Designing protective packaging for a fragile product

Design report

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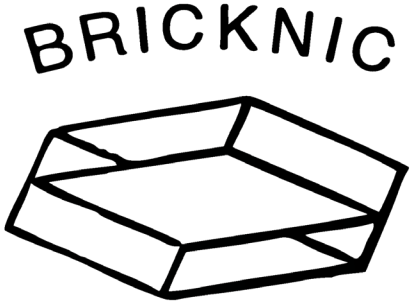


Content

Background

Introduction

Packaging designs have many functions that need to be completed (to protect, transport, present, etc. a product), which also depend on the type of product they are packaging. Food products are very well protected from air and water coming into contact with the product as they have a short shelf life and are easily prone to spoil; the main job of food packaging is to protect the food, transport it as well as giving it a good presentation in the shops and attracting customers with its design. Clothes on the other hand, do not need protection from air, water nor impact; the main function for fashion items packages is only to transport it. It is evident that there are different hazards in the logistical system that can damage a product. For example, force of impact, moisture, vibrations, light, water, air, etc. Some types of products are affected by a hazard more than others; for example, ink-related products are usually covered completely because they can damage if light enters the packaging.

Cooking tools are a complete different type of product, so they will clearly need a packaging focused on something else which ensures the products' safety and the packaging design's success. Many cooking tools are heavy, sharp and even made of fragile materials, such as clay. Therefore, the packaging designs for this type of product is much more focused on the protection and the safe transportation of the products. These packages have minimal graphic design as they are not meant to attract the attention of a consumer that is browsing through a shop.

There is one job that almost every packaging design for any kind of product completes: providing an unboxing experience. This phenomenon, 'unboxing experience', is a fairly new term and has been used more recently in the last decade to describe the action of taking something out of its packaging. The term's popularity has risen with the many creations of 'unboxing videos', where someone is unboxing a product and is filming themselves recording their reactions to the product. Unboxing videos have been used by many people who want to research about a product before buying it, they want to know someone else's thoughts on it before taking a risk and spending money on an unknown item.

This design report is based on the research report 'Protecting and unboxing, the success of a packaging solution'; and the design brief as well as this introduction are both based on the findings of the research.

The client company

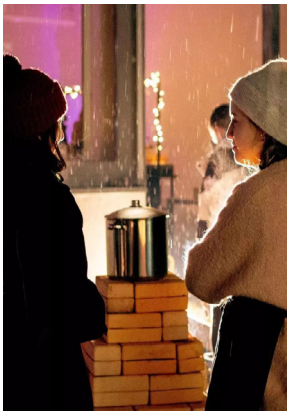
Bricknic was founded in 2018 by 2 young designers who had recently graduated from the Eindhoven Design Academy, Timm and Leif. The company mainly focuses on producing cooking tools made out of clay, with the company slogan being ‘Cooking tools for togetherness’.

Bricknic designed and developed a patented product that has reached every continent for new customers. This product is the Bricknic Brick and has won a red dot design award in the year 2021; it consists of a clay brick-looking vessel that can be opened to place food inside it and cooked over any kind of heat source.

The Bricknic BBQ Planet has also become very popular amongst their customers.

Bricknic is based in Rotterdam, they value nourishment, diversity, social gatherings and bringing people together through cooking. Sustainability is a goal that they are always trying to achieve, through the use of locally sourced and natural clay and suppliers.

Bricknic also hosts outdoor cooking events for big gatherings, weddings, workshops and corporate meetings, and also attend markets of local and innovative products from Rotterdam.



Social media

Target user

There are two groups of target users with different needs that will be using the skewer brick:

1. People from all over the world, aged 16 and above, who like to cook at home, especially barbecue enthusiasts and grilling amateurs. People who buy good quality cooking tools value the protection of the product during its transportation,

and, 2. Restaurants that will buy the Skewer Brick in bulk and serve their dishes on the Skewer Brick.

User needs

The user, someone who loves to cook and is all for experimenting new foods, expects to receive the product in perfect condition, the same condition it left the factory.
They need the packaging to protect the Skewer Brick and its additional components throughout its whole transportation

Although most users are environmentally friendly, their first priority is to receive a product they bought in a flawless and immaculate state. So, ironically, the package can include loads of bubble wrap if necessary.

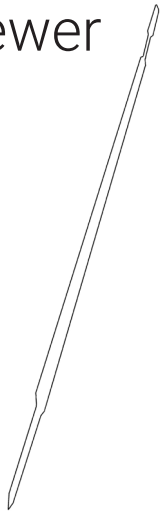
Receiving a broken product, almost with any product that is ordered online and delivered, will definitely bring negative claims from users and bring consequences to the reputation of the brand that is sending off items that are breaking during their transit.

The Skewer Brick

Bricknic is developing a product that will release in 1-2 years to the market, the Skewer Brick. It consists of a grilling kit to cook food with, 'flambé' style. Where food is cooked with a flame. The components of the product are made of different materials such as clay, glass, stainless steel and PET. It will be sold to both restaurants and regular private consumers.

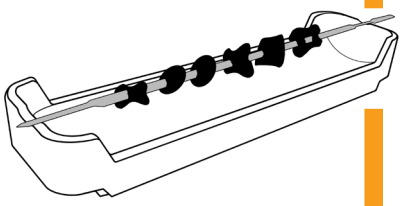
Components:

Skewer



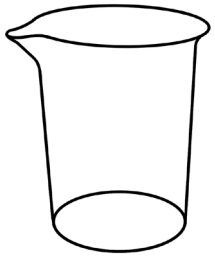
Materials:
Stainless steel

Dish



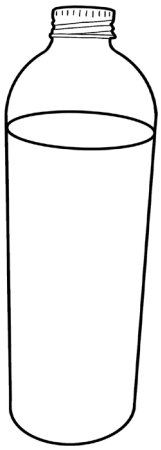
Clay

Measuring glass



Glass

Cooking oil



PET bottle containing cooking alcohol.

Design Brief

Problem statement

Bricknic is currently developing a new product that will soon be released. The product is made of multiple pieces and combines different materials, some of which are new to Bricknic's product range. For this product, Bricknic does not yet have a packaging design that will protect the product, engage the user through the unboxing experience and express the company's core values. Therefore, they need a packaging solution as well as a branding direction for their new product.

Vision

The vision of this project is to have an effective packaging solution for the skewer brick. A packaging solution that protects the clay dish as well as the measuring glass which are of fragile and brittle materials. The product should reach the end user in one piece and the packaging design will also trigger positive emotions that will make the unboxing experience memorable; which will improve the customer's brand experience and could help get more recognition amongst cooking enthusiasts and restaurants.

The packaging is modular in a sense that users can order single components on their own in case they break or run out. Furthermore, restaurants will order the product in big quantities and the packaging solution will also tackle these aspects: to transport large quantities of the product and to provide modularity in case single components are ordered.

Research Insights

Labelling

• Different products require specific labelling requirements under European law. The required labels for the skewer brick are: the one for transporting a flammable substance; and the one for a product/material that comes into contact with food.

• The producer is responsible for ensuring their packaging meets essential requirements such as limiting weight and volume, minimising hazardous materials, and designing reusable or recoverable packaging.

• CMYK is the standard colour system used in packaging printing, as it is more efficient than RGB for printing a wide range of designs and colours.

Protection

• Protection is crucial for the success of a product.

• Different materials require different packaging specifications.

• The hazards of the logistics must be identified to be able to protect the product from it (mechanical shock, vibrations, • compression, and atmospheric conditions).

• Hazards can damage the product.

• Protective packaging limits the physical hazards to below the product's fragility level.

• Choosing the right cushioning material and understanding cushion curves is crucial for effective protective packaging.

• Standard box sizes are measured by their inner wall dimensions (length, width, and depth).

Branding

• The success of packaging can be measured by technical aspects, such as holding, protecting, storing, transporting, and the human aspect that involves the presentation of the product and how users interact with it and experience it.

• A successful package is consistent with the brand values, relevant to the consumer and is well integrated with other communication vehicles of the brand.

• Branding can influence the image of packaging and how it is perceived.

`• Image has become the driving force behind packaging and branding, good branding is essential for product's success.

The Unboxing Experience

• It is very important to make the unboxing experience memorable.

• Complex unboxing experience, with multiple layers of packaging to unwrap, improves the unboxing experience.

• Packaging must fulfil both the emotional and physical expectations of consumers.

• Humans are excited by new ideas and experiences, and unique designs are more appreciated.

• The unboxing experience is a key factor for the success of a packaging design

Design requirements

Must Haves

• The packaging solution should protect the ceramic and glass components from logistical hazards, they must arrive without damages.
• There needs to be enough buffer zone (space from product to the inner wall of the packaging) (> 10 mm).
• There needs to be spacing between components (>5 mm).
• The components should not be able to move around freely, there must be a structure confining the components in place.
• The box must be durable & sturdy, also be able to withstand the weight of 8 units stacked on top.
• Protection should be prioritised over sustainability.
• The box as well as the insert should be foldable to easily disposed of.
• Both the insert and the box should be cut out and assembled out of one piece of cardboard.
• The material used should be unbleached corrugated cardboard.
• The packaging should be composed of one single material.
• The layers of packaging should be minimal.
• The packaging design should provide a positive and memorable unboxing experience.
• The product should not be seen the first thing when opening the package.
• The opening should be smooth and easy; as well as clear to the users
• The packaging must be informative of the product inside
• The graphic design should be minimalistic, playful & inviting.
• The packaging must comply with legal packaging labelling & marking requirements.
• The packaging design must be modular, in a sense that single components can be delivered in the same packaging

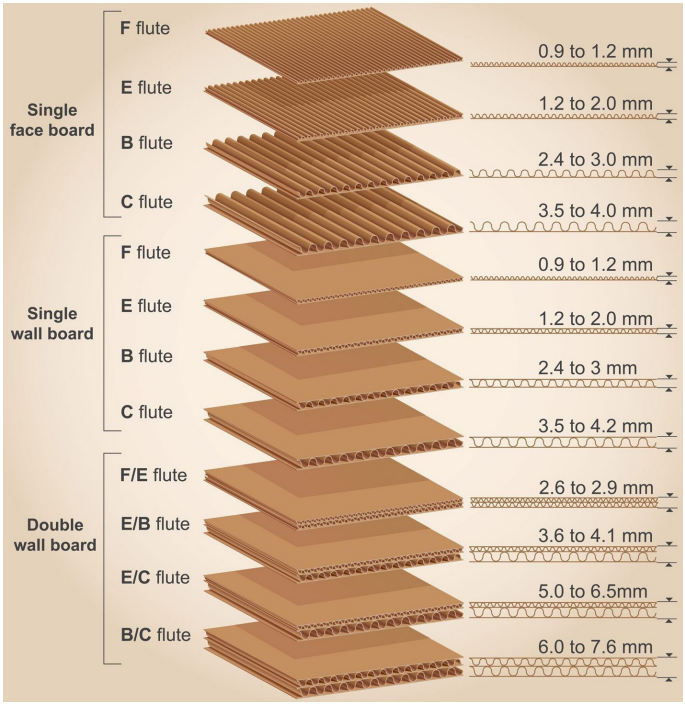
Nice to Haves

• A similar packaging structures as the current one used for Bricknic products would be ideal.
• The dimensions of the box should somehow be related to those of the Bricknic Brick.
• The size of the box should be compact, occupy the minimum possible space.
• Only use the most necessary amount of printing on the packaging.
• There should be some form of personalization in an element.
• The box should be able to be reused somehow.

Material choice

Corrugated cardboard

Corrugated cardboard is a type of material that is widely used for packaging, shipping boxes, and various other applications. Corrugated cardboard differs from normal everyday cardboard paper. It consists of three main layers: two flat outer linerboards and a wavy inner layer (the flute) that provides strength and support. The wavy/ fluted/arched board is sandwiched between the two flat boards. Arches have been used in architecture for thousands of years, because the appropriately curved arch is the strongest way to span a gap. The flutes in the corrugation resist bending and pressure when glued to the linerboard due to the same principle.



One important advantage of using corrugated cardboard is that it is a sustainable material choice. It is sourced from old cardboard, newspapers, and other paper products; making it a circular product as it reuses and recycles materials from older products that have exceeded their life cycle. Moreover, most corrugated cardboards are unbleached, which means that the pulp is not contaminated with bleach and colourants to get the desired colour.

There are different types of corrugate for different purposes. The factors that change with each grade of corrugate are: the size of the flute, and the amount of flutes in a set distance, (the frequency of the wave).

The flute type chosen for the packaging design of the Skewer Brick is an E-B flute (3.7-4.5mm). This is the same flute and thickness used for the Brick and the BBQ Planet which suggests that it has a high strength and resistance as both of those products are heavy as well as fragile.

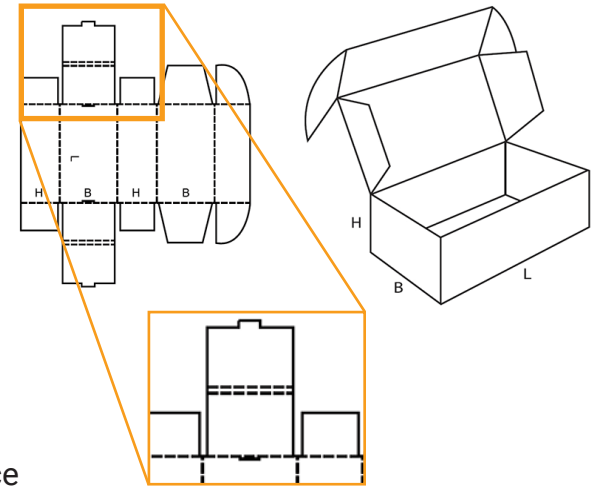
E flute is often used in packaging like mailer boxes and is one of the thinnest flute profiles. This may not sound durable, but E flute has a high number of flutes (90) per foot. This not only creates the ideal surface for printing but offers excellent crush resistance too.
B flute is often used in shipping boxes and is the most common flute profile for shipping boxes. As it's thicker than E flute, it offers more cushioning and better puncture resistance, but it still has a smooth surface for printing on.

E-B flute offers both excellent print performance and protection.

Current Bricknic packaging

The Bricknic Brick and BBQ Planet have the same packaging format. It consists of a box that contains the product and the insert. The insert is a flat piece of corrugate that is folded into the box and has cut-out holes where the product fits in perfectly to stay confined in place and also be protected from reaching the walls.

The box structure used in the current packaging solutions is the FEFCO box code 0427. This box can be sealed without the use of adhesives as the folds and flaps in the structure allow the walls to lock in with themselves.
The extra flaps that fold inwards act as a second wall which provides more protection as there is more layers of cardboard on two of the four walls; therefore, using this box 0427 for this project will be advantageous.



The following images show the unboxing sequence of the current packaging solutions for Bricknic's products: the BBQ Planet and the Brick.

Idea Generation

Diverging

Diverging in packaging design is slightly different to making ideas for a product where one has all the freedom in the world. An ideal package is as cheap as possible without putting in risk the product's integrity. When it comes to corrugated box structures and packaging inserts, most of the structures and shapes are already existing, one just has to find the correct one to complete a specific purpose.

Morphological Chart

The method used to diverge and create many ideas was the morphological chart method. For the first part of this method, I identified all of the functions that the packaging solution will be completing throughout its entire journey. These can be seen in the following list.

For each function I looked for as many existing structures as possible that can be used to complete that function and package and protect the Skewer Brick. Furthermore, I designed the packaging inserts myself as the components of the Skewer Brick have unique shapes that will be difficult to find an exact insert cut-out for.

Functions & components

- 'To contain the product, with a box'
- 'To confine the components of the product in place with a insert structure'
- 'To provide protection with a cushioning structure'
- 'To surprise the user with an unexpected element'
- 'To inform the user about the product through graphics and branding design'
- 'To present the product'

The box

Function(s):

- 'To contain the product & components'.
- 'To provide a handle'

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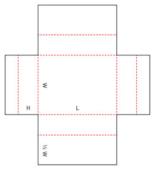

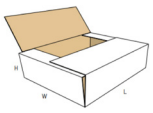

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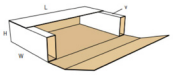

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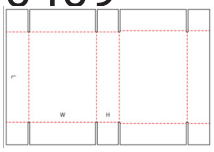

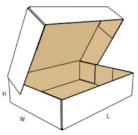

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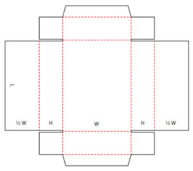

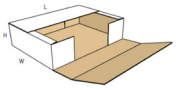

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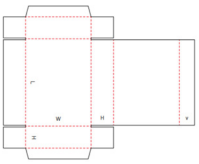

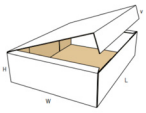

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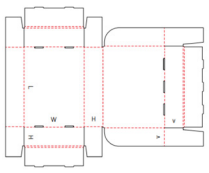

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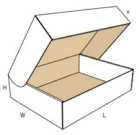

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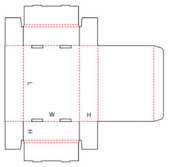

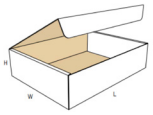

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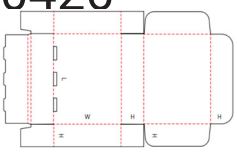

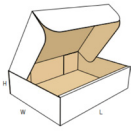

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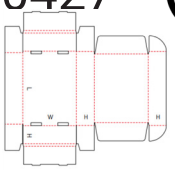

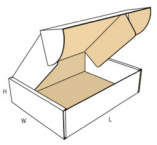

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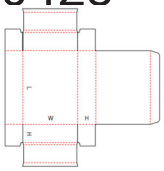

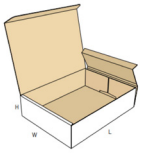

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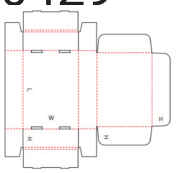

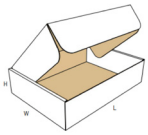

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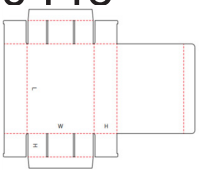

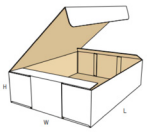

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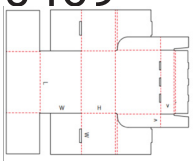

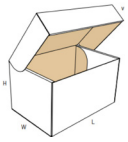

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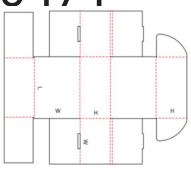

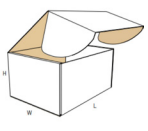

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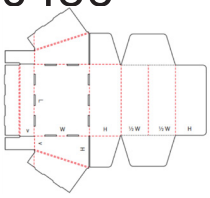
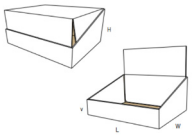
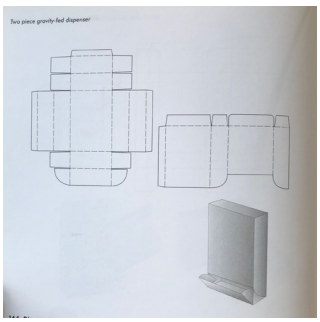
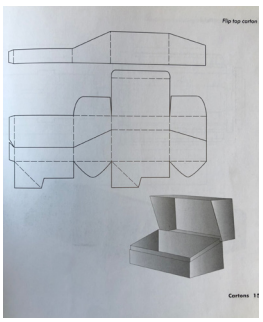
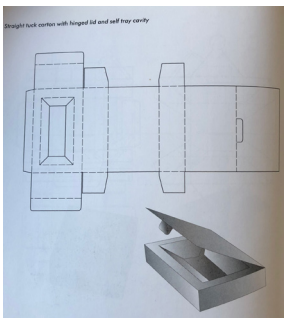
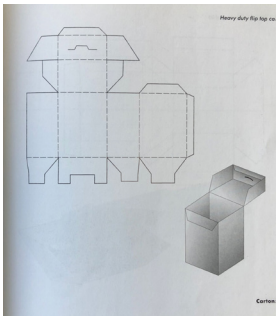
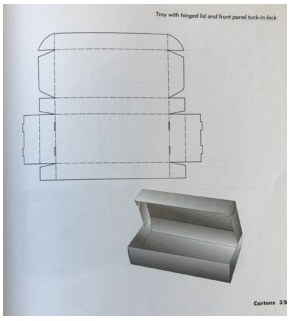
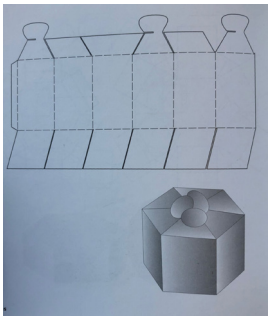
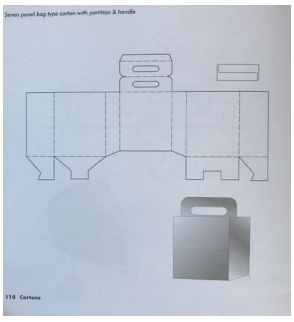
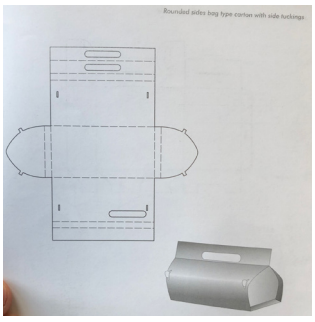
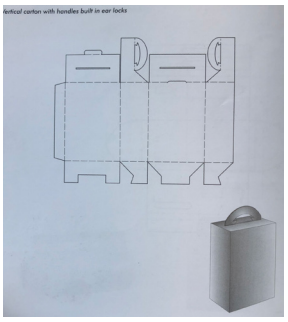
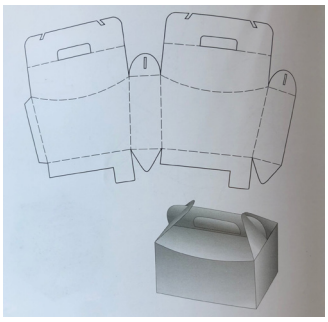
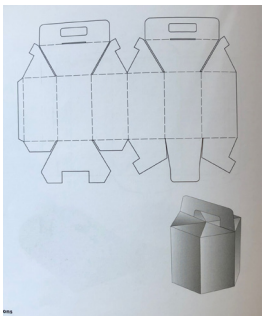
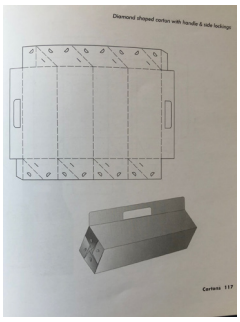
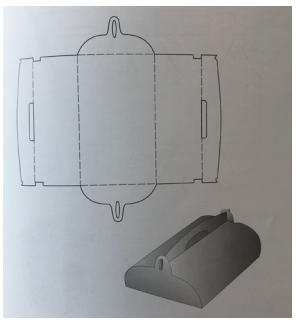
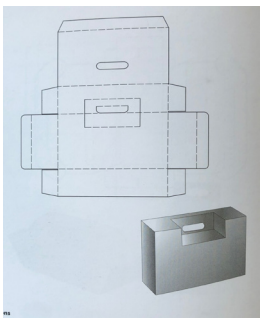
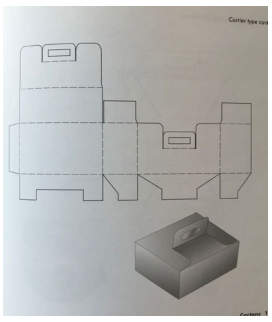




The chosen box design for the final idea is the FEFCO code 0427. This design keeps the Bricknic packaging line consistent (page 13) and has proven to be a protective option for clay materials. It is more protective than others boxes as the template makes the two shorter walls fold back into the box, providing more material and more cushioning on those shorter sides (page 13).

Configuration of components

1

2

3

4

5

6

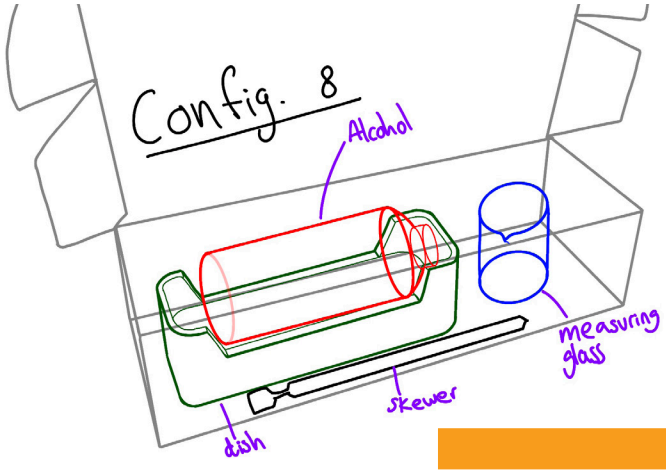
7

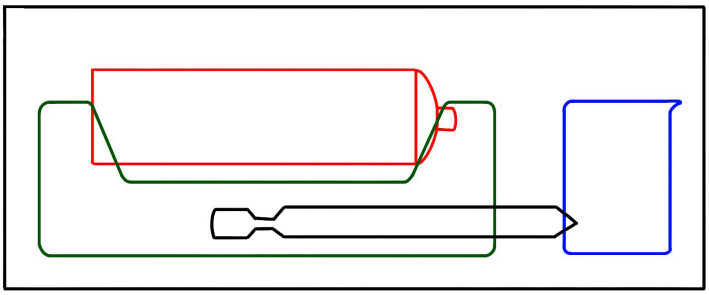
8

Different configurations were explored to help with designing the packaging insert. On the previous page, configurations number 1, 2 and 3 were discarded because of the positioning of each component. They were too close together which risked them from getting damaged. These configurations would also conflict with the design requirement of having at least 5 mm of distance between components of the product. Having the Skewer Brick sideways like in configuration 4 was also a risky position for the dish to be in, as the more fragile sides of it were touching the bottom of the packaging. Configuration 7 was also discarded as the skewer occupied too much space in that position.

For the next diverging exercise, configurations number 5, 6 and 8 were used and an insert was created to keep the components in those positions. Configuration 5 was used for insert 4 and 5, configuration 4 for insert 6, configuration 6 was used for insert 2, finally, configuration 8 was used for insert used 1 and 3.

The configuration chosen for the final idea will be number 8; where the bottle of alcohol is on top of the Skewer Brick and the glass is to the side of them. This configuration was chosen because it is the most space-efficient one and at the same time does not risk the fragile materials from getting damaged.





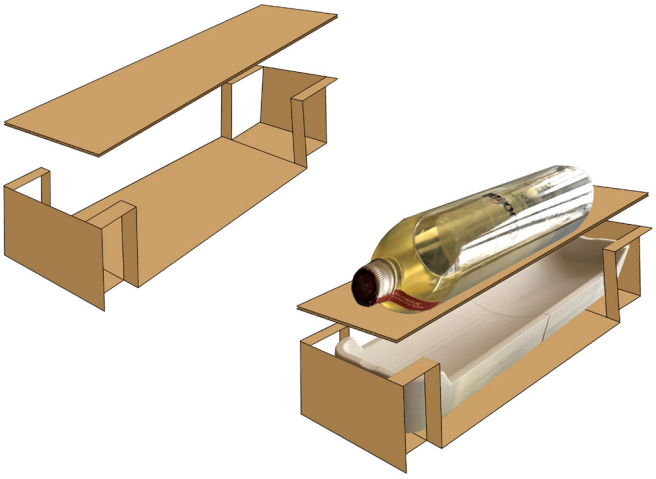
The insert

Function(s):
- 'To surprise the user by uncovering something'.
- 'To confine the components'.
- 'To provide protection'.
- 'To present the product'.

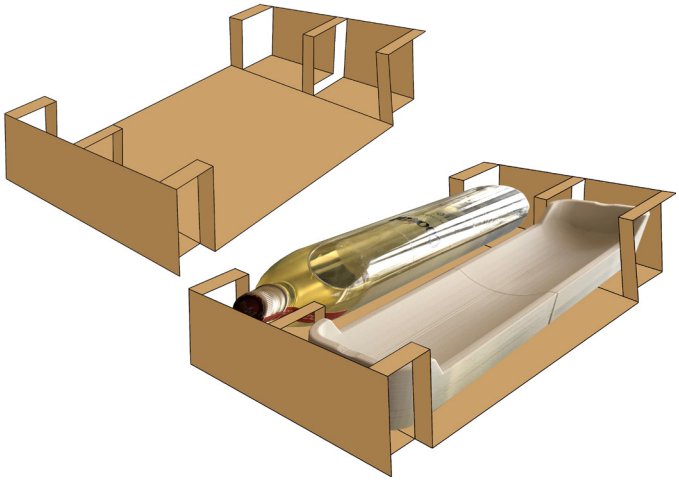
The packaging inserts are cut out structures, made from many different materials (cardboard/foam/plastic/etc.), that hold the product and its components in place inside the packaging. Packaging inserts are considered protective structures because it confines the product and/or its components; meaning that they will not be moving around bumping into each other nor the walls. This way there are less prone the getting damaged by impact, sudden movement or vibrations. Furthermore, it provides protection as the structure holds the components and separates them a distance from the wall.

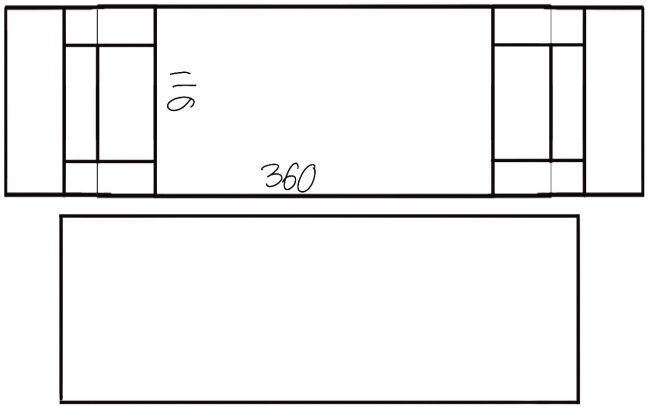
This distance between the wall and the product is called a buffer zone, which is an almost empty area with space so that the structure can crumple when subjected to force. Usually the force comes from an impact.
Moreover, during an impact, the material should crumple which shows that it absorbs the force of impact and translates it into the deformation of the structure of the insert and the box, this way the force is absorbed entirely by the packaging before it can reach a component of the product and potentially damage it.
Having the product separated from the wall provides a certain margin of safety, the more it is separated, the more the product is protected.

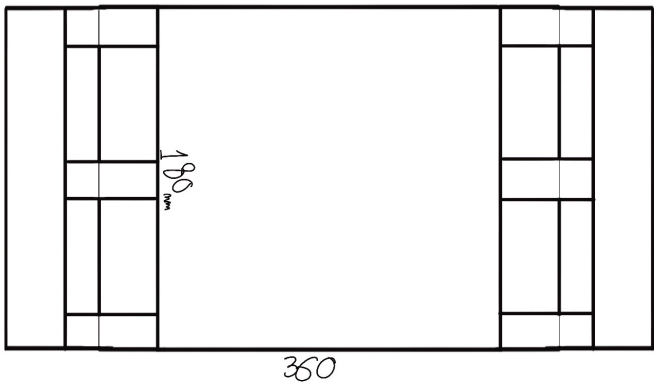
1



2







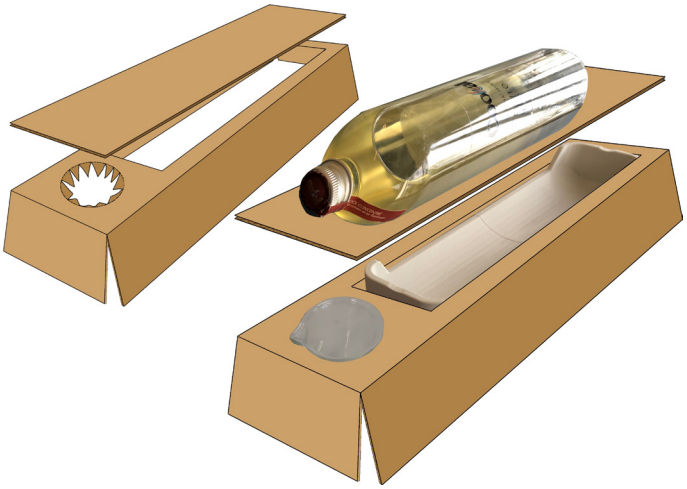
Surface area: 880 cm^2

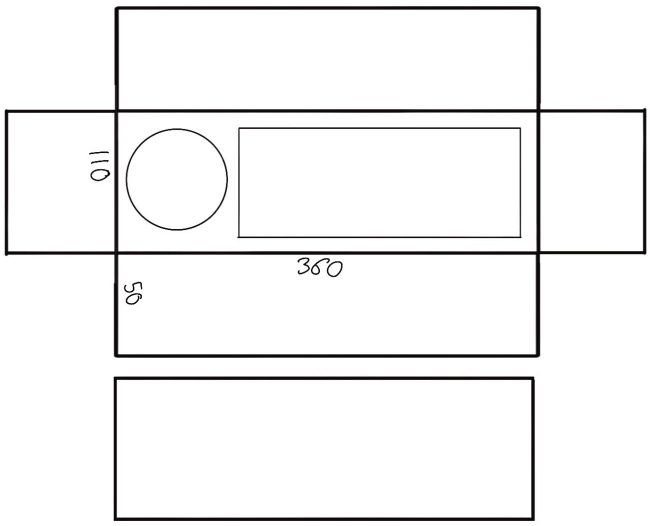
This idea holds the clay dish underneath the bottle of oil and the measuring glass, like in components configuration 8, with a layer of cardboard in between. It provides enough buffer zone from the longer walls of the box. The clay dish, on the other hand, is very close to the shorter walls. This is compensated if the box used would be 0427 which provides extra padding of material on the short walls of the box.

Surface area: 648 cm^2

The idea of the insert is the same as the previous one, but the configuration of the components differs; from 8 to 6. Instead of being on top of each other, the components are side-by-side. Consequently, the width of the package dimensions almost doubles while the height decreases by half as well.

3

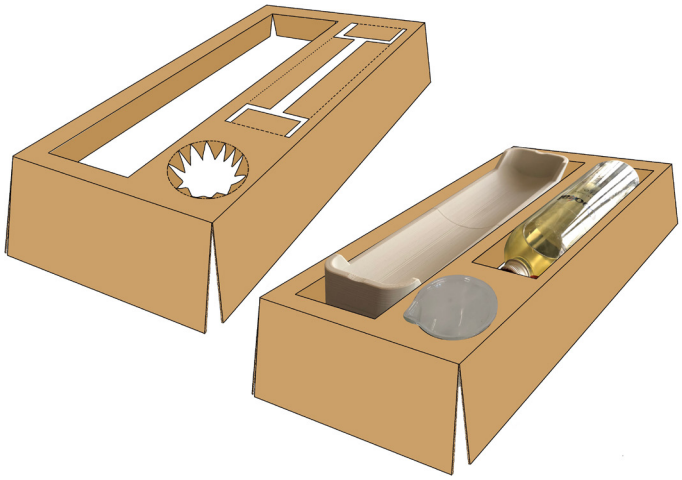


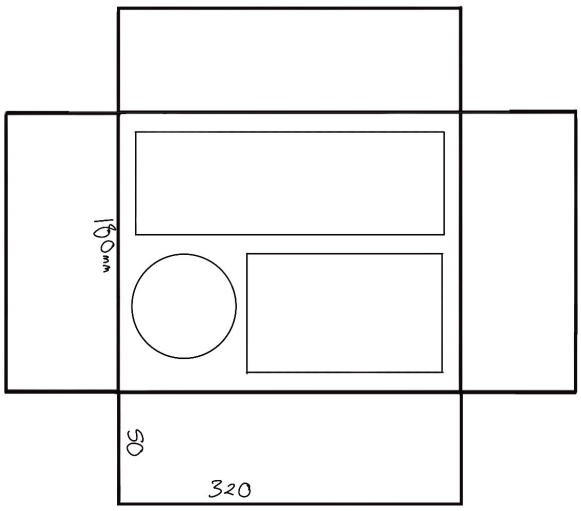


Surface area: 866 cm^2

Similarly to insert number 1, the bottle of flammable oil is resting on top of the skewer brick and the measuring glass and there is a layer of corrugated cardboard in between them. The configuration 8 was used here, which provides the packaging dimensions with the smallest width. Consequently, the height is much higher that if the components are configured next to each other.

4

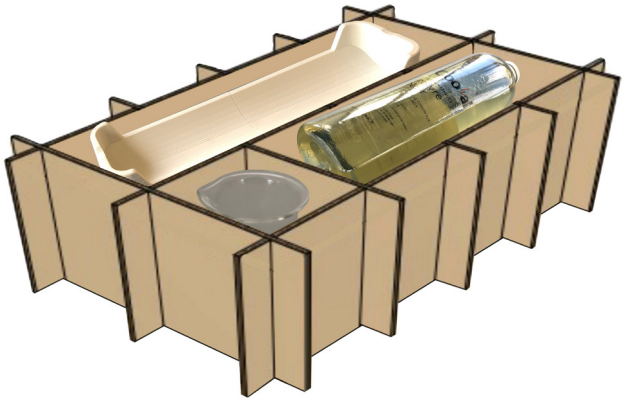


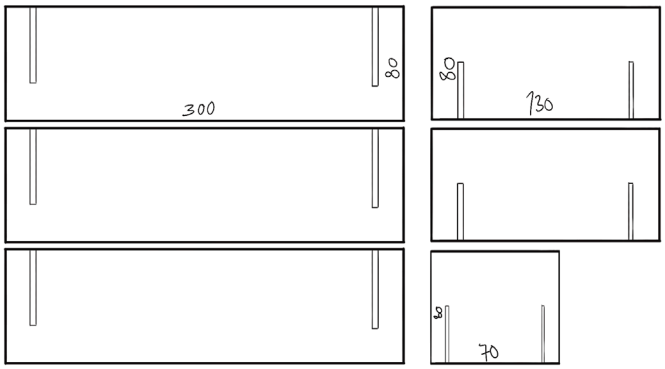


Surface area: 1076 cm^2

This insert idea and the previous one, was inspired by the current packaging solution Bricknic products have. An insert with four walls that are folded down acting as support, and the insert has holes cut in them with the shape of the product's components so that they tightly sit in these holes confined and separated from the four walls.

5

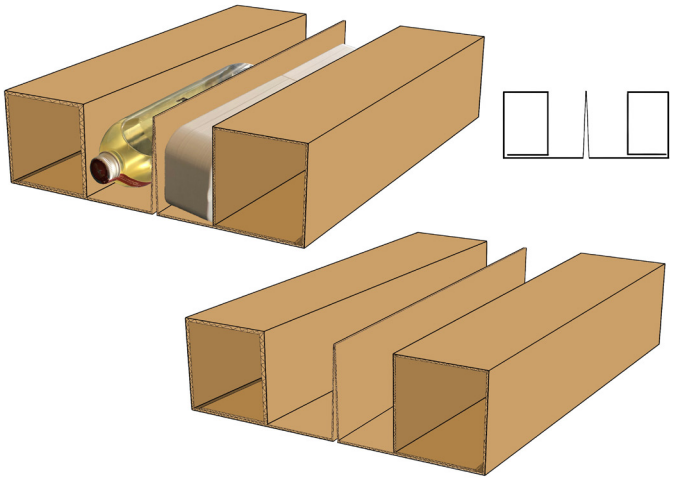


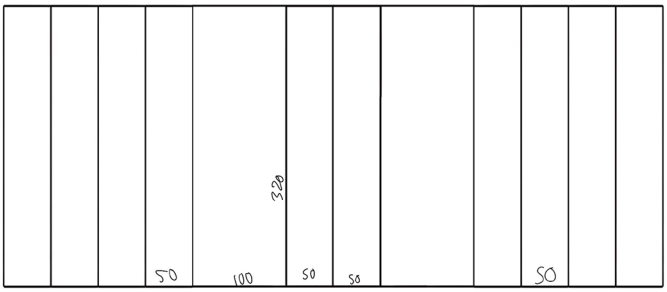


Surface area: 984 cm^2

Insert idea 5 is based on the FEFCO packaging code 0934, which consists of flat pieces of corrugate standing vertically to form gaps where each component can fit. This design does not provide protection from underneath the product, so therefore, an extra flat sheet of corrugated cardboard will be needed and placed under everything to compensate for this lack of bottom protection.

6





Surface area: 2240 cm^2

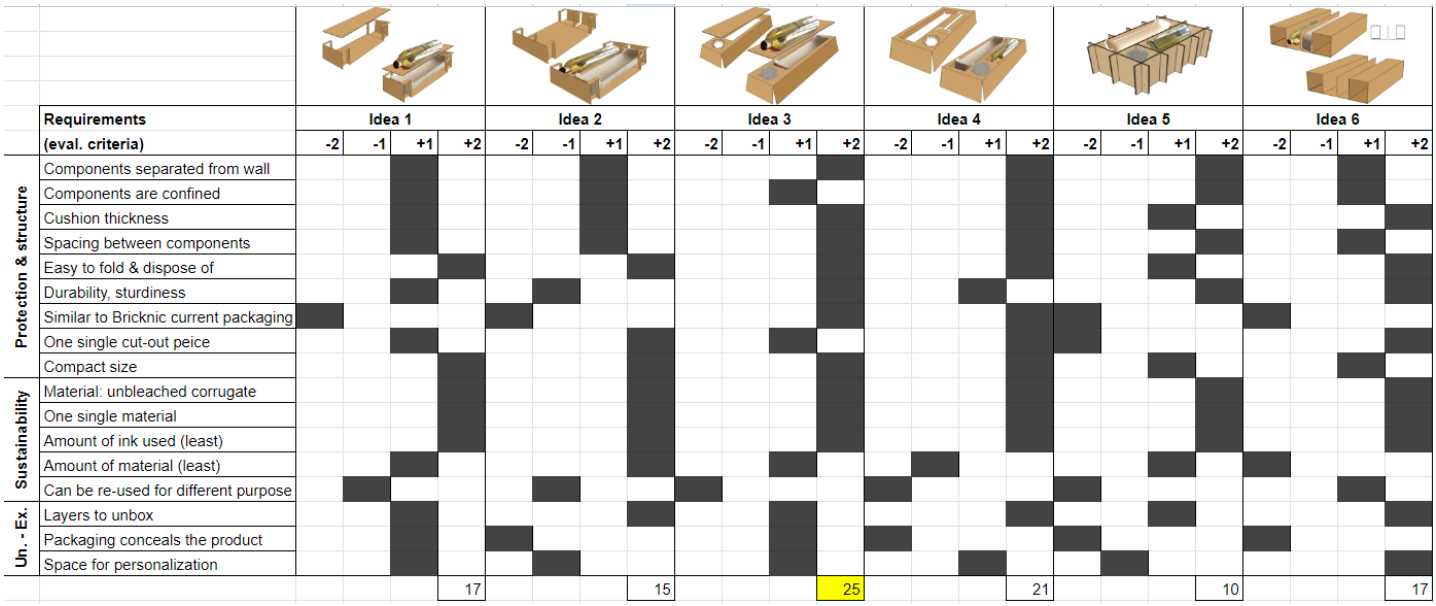
Insert 6 was also based on a FEFCO design. This time the insert was inspired by the interior fitments FEFCO 0946. This idea provides a large separation of the components from the long walls but not from the shorter ones. I thought of putting an extra fold in the middle of the 2 sides of components so that they do not touch each other and the probability of them breaking is much lower.

Converging

Harris Profile

Moving forward with the development process of this packaging design project, the next step is to narrow down on the ideas, converge, and chose a final insert structure to hold and protect the product(s).

The Harris Profile is an appropriate method that evaluates ideas and concepts and aids the process of choosing the correct one based on a specific criteria. In this case, the criteria for which each packaging insert concept will be compared to one another and judged is the list of design requirements (from page 11). Not all requirements were used as they are not easily measured, only the more specific ones were used.



	Requirements	Idea 1				Idea 2				Idea 3				Idea 4				Idea 5				Idea 6			
	(eval. criteria)	-2	-1	+1	+2	-2	-1	+1	+2	-2	-1	+1	+2	-2	-1	+1	+2	-2	-1	+1	+2	-2	-1	+1	+2
Protection & structure	Components separated from wall			■				■					■				■				■			■	
	Components are confined			■				■				■					■				■				
	Cushion thickness			■				■					■				■			■					■
	Spacing between components			■				■					■				■			■				■	
	Easy to fold & dispose of				■				■				■				■			■					■
	Durability, sturdiness			■			■						■			■				■					■
	Similar to Bricknic current packaging	■				■							■				■	■				■			
	One single cut-out peice			■					■			■					■	■							■
	Compact size				■				■				■				■			■				■	
Sustainability	Material: unbleached corrugate				■				■				■				■				■				■
	One single material				■				■				■				■				■				■
	Amount of ink used (least)				■				■				■				■				■				■
	Amount of material (least)			■					■			■			■					■		■			
	Can be re-used for different purpose		■				■			■				■				■						■	
Un. - Ex.	Layers to unbox			■					■			■					■			■					■
	Packaging conceals the product			■		■						■		■				■	■			■			
	Space for personalization			■			■					■				■									■
					17				15				25				21				10				17

The table above depicts the result of the Harris Profile. The highest scoring concept, and therefore the winning one, is packaging insert number 3. Compared to the other 5 ideas, idea 3 is the one that meets most of the requirements to the furthest extent.

The requirements that have not been perfectly met by this concept and the reasons for that are the following:

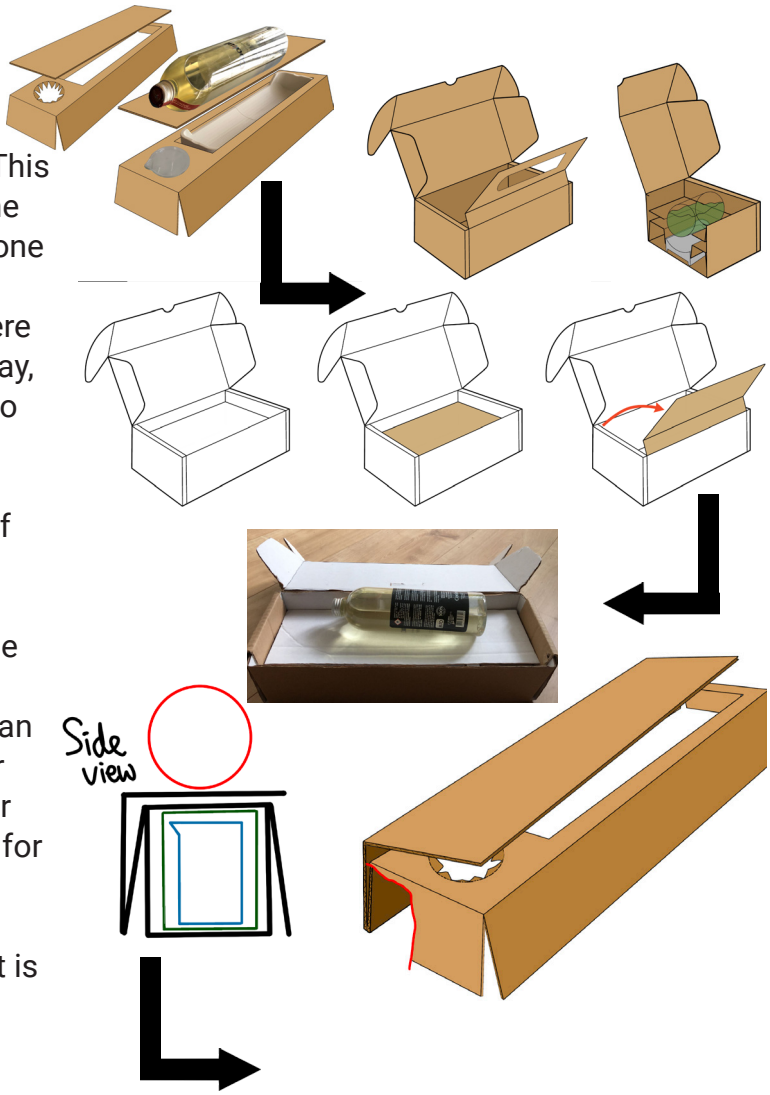
- Components are confined: The flat platform that holds the bottle does not confine the bottle.
- Cut out of one single piece: The concept consists of two parts.
- Amount of material: It is the concept with the second least surface area of cardboard used.
- Can be used for a different purpose: The shape of the holes are very specific for the components of the Skewer Brick.

More advantages that come with choosing this idea for the final concept:

1. There is room for modularity, in the possible case when just the alcohol is ordered, the bottle can fit into the hole of the dish and not much space is lost.
2. The size is compact and relates to other Bricknic boxes.
4. An excessive amount of material is not used, everything fits tightly.
5. Important: there is room for iterations that improve the functionality and unboxing experience of the package and to possibly tackle some design requirements.
6. Insert 3 also meets the requirement ‘to surprise the user’ to a certain extent as the dish, the ‘main event’ of the product, where all the action happens, is being concealed by the bottle and the platform; this adds suspense to the unboxing experience as it takes longer to uncover the product.

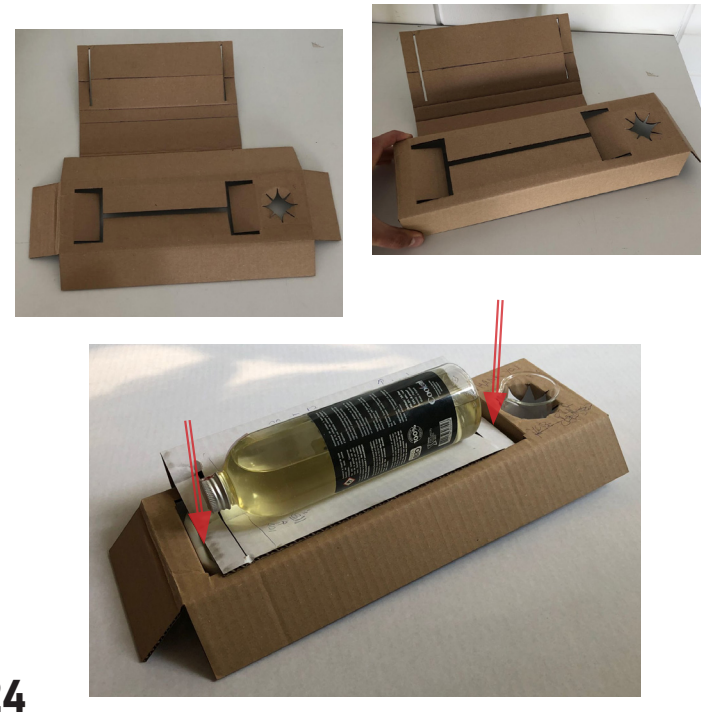
Iterations to insert 3

In order to achieve efficiency in production and logistics, as well as complying with some design requirements, iterations were made to the chosen insert structure and configuration of components: insert 3. All the changes were implemented without losing any protection.



1. Firstly, a very important change to the structure was implement. The second level, holding the bottle, was attached to the box. This was done to meet the design requirement ‘the packaging structure should be cut out from one piece of cardboard’ and ‘it should be easy to dispose of’. The requirements are met as there are less amount of pieces to store/throw away, it is all attached to one piece. There is also no risk of pieces ending up elsewhere.

2. The second iteration was to add the flap of the second level to the insert, instead of the box. This was done for one main reason: to add modularity that would be needed in some scenarios. One of them being: a consumer only orders the alcohol bottle because they ran out; the bottle fits into the hole of the Skewer Brick and no extra insert is needed. The other scenario is if Bricknic wanted to use the box for a different purpose than packing the Skewer Brick, like packaging the Sidekick Sauce, the box itself can be used without any insert that is specific to the Skewer Brick components.

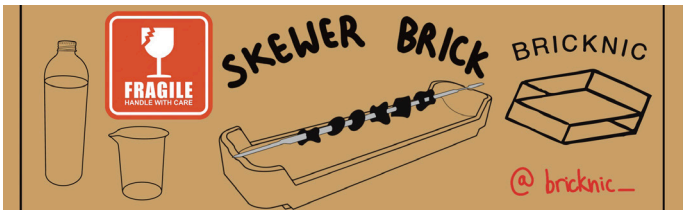


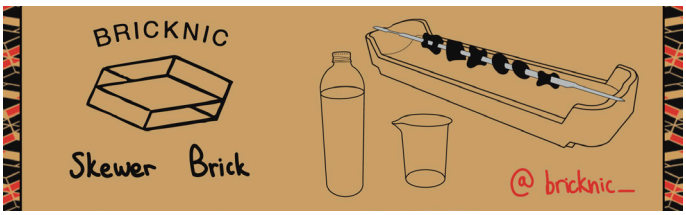
3 .The next iteration changes the packages dimensions to make it more compact and protected; tackling the requirements: ‘the design should be compact and space-efficient’ and ‘the components should be confined by a structure’. The iteration was to make the elevated platform holding the bottle slightly smaller and fold into the hole of the skewer Brick. This was done to save space by reducing the total height of the packaging as well as to confine the bottle even more. Furthermore, in the case of just the bottle being re-ordered again, not much excessive space is left empty as the bottle can be placed into the cut-out hole meant for the dish.

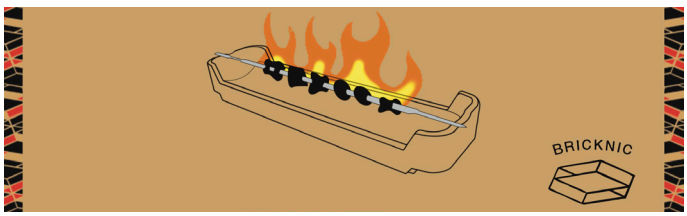
Graphic design

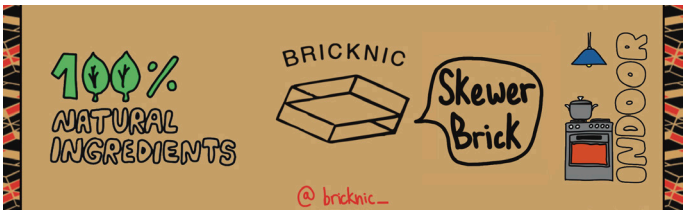
Function(s):

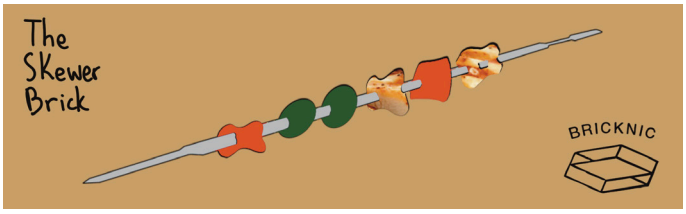
- 'To inform the user about the product through graphics and branding design'

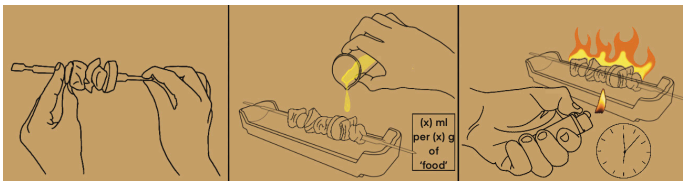


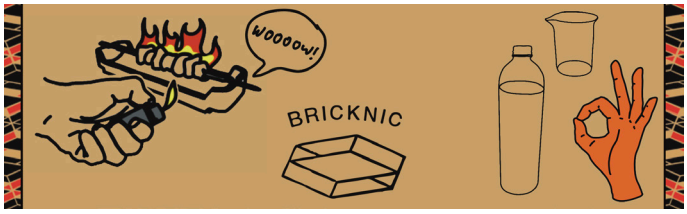


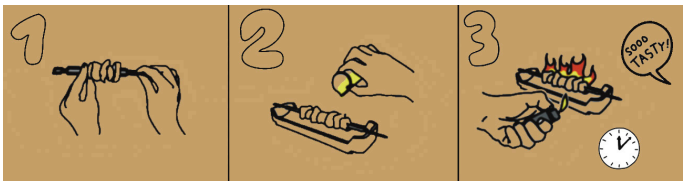








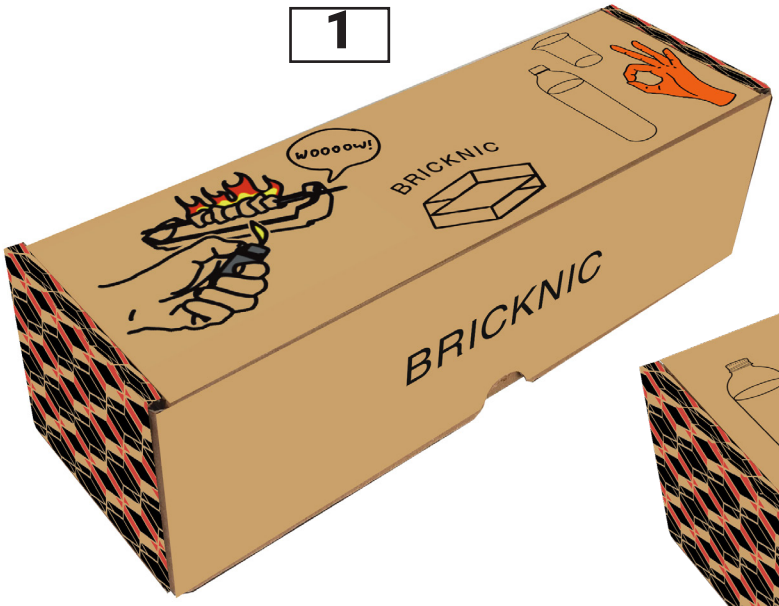




The graphic design of a packaging solution is important for creating a positive unboxing experience for the user. The unboxing experience is a consumer's interaction with a packaging solution; the graphic design aids this experience; ideally, in a positive way. It should inform the consumer what they are going to open, a small teaser of what the product might be; even though they know because they ordered it, it adds to the overall intrigue while unboxing a product.

The images depict the different versions that were made to try to fit with the current aesthetic look of the rest of the packages from the Bricknic product line. Designs were created for the front top and back of the box, as well as some interior parts, like under the lid and on the insert. The exterior sides of the box will have the same design as the current Bricknic boxes has: the black and red Bricknic logo pattern.

1


Wooooow!
BRICKNIC
BRICKNIC

2


SKEWER BRICK
FRAGILE
@ bricknic_
BRICKNIC

3


BRICKNIC
Skewer Brick
@ bricknic_
100%
NATURAL INGREDIENTS

4


Skewer Brick
BRICKNIC

5

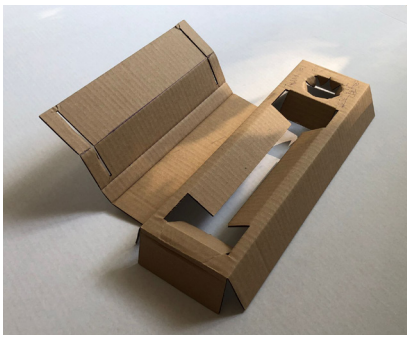

FRAGILE
BRICKNIC

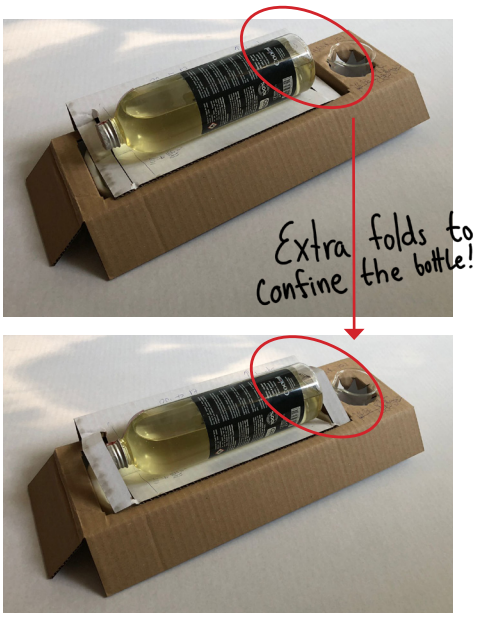
6


BRICKNIC
The Skewer Brick
"Cooking tools for togetherness"

Final idea

The insert





The Box

Unboxing sequence

1

2

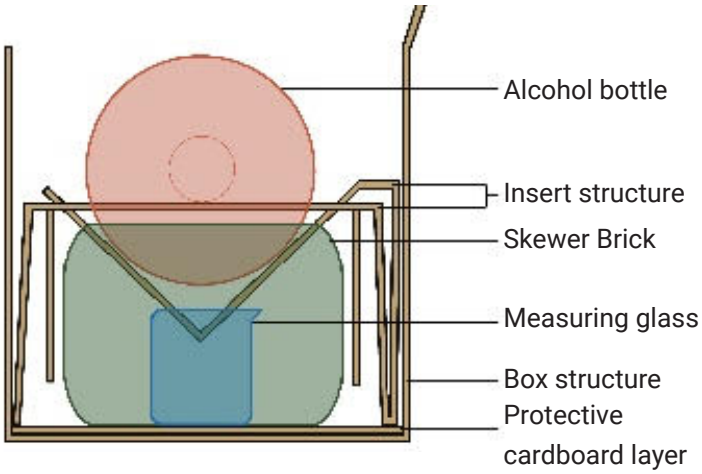
3

Concept Development

Part one: Feasibility

Interior Structure

The final structure of the solution includes insert 3 from page 21, configuration 8 (page 18), and box 0427 (page 16). This structure allows enough space and provides material between components. It is very well protected and very compact as the alcohol bottle is embedded into the dish.



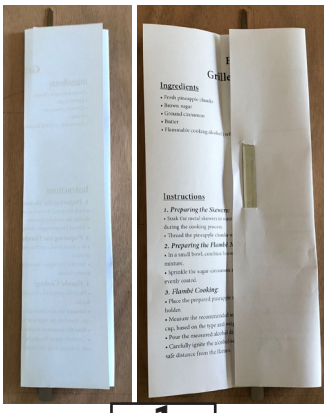
Material and thickness

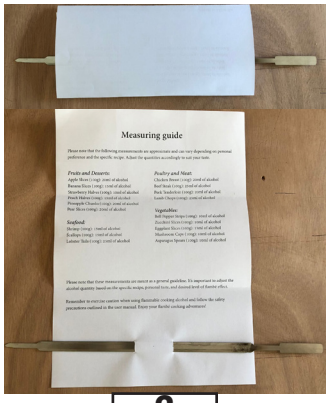
Following the style and structure of other Bricknic products that are also made from fragile materials, the material of the packaging design of the Skewer Brick will be corrugated cardboard, its thickness will the same as well, E-B flute (4.2 mm thick). This material and thickness has proven to be enough protection for robust clay products to be safely transported in.
It also reflects on Bricknic's value for sustainability, by using a material that has been recycled, giving it a new life to be used as a packaging or for something else, it is also recyclable.

Placement of skewer

The metal skewer is a key component of the product and must also be properly packaged. It is a very thin piece of metal so it has not been included when diverging into the configurations of components and insert structure. Because it is such a thin and small product, it is prone to getting lost, even inside the packaging as it could slide under the insert or other protective elements and hide itself when the user is unboxing the packaging. Therefore, it is crucial for the skewer to be visible when unboxing the product.

The idea is to have the skewer be wrapped around like a present and for it to be very visible so that the user does not forget about it. To save material and space, it was decided that the skewer should somehow be wrapped around the documents that are in the product: the user manual, the recipe or the measurement guide; and placed in the tight gap between the insert and the box. I conducted a mini-diverging session where different variations were made of how the skewer can be wrapped and how it is unboxed. The chosen direction will be idea 2 because it least affected the paper with wrinkles as well as being very efficient. It is designed so that the user sees the skewer when they open the user manual.


1



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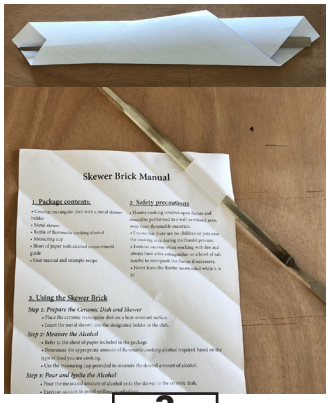


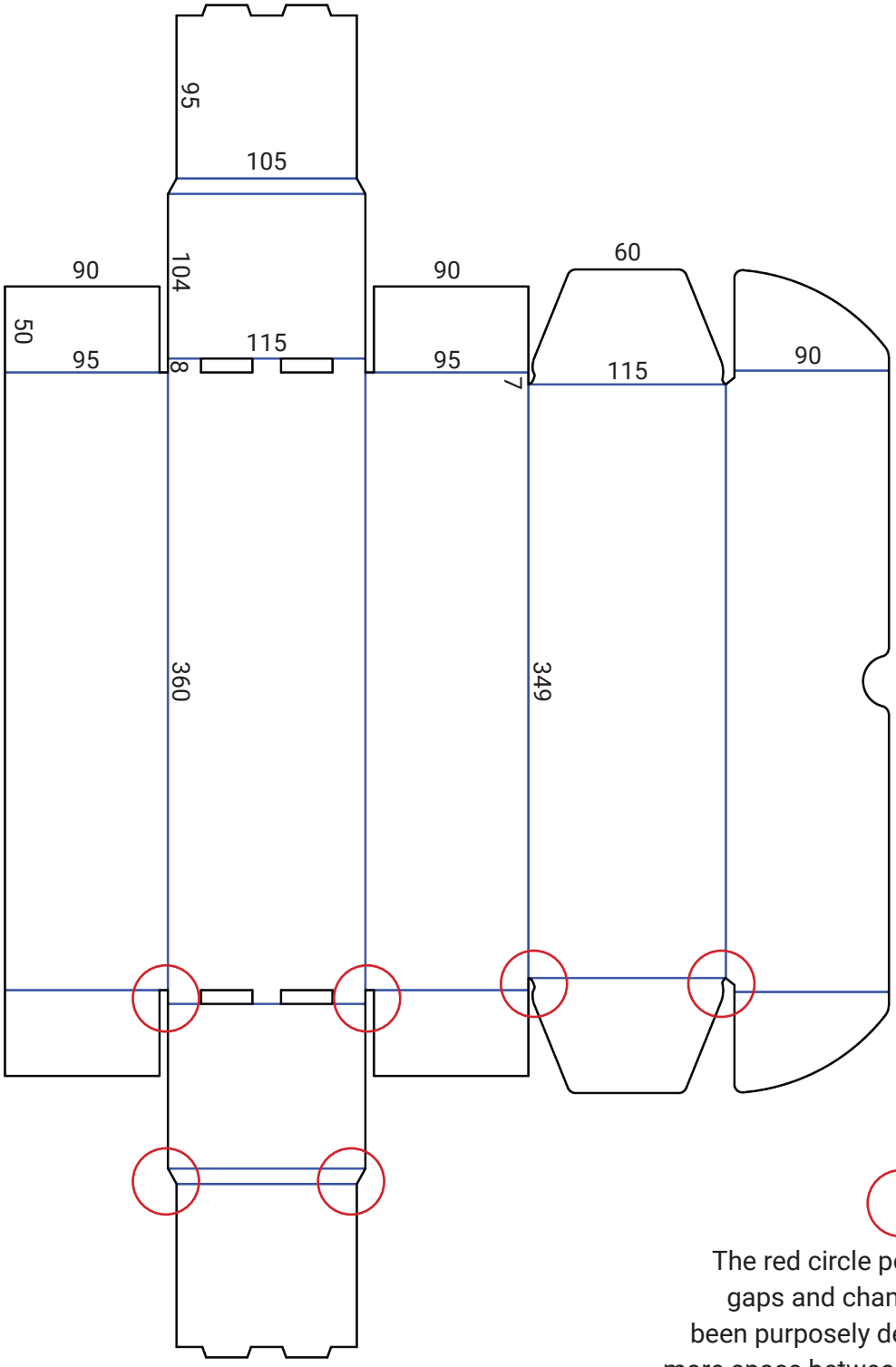
3


4

Packaging template

Scale 1:2
(Millimetres)

Box cut-out



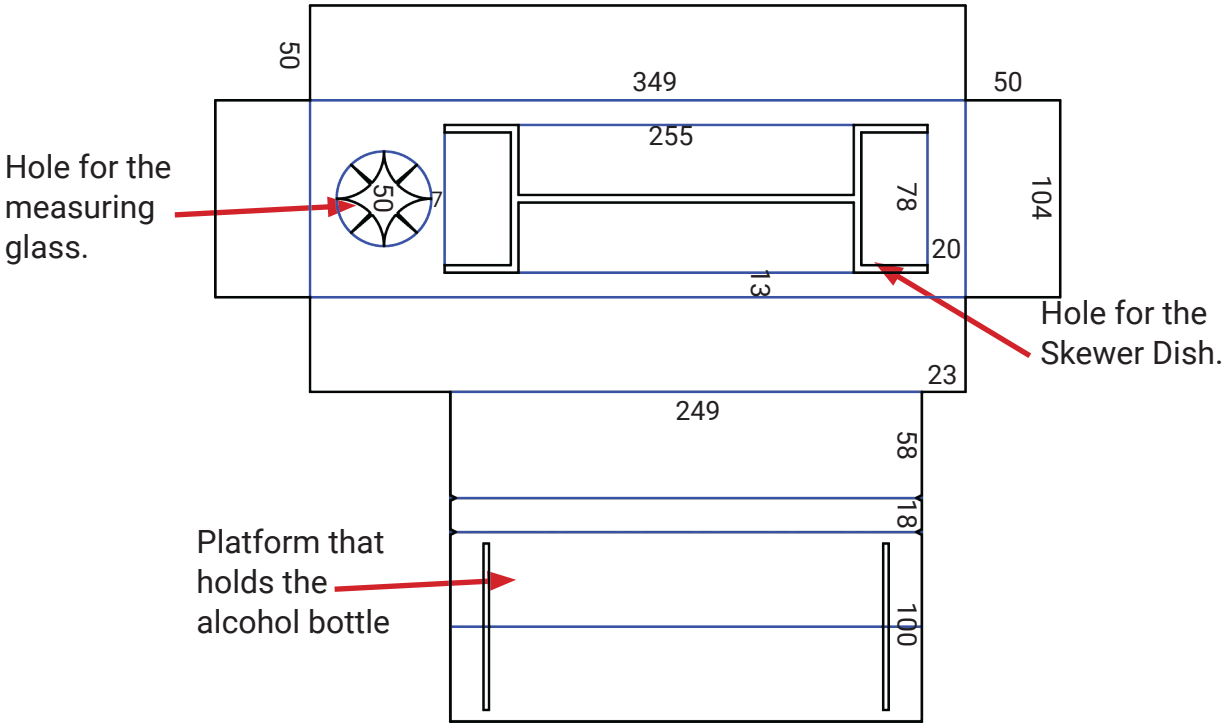
The red circle points out some gaps and chamfers that have been purposely designed to give more space between the folds and avoid the edges of the cardboard scraping with each other.

Insert cut-out

Legend

Cutting line

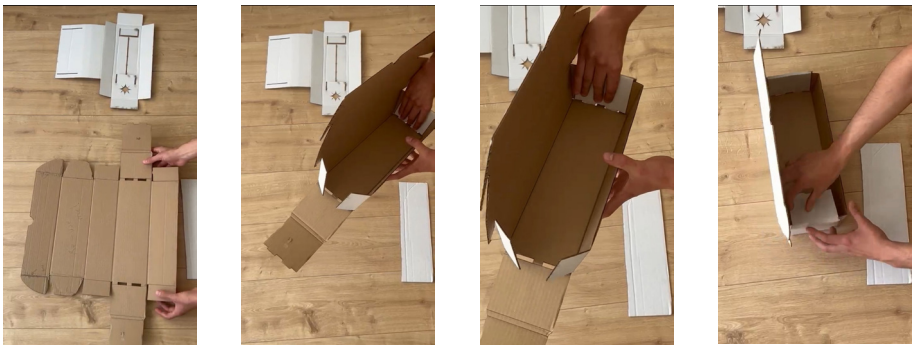
Folding line



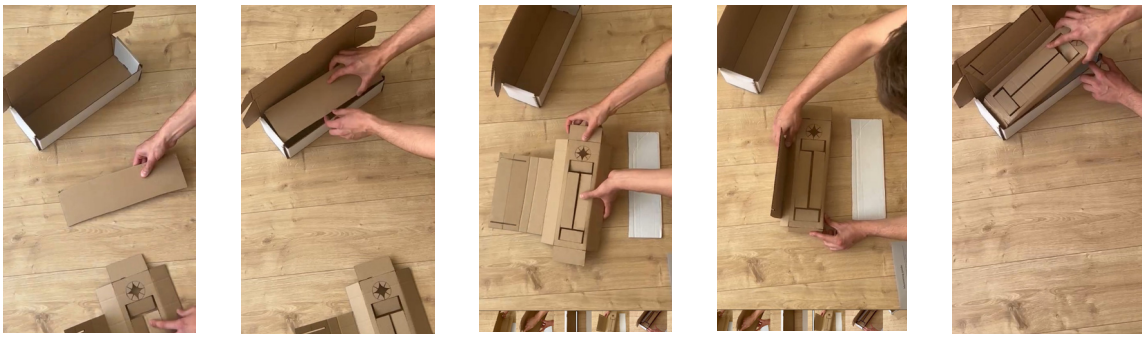
Folding & packaging sequence

(A small tutorial on how the Skewer Brick is packaged)

Box



Insert



Product

Strength testing

Different types of strength tests were conducted to ensure the protective ability of a packaging design. Looking at different ways the package can come under physical stress can make the testing more reliable. Three different tests were conducted. The main way of measuring the success of the test and the box's protectiveness is to see if any of the (fragile) components have been damaged in any way.

I did not have access to the correct double-walled cardboard that will be used in the final product (4.2 mm thick). Therefore, I used a thinner one, of single wall (3.5 mm thick). This corrugated cardboard offers less protection as it is thinner; therefore, if the test results positive, it ensures that the thicker and more protective cardboard will also work.

Due to the fact that there was no prototype to test with, I decided to make a clay 'dummy' that similarly represents the shape and dimensions of the Skewer Brick. This was done to have a realistic result, as the 'dummy' comes close to how fragile the actual product is. It is even more fragile as it has been air-dried, compared to the actual product which will be fired and glazed making it tougher. Moreover, the worst scenarios will also be considered. The final idea will have 'fragile' stickers, ensuring that logistics workers are aware and handle it with care.

Dummy

Stacking weight test

The stacking weight test measures the maximum weight that can be placed on top of the Skewer Brick box before it collapses or the product gets damaged. This test will also measure what the safest and most space-efficient amount of box can be stacked on top of each other, for the purpose of stacking many units on a pallet. The weight of the hole package combined is around 1.7kg, and a flat surface was prepared to equally distribute the weight. The result shows that the package can sustain up till 70kg of equally distributed weight before it collapses. The back wall of the package collapsed but no damage reached the product.

15kg

25kg

Me (70kg)

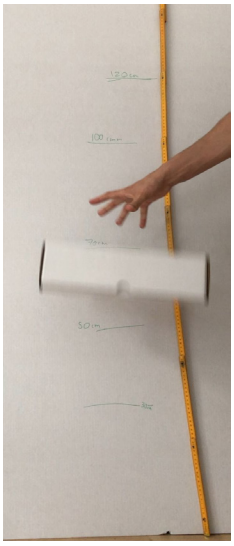
The insight gained from this testing round was that a package can hold almost 40 units stacked on top, however the standard maximum height of a loaded Euro-pallet is 220cm. The height of the box is around 10cm. To be safe, around 15 units can be stacked on top.

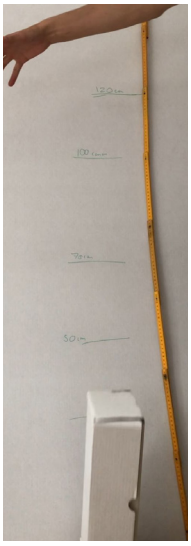
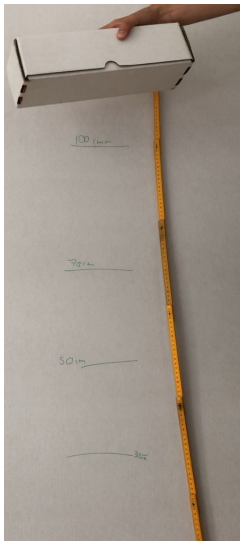
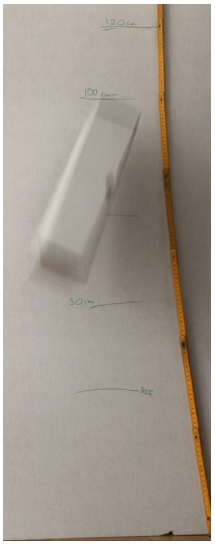
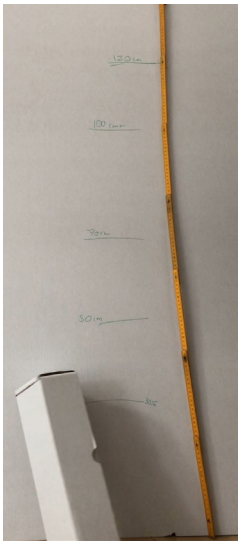
Aftermath

Drop test

Drop test tests the ability of the box to protect the product as the whole package is dropped from different heights. This reflects real-life situations where boxes on top of pallets fall down in different directions as they bump during logistics. This test will see if the product is damaged in those situations.

Result: The components are still intact after dropping from almost 2m, the alcohol insert is damaged and is unconfined.



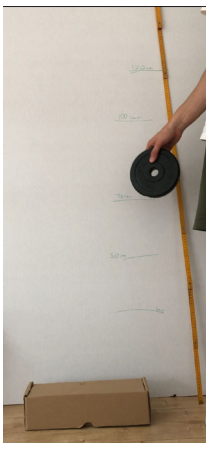
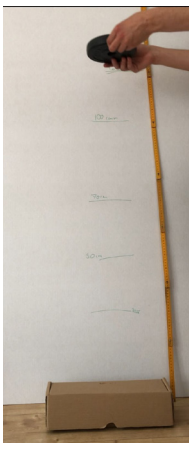
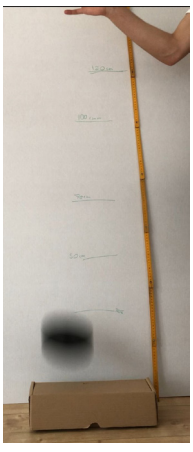
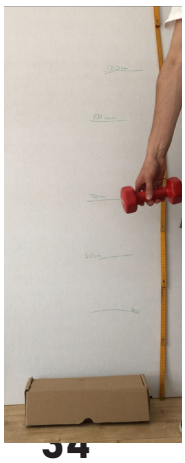
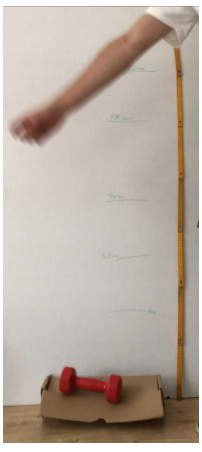





Aftermath

Impact test

This test assesses weather the structural integrity of the box holds while there are forces being dropped on the box. A weight of 1kg and a 3kg dumbbell were dropped from different heights and different directions to see the box's tolerance before damaging the product. This test was the one that damage the package the most, as a lot of force was concentrated in a small are. I realised that the bottle acts as a kind of cushion as the weights would bounce off when they would fall directly on the alcohol bottle.

The overall results of the testing phase show that the packaging will absorb the shock and break before the product does.


Aftermath

Sizing

Packaging line

It was an important aspect to relate the size of the Skewer Brick box to the boxes of Bricknic's other product. This is because Bricknic had has issues in the past with combining the different sized boxes of the BBQ Planet and the Brick into the same order. The general stability of the shipping unit decreases as there are more gaps created by the different size.

The length of the Skewer Brick packaging solution matches that of the Bricknic Brick (1-3), while the width is almost half of it.

The width of four Skewer Brick boxes perfectly matches that of the BBQ Planet, while the length will match if one more Skewer brick box is placed perpendicularly (4).

Combinations of the different boxes can be assembled in a way that there is no excessive amount of free space. This helps meet the requirements 'The dimensions of the box should somehow be related to those of the Bricknic Brick.'

1. Brick

2. Brick

3. Brick

4. BBQ Planet

5. BBQ Planet + Brick

6. BBQ Planet + Brick

Euro pallet

The length of two Skewer Brick boxes fits the width of the standard European pallet (1200mm x 800mm). This makes the dimensions of the packaging solution optimal for shipping as it maximises the space on a pallet.

If a pallet was to only ship Skewer Bricks, the amount of boxes in a pallet layer is 18 (9x2). The amount of layers to be able to stack on top of each other is 15 which was discovered in the testing phase (previous page).

Therefore the total amount of boxes that safely fit on a Euro-pallet is 270.

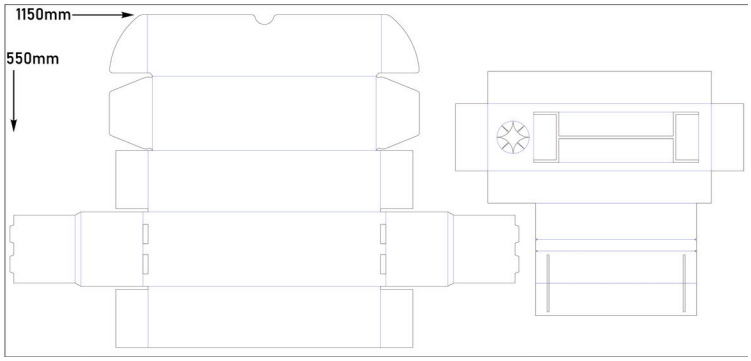
Part two: Viability

Cost calculations

Material

The product is still in development, therefore, Bricknic still has not decided on a definite producer for the Skewer Brick. The producers for the packaging design will depend on the location of the dish producers, because they should ideally be in the same region. In this case, I will be using the previous supplying companies: Römertopf Keramik GmbH as the Skewer Brick Producer, and their partnered packaging company Wolf-Kartonage GmbH.

The total surface area occupied by both the box and the insert is 632,500 mm².
The thickness is 4.2 mm (Flute EB, double layer).

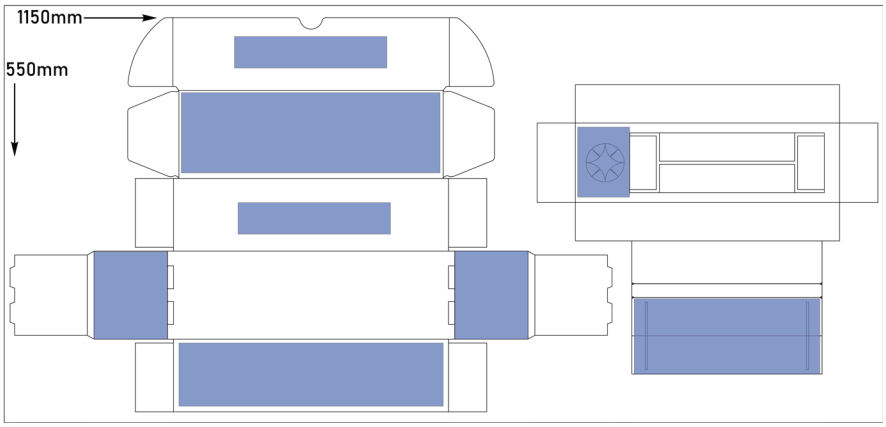


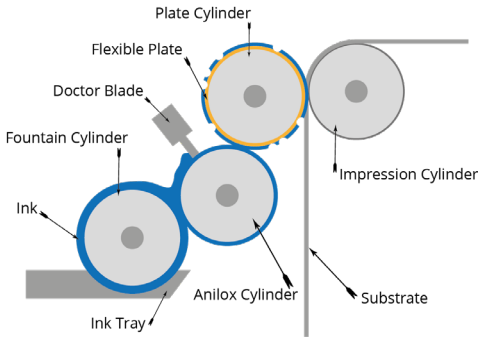
German retailers sell sheets of EB flute cardboard with custom dimensions, the dimensions 1150x550 mm sell at around €0.90 per piece for an order of 500 sheets.

Therefore, the total cost of material for one sheet (one packaging unit) is €0.90.

Printing

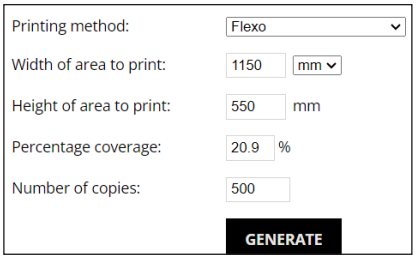
The best printing technique for corrugated cardboard is flexography, as it offers a quick printing process due to the use of quick-drying inks and produces durable and long-lasting prints.





Out of the 632,500 mm², only 132,720 mm² is going to be printed on (the blue area). This amounts to 20.9% of the total surface area.

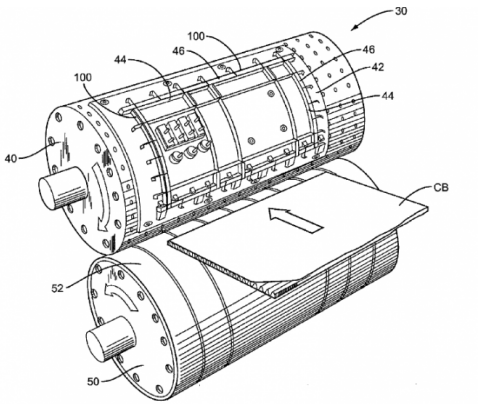
Using the flat box and the insert templates, and an ink consumption calculator, I could estimate the quantity of ink used for the graphic designs.



The amount of ink required for one packaging unit will be 0.36 kg. Flexo ink costs roughly €60 for 20 kg (€3 per kg). The cost of ink for one unit is €1.08.

Cutting

The sheets are cut into the box and insert templates with a die cutting machine. Usually, the supplier of the corrugated sheets also offer the option for cutting them. With an order of 500, German packaging companies offer this service for around €0.10 a piece; making the total material cost around €1.00.



Transport

Shipping costs must also be taken into account. Those from the packaging factory to the Skewer Brick producers, where they will be packaged.

Trip Distance	8	kilometers (km)
Fuel Efficiency	13	liters per 100 km
Gas/Fuel Price	$1.94	per liter

The producers of the Skewer Brick are going to be Römertopf, Bricknic's producing partners. Wolf-Kartonage charges very little for the transport because both companies are located a 10 minute drive away from each other. It costs €12 to transport 500 boxes to Römertopf (cost of gasoline + manual labour), making it cost €0.02 per unit.

Labour

Labour cost: the average wage in Germany for hand-packaging products is €13 per hour. The average time taken to fold one box with the insert and place all the components of the product is around 30 seconds; so in one hour, roughly 120 units can be packed. This makes the average labour cost per unit €0.11.

The final cost is the transportation of the Skewer Bricks to the Bricknic office in Rotterdam. This cost will not be included as it is part of the costs of both the product and the assembled packaging being transported. It is not included in the sole cost of the packaging solution.

Total (per unit for an order of 500 units)

Item	Quantity	Price (€)	
Corrugated cardboard	632,500 mm²	0.90	
Ink	0.36kg	1.08	
Cutting	N/A	0.10	
Transport	8 km	0.02	**Total**
Labour	0.5 min	0.11	**€2.21**

The total cost per unit of the packaging solution for the Skewer Brick is €2.21. For comparison, the packaging costs for the Bricknic Brick is €1.80, and €2.00 for the BBQ Planet; these costs are for orders of 1000 packaging units.

Therefore, the cost of the Skewer Brick packaging will decrease to €1.98 if an order of 1000 packaging units is placed. The higher the order volume, the lower this cost per unit becomes.

Part 3: Desirability

How does the packaging create a positive and memorable unboxing experience?

(Refer to the next page for a visualization of the unboxing experience)

The first thing to satisfy the user in its simplest form is meeting their needs. The most important need consumers have is to receive the product they ordered without being damaged. The structure of the packaging design does so by protecting the components made of fragile materials, clay and glass. The necessary amount of material was used in order to provide the optimal protection, it is clear that protection is prioritised over sustainability. The unboxing experience will be memorable if the user encounters unexpected elements from the packaging that bring emotional value to the whole experience. Furthermore, elements that reflect the user's values will also help make the experience positive.

The graphic design helps reflect both the user and company value of sustainability and environmental awareness. The material, unbleached cardboard, is the first noticeable element that is considered sustainable compared to bleached cardboard, as the bleached cardboard has to go through more processes to be recycled again. Additionally, there is a message under the lid that is shown once the box is opened that says, 'RE-USE ME!', giving the users reminder in a friendly font that the packaging was designed with circularity in mind. It can be re-used and recycled and given a new life.

Simplicity and 'straightforwardness' are values that the user appreciates when coming to packaging design. In other words, the user does not want to receive complicated structures to unbox and that contain excessive packaging material and flaps everywhere. This can overwhelm them, and the experience could result negative. The focus of the unboxing experience is still the product. The users want a 'straight-to-the-point' kind of feeling, because they also value their time, which is conveyed by the packaging solution.

More values that are expressed with the packaging design, and that are also appreciated by the users, are little effort and clarity. The fact that there are little layers to uncover to reach the product proves that little effort and time is needed. Moreover, a finger tab was designed so that the opening would be clear to the user. This also facilitates the unwrapping of the product as little time and effort is needed to find the right opening.

The unboxing Experience

Unboxing Sequence

1

2

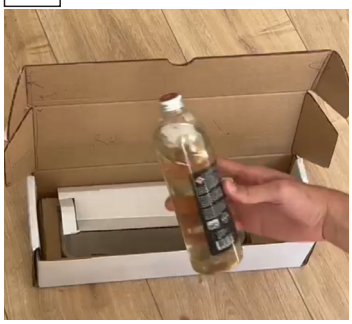
3

4

5

6

7



8

9

Finally, an important factor that affects the general mood of unboxing experiences are surprising elements that surpass users expectation of what a packaging should offer. This can include the sense of uncovering something, like unwrapping a present, or even unexpected messages or items that the user receives. These aspects are also tackled by the packaging solution.

There is this sense of uncovering ‘a treasure’ with two elements: 1. The skewer comes out when the user manual is pulled out, it also unravels from the folded document adding to that sense of revelation and giving the whole experience a ‘WOW factor’ (4-6). And 2. Once the alcohol is unboxed, the user must open the flap that holds the alcohol bottle, revealing yet another component underneath (7-8), but this time it is the main component, as it is where all the ‘action’ happens.

More unforeseen elements that come with the packaging design are: the cartoon tutorial on how to use the Skewer Brick (placed on the platform holding the alcohol), the ‘Thank you for our purchase message’ around the cut-out hole for the glass, and finally, Bricknic logo stickers. These are subtle elements that slightly elevate the mood of the person unboxing and therefore improving the overall unboxing experience.

Values

Values which were relevant to the project were identified in the beginning and integrated throughout the design process of this project. This gives an overview to show how they were incorporated into the packaging solution and branding direction.

Company values

Modularity

The packaging design incorporates modular elements that allow for flexible configurations and reusability. For example using the same box to package single components of the Skewer Brick.

Sustainability

The material is eco-friendly and sustainable, it uses no adhesives so its is circular. The amount of material was also looked at, when choosing the insert. Additionally, the amount of ink on the packaging is minimal.

Diversity

The packaging design reflects on inclusivity and diversity, representing Bricknic's commitment to catering to a wide range of users. This was achieved through diverse visual representations and customizable elements that cater to individual preferences.

User values

Little effort

The packaging is designed for easy and hassle-free use, minimizing the effort required to open the box and access the product. An intuitive opening mechanism was incorporated (the finger tab) to simplify the unboxing process. Furthermore, the fact that the insert is all one piece and that there are not many loose pieces, the action of disposing of the packaging is also made easier.

Sustainability

Providing information on the packaging about the sustainable aspects of the product was considered. It clearly states that the user should re-use the box instead of disposing of it in the message. A box can be re-used for many different purposes. The use of unbleached paper, little ink and zero plastic shows the user that Bricknic strives for a healthy environment. It helps users understand and appreciate the product's sustainability.

Quality

The packaging expresses a sense of premium quality and durability, assuring users of the high standards associated with Bricknic's products. Protective cardboard has been selected and designed to fully protect the product, and the printing techniques are those optimal for corrugated cardboard. These factors convey a sense of craftsmanship and attention to detail.

'Straight-to-the point'

In other words, conciseness. The packaging design clearly communicates its purpose and contents to the user. Concise and visually engaging graphics and typography were implemented to convey the product's features, benefits, and usage instructions.

Identifying values help the success of a design project. In this case, they did not only help fulfil the functional requirements of protecting the product and engaging users but also reflects Bricknic's core values, appeals to user preferences, and enhances the overall brand experience.

Contextual values

Good taste

The graphic designs aligns with Bricknic's brand image and aesthetics associated with their products (cooking tools). Relevant visuals of appealing and tasteful design elements and colours were incorporated that resonate with the target audience and create a cohesive brand experience.

Positive experience

The packaging design aims to create a positive and memorable unboxing experience. This is achieved through the thoughtful design elements like surprise elements, messages, or engaging visual and tactile elements that have been implemented into the design.

My values as a designer

Elegance

Two aspects suggests how elegance was incorporated. 1. Minimalistic design, focussing on simplicity and clarity, including a minimal colour palette and using clean lines to avoid unnecessary clutter. 2. Premium material choice, such high-quality the materials that were implemented that exude a sense of luxury and refinement.

Visual appeal

Visual appeal is the use of aesthetics, colours, typography, and graphics that catch the viewer's attention and evoke a positive response. This value was incorporated through: harmonious design elements (complementing colours, typography that enhances readability and conveys brand identity, and graphics that create a visually pleasing arrangement), and attention to detail (paying meticulous attention to refining the packaging structure, considering the appropriate scale and placement of graphics

Environmental awareness

Environmentally-friendly materials were implemented into the final design. The only packaging material is unbleached corrugated cardboard which is recyclable, biodegradable, and circular that minimizes waste and carbon footprint. Moreover, an efficient design and manufacturing was thought out to help put the Skewer Brick onto the market. The packaging design was optimized to minimize material usage and reduce energy consumption during manufacturing. This ensures that the packaging solution is both environmentally conscious and efficient.

User testing

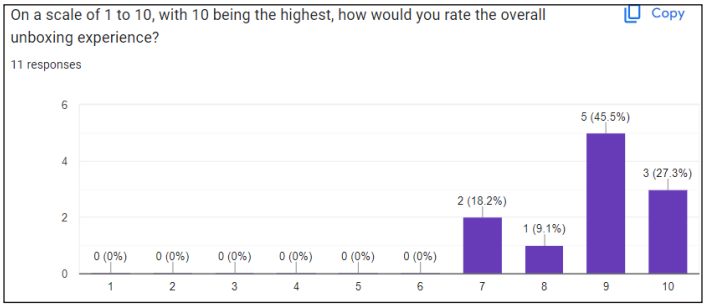
User testing was conducted to validate that the packaging design is successful and brings the desired effect on the user, which is a positive interaction with the packaging so that the unboxing experience is memorable and the user's opinion of Bricknic improves.

The testing method performed was to get a user to unbox the packaging ans answer a survey. The physical prototype did not have the graphic design printed on them, however, I showed the subjects pictures on what designs they preferred and thought was more appropriate for the product.

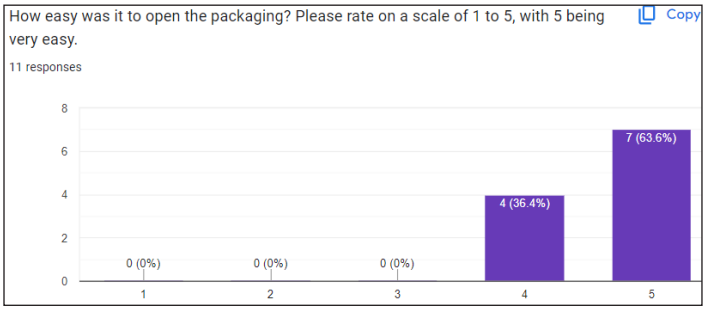
A total of 20 people were contacted. These people ranged from experts in cooking and enthusiasts in barbecue. Due to the limited connections, I thought it would be viable to also try to contact cooking amateurs to unbox the prototype, as well as answering the survey. This audience still satisfies the target segment as they are likely to still purchase cooking appliances, as well as, when introducing the product to the respondents, the product itself was of interest to them.

However, only a total of 11 respondents had the time to complete the user testing. 18.2% were cooking experts, 45.5% were cooking amateurs and 36.4% were barbecue enthusiasts.

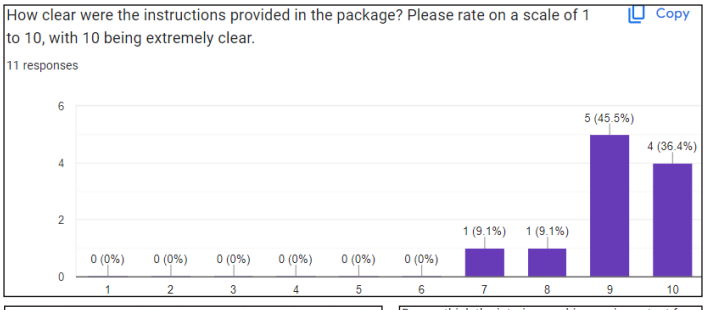
From the results, it is clear that the target audience ranked the unboxing experience as an overall positive experience as 72.8% voted the unboxing experience 9-10. Furthermore, the target audience felt satisfied with the experience due to a response rate of 100% voting it 4-5.



The target audience thought the unboxing experience was very easy to open, as 63.6% voted it a 5. The target audience also felt that the experience was visually appealing as 81.8% voted it 9-10.

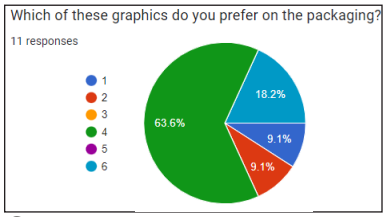


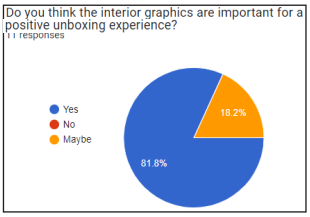
When trying to evaluate whether the experience felt organized (via with labels, instructions, placement etc.), the target audience seemed to be in favour as 81.9% voted it 9-10.



Overall, because of this, it was clear that the target audience felt that the unboxing experience had a positive impact on them, likely to refer it to other people (as seen by 72.8% voted it 9-10).

Finally, in terms of graphic design, the majority of respondents preferred design number 6 (page 26), additionally most of them state that graphics in the interior of the box aids a positive experience.





Graphic design

The following graphics have been chosen to be the ones shown in the final design, both exterior and interior of the packaging. This was a decision taken with the bosses of Bricknic, based on how much the graphic design represent Bricknic's branding and core values, and on how it fits with the rest of the packaging line based on a similar type of graphic. Moreover, results from user testing also played an important role in this decision.

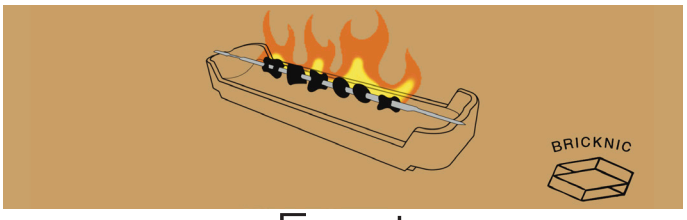
Additionally, values were considered in this decision as well. For example sustainability was taken into account for the amount of ink printed on the cardboard. More ink suggests that the paper must go through more cleaning processes to be recycled and therefore will produce a higher carbon footprint. Conciseness is another value that can be reflected with graphic design and reflects the companies brand image. It can result inappropriate if the user is overwhelmed with graphics and does not know where specifically to focus on and what is important to know before opening the box. Design requirements that affected the choice of graphic design were also considered. For example 'The graphics must be informative of the product' and 'The graphic design should be minimalistic, playful & inviting'.

Both the design requirements, the company values and the user values were all contemplated for the final decision on how the graphic design should look. It is important that all the user needs are met as well to ensure the success of the packaging design for the Skewer Brick. Graphic design helps meet these values, needs and requirements; as it states in the research insights (page 10), 'Branding can influence the image of packaging and how it is perceived.'

Exterior

The exterior graphic design is simple and straightforward. The top shows the name and intrigues the user as it informs very little. However, the front side shows a cartoon version of what the working product should look like, and the back and the sides help represent the Bricking brand identity.

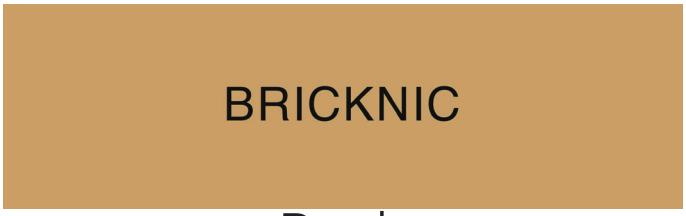
These two labels are compulsory to include in the exterior graphics. They state that a flammable substance is being transported and that the package contains a product that comes into contact with food.



Front

Sides

Top

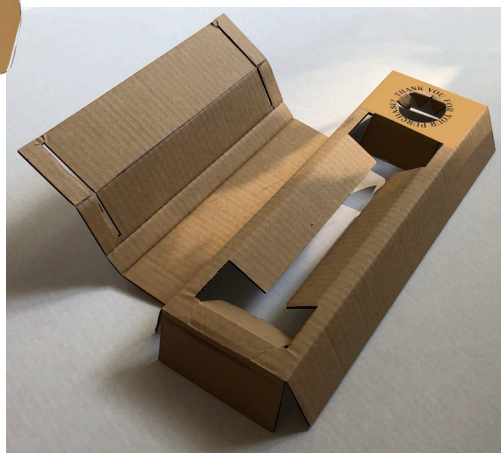


Back

Graphic design

Interior

Interior graphic design in packaging is not very conventional, as graphics are usually used to captivate a consumer's attention before they purchase a product. My research paper and the user testing have both proven that interior graphic design does have some purpose. Which is to create a positive unboxing experience. There are many elements that can enhance the experience and make it a memorable one, such as surprising and unexpected informative graphics or little messages that can upbring the user's mood or that reflect their values that they try to follow.

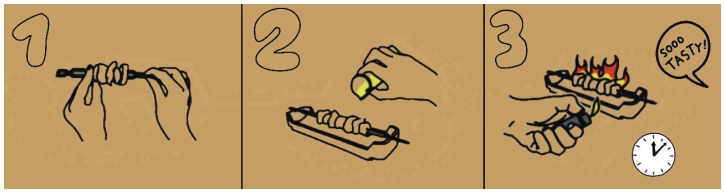


The interior graphics improves the overall unboxing experience by providing the user with more information and unexpected messages, there are 3 graphic designs in the interior of the box: 1. The 'Re-Use Me!' message, 2. the 'Thank you for your purchase', and 3. the 3-step cartoon instructions on how to use the Skewer Brick.

(More emotional effects that the packaging elements create are explained in depth in pages 38-39).

Under the lid

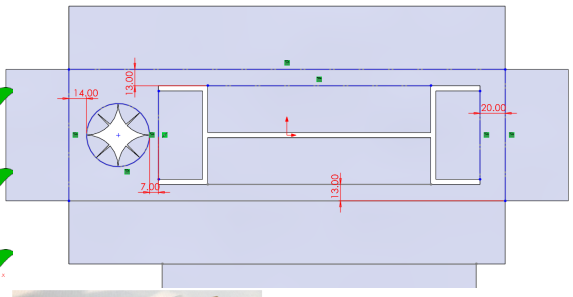
Around the glass hole



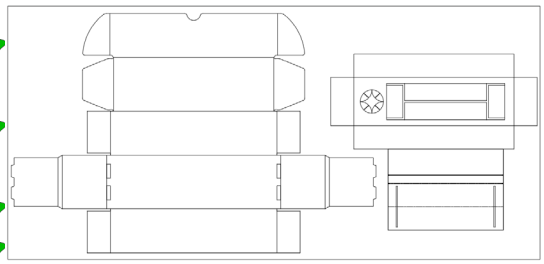
On the platform that holds the bottle

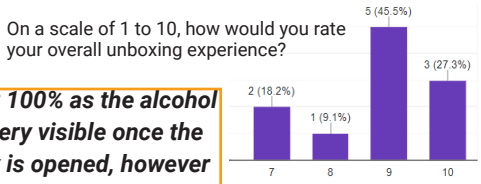
Requirements check

- The packaging solution should protect the ceramic and glass components from logistical hazards, they must arrive without damages.
- There needs to be enough buffer zone (space from product to the inner wall of the packaging), (> 10 mm).
- There needs to be spacing between components, (>5 mm).
- The components should not be able to move around freely, there must be a structure confining the components in place.
- The box must be durable & sturdy, also be able to withstand the weight of 8 units stacked on top.
- Protection should be prioritised over sustainability.
- The box as well as the insert should be foldable to easily disposed of.
- Both the insert and the box should be cut out and assembled out of one piece of cardboard.
- The material used should be unbleached corrugated cardboard.
- The packaging should be composed of one single material.
- The layers of packaging should be minimal.
- The packaging design should provide a positive and memorable unboxing experience.
- The product should not be seen the first thing when opening the package.
- The opening should be smooth and easy; as well as clear to the users
- The packaging must be informative of the product inside
- The graphic design should be minimalistic, playful & inviting.
- The packaging must comply with legal packaging labelling & marking requirements.
- The packaging design must be modular, in a sense that single components can be delivered in the same packaging.
- A similar packaging structures as the current one used for Bricknic products would be ideal.
- The dimensions of the box should somehow be related to those of the Bricknic Brick.
- The size of the box should be compact, occupy the minimum possible space.
- Only use the most necessary amount of printing on the packaging.
- There should be some form of personalization in an element.
- The box should be able to be reused somehow.



(20kg)

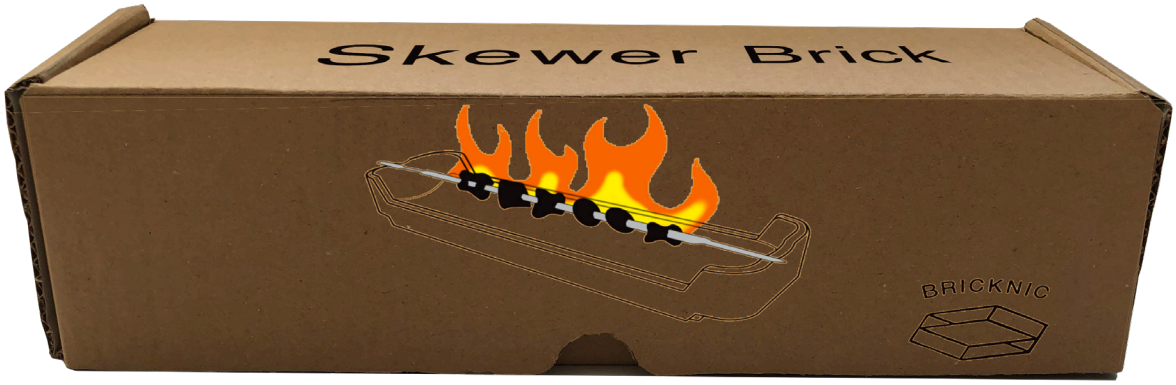




Not 100% as the alcohol is very visible once the box is opened, however the dish stays nicely hidden for a more exciting revelation.

The graphics could be more informative by disclosing more features of the product.

There are unexpected & surprising messages & notes, but there is no from of personalisation in the unboxing experience.


Skewer Brick
BRICKNIC


RE-USE ME!!
BRICKNIC
Cooḱal
Poivre
Noir


Measuring guide