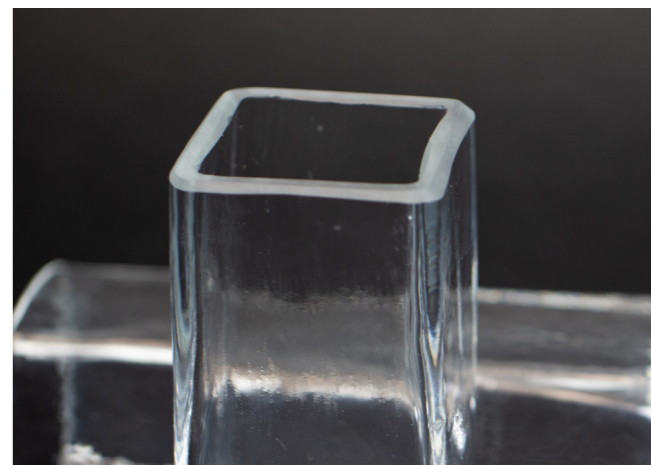
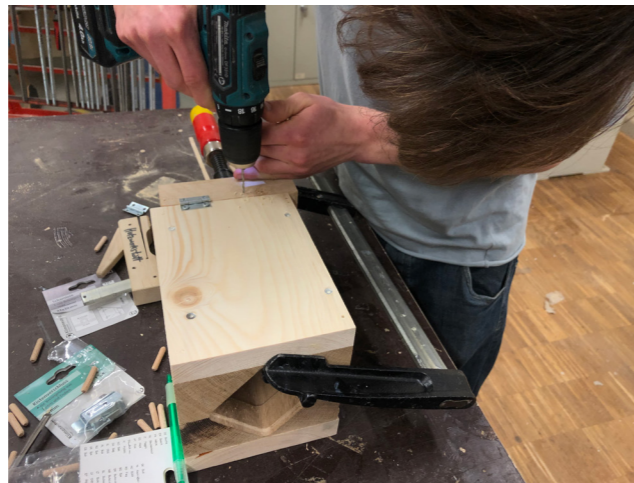
Bio - Vollmilch



GLASS PROTOTYPING

For the final prototype we decided to make the base body out of glass. To do this, we CNC milled a 3-piece negative mold of the body from oak wood. To close the mold tightly and to remove the glass easily, all parts are connected with hinges and clamps.

Since the high heat during glass blowing creates a lot of pressure, the mold must be placed in water for as long as possible and small holes must also be drilled in the mold walls.



QUALITIES

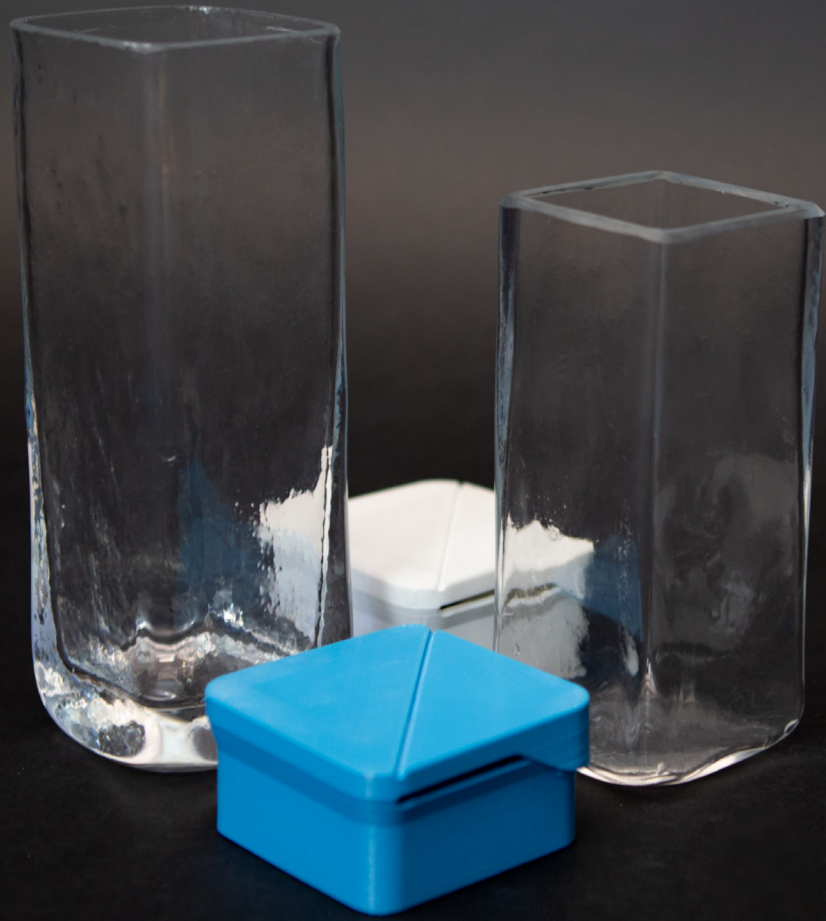
Bottle and lid staying together all the time. Removing the lid is not possible for the user, which guarantees carefree transport. Industrially, on the other hand, the lid can be easily removed for cleaning and filling. Due to the undercut-free shape, industrial cleaning of the bottle can be carried out in a much more resource-friendly manner than with conventional glass bottles. The filling process is also efficient because the symmetrical shape means that the bottle does not always have to be aligned in a particular direction. The label functions on the one hand as information and on the other hand as a seal that guarantees the unsealed nature of the product. It is made ex-

clusively from ecologically degradable material, so that no additional waste is produced. The shape of the bottle can save up to 18 percent space during transport in a collection container compared to round glass bottles.



IN-USE









CUBO

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WiSe 21/22

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