

Only Natural Student Design Competition

Brief: Design a truly bespoke piece of fashion or home item that you would love to wear or live with, that is inspired by nature and made from natural materials

The design must include two or more natural materials from Cotton to wool and wood to stone. Other materials include but are not limited to bamboo, mohair, hemp, cork, etc. Accept the use of nature derived products such as glass or metals, where the end result can be recycled and reused.

The design must not include fur or exotic skins such as crocodile, alligator, Python or other snakeskin, ostrich skin, plastic, synthetics such as polyester or lycra.

The design can include a minimal use of non-natural materials to join natural material together (glue, metal screws) or to enhance item's functionality and durability (light bulb filament, electrical cables, ink, paint, varnish, etc). Encourage to swap these ~~out~~ for natural alternatives where possible for the ease of recycling.

Design ~~Elements~~ Essentials:

Ethical Sourcing: The use of animal fibres is allowed when sourced from animals not raised or killed for skin or fur. Use of animal waste, for example cow skins and hides is encouraged.

Sustainability: Chosen materials should be sustainably sourced and processed. The resulting product should be designed to minimise waste and support recycling or reuse.

Commercial Viability: The design should align with genuine consumer needs and be suitable for large-scale production and distribution.

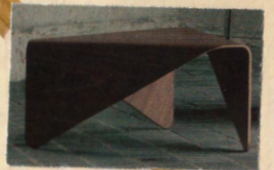
The Entry should include the following elements:

- A brief summary of your project provided in English. Inclusion of high-res imagery or sketches of your project (JPEG or PNG) advised.
- Design Documentation: A comprehensive document detailing the products design process, from inspiration board to technical specification.
- Material Breakdown: A detailed explanation of the materials used, their sourcing, and the rationale behind their selection.
- A short two minute video to introduce you and your design.

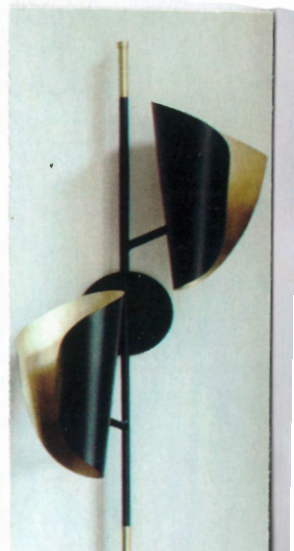
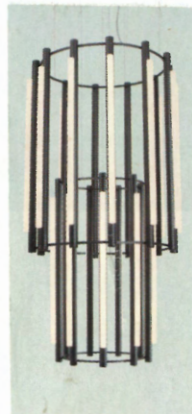
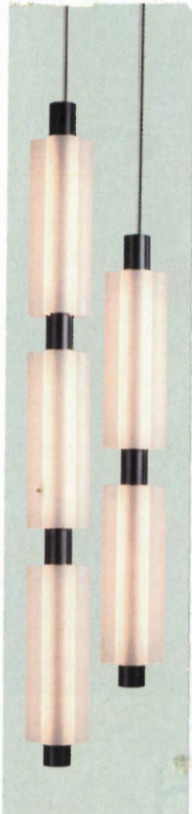
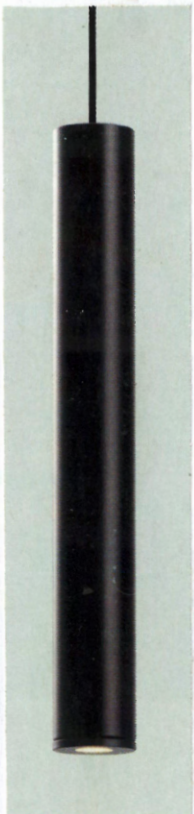
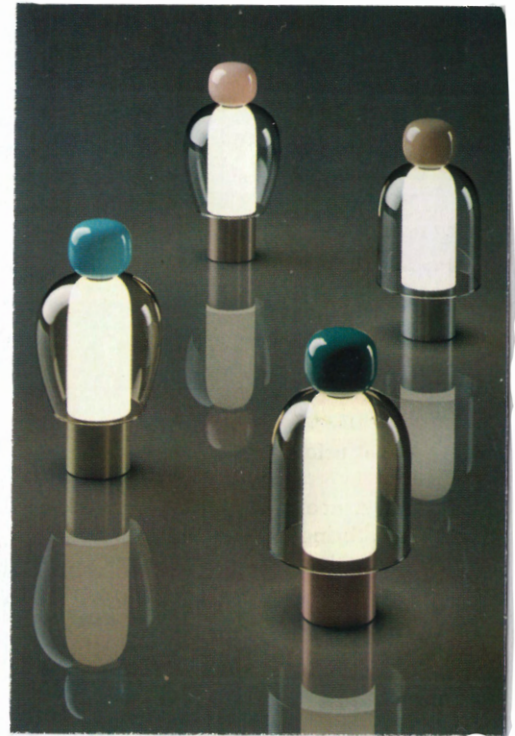
Home Items: Furniture



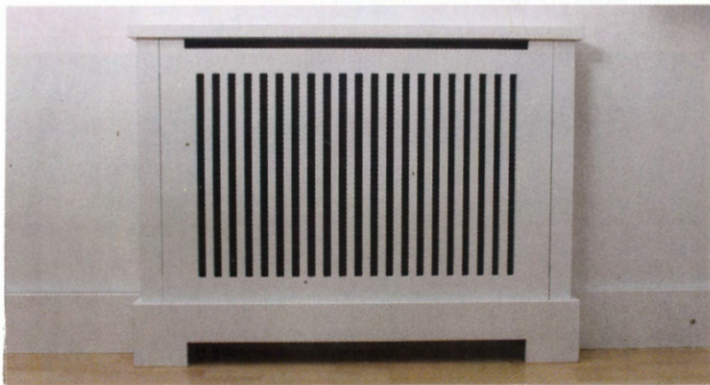
take on the
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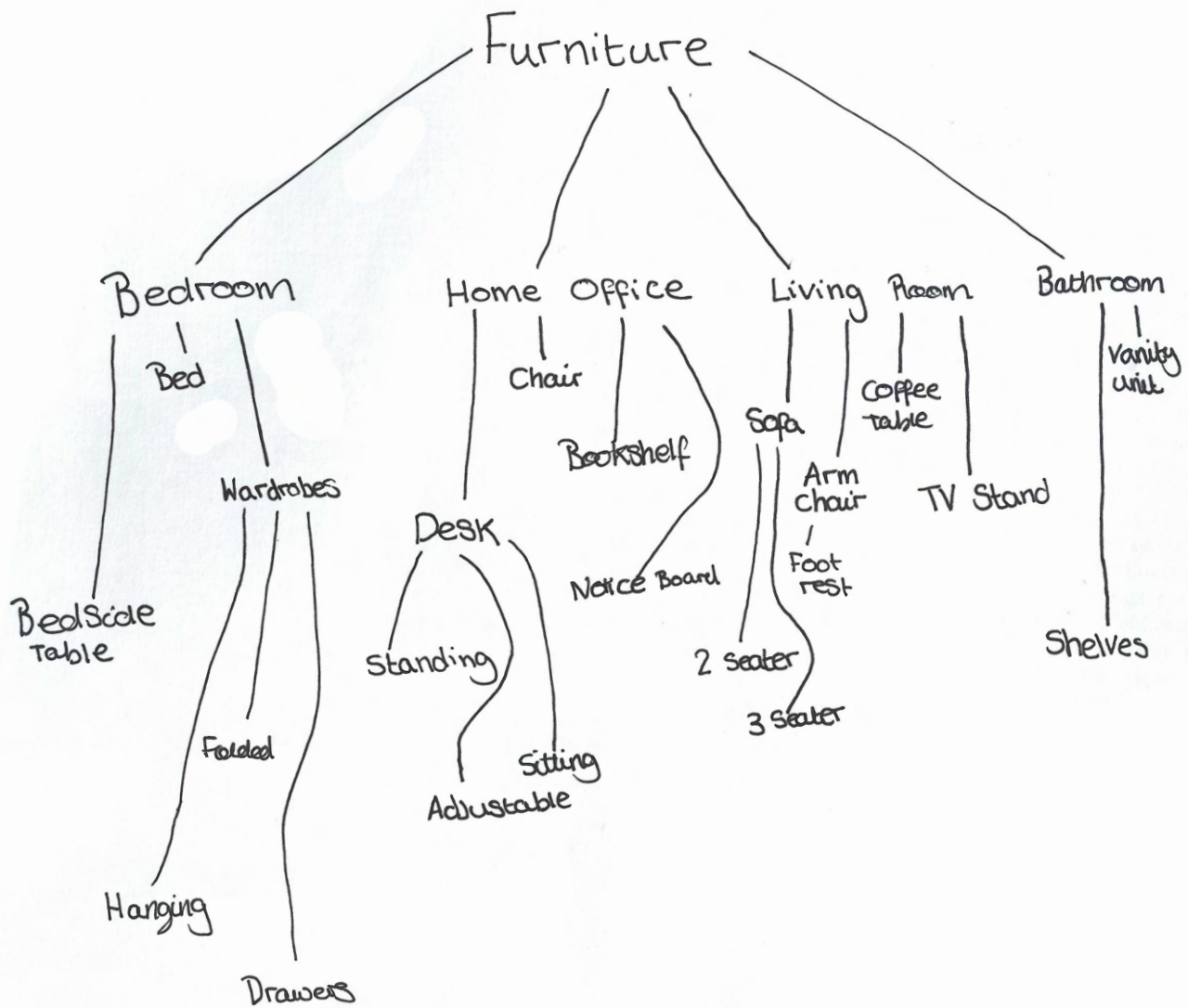


Home Items: Lighting



Home Items: Storage





Things to take into account:

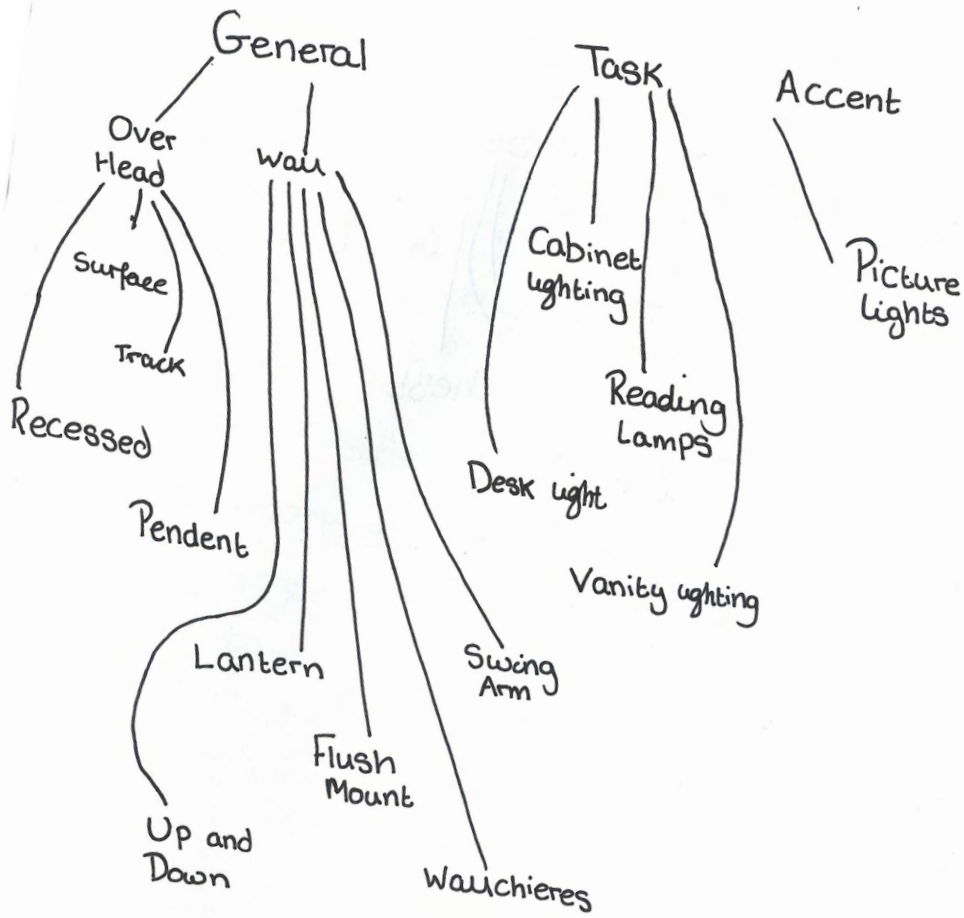
Size of Doorways

Ergonomics

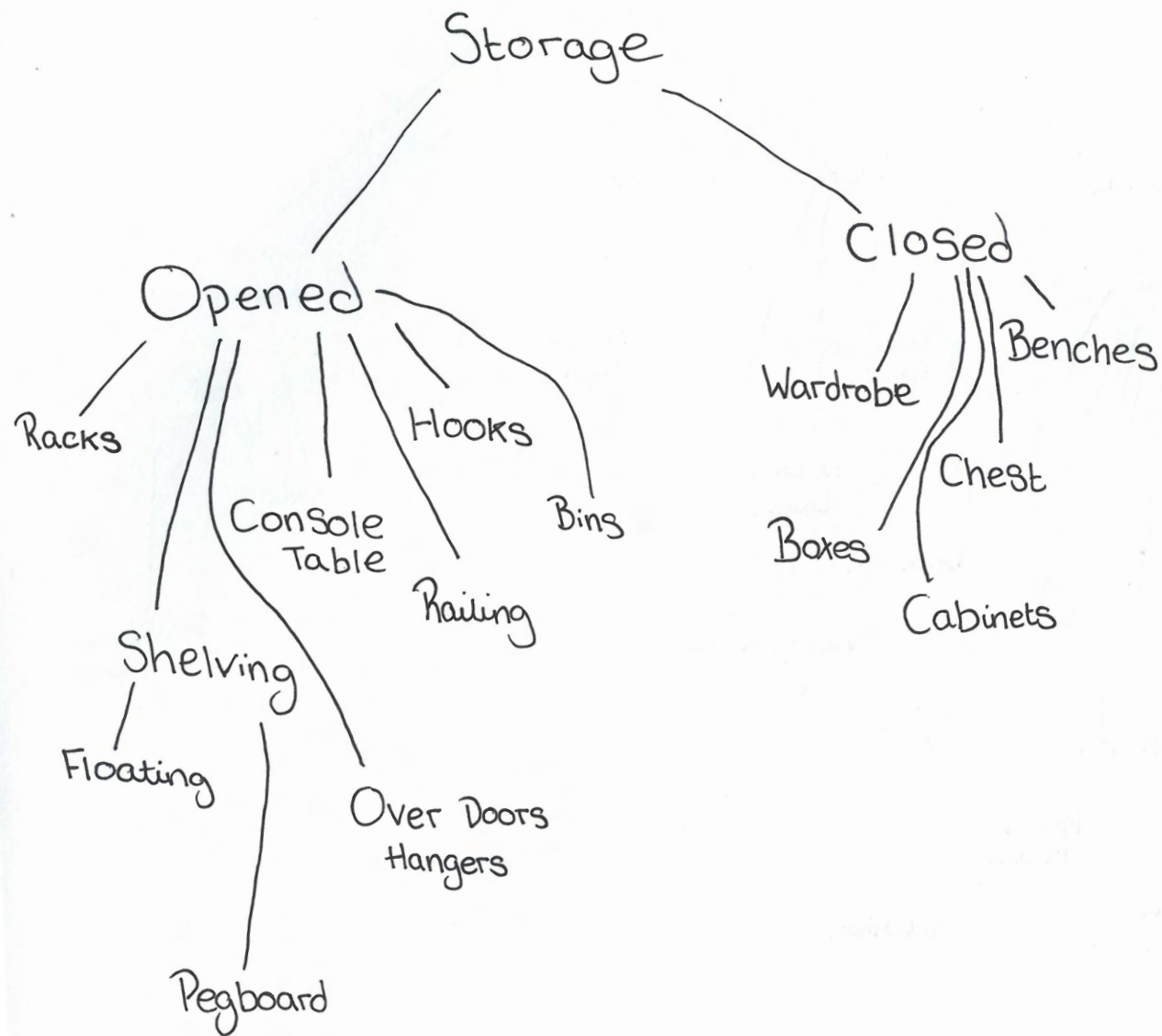
Ease of Cleanings

Flammability of Materials

Lighting



- Things to take into account:
- Type of Light Bulb
 - Colour Temperature
 - Ease of Access
 - Method of Switching on and off
 - Temperature of Bulb



Things to take into account:

- Item being stored
- Length of time being stored
- Frequency of use
- Reason for being stored

The area to focus on:

Soft furniture

Living Room / Lounge

Possibility of Short term storage

Possibility of flat packed

Possibility of modularity

Considerations to be taken:

Standard size of doorways

Ergonomics

Ease of cleaning

Age of user

Anthropometrics

Packaging and Transporting

Sizes of Doorways

1981 x 762 x 35mm. Most common internal door size in England and Wales.

1981 x 838 x 35mm. Most circumstances provides the required opening width for wheelchair access under the Part 'M' mobility requirements.

1981 x 610/686 x 35mm. Door size when wall space may be restricted.

1981 x 457/533 x 35mm. Most popular for cupboard or wardrobe door.

If Product is going to be used occasionally and stored away the Product or it's pieces need fit within a 457mm gap in order to fit into a cupboard.

If the product is staying where it's placed, it or the pieces need to fit within a 610mm gap so that it is able to get through doorways.

Commonly Used Materials for Soft Furniture

Cotton: Easy to Clean
Breathable
Resistant to Pilling and wear
Easy to Dye

Linen: Breathable
Durable
Environmentally Friendly

Wool: Durable
Natural
Easy to Clean
Soft

Velvet: Rich Colour
Liquid Resistant
Elegant

Leather: Easy to Clean
Durable
Resistant to Stains
Cannot hold onto dirt

Ways of adding Cushioning to Seating

Feathers: Temperature Regulation
Natural Materials
Contours to People

Fibre: Soft
Bouncy
Hypoallergenic

Seat Cushions: Comfort
Pain Relief
Posture Improvement
Versatility
Customisation

Types of Seat Cushions:

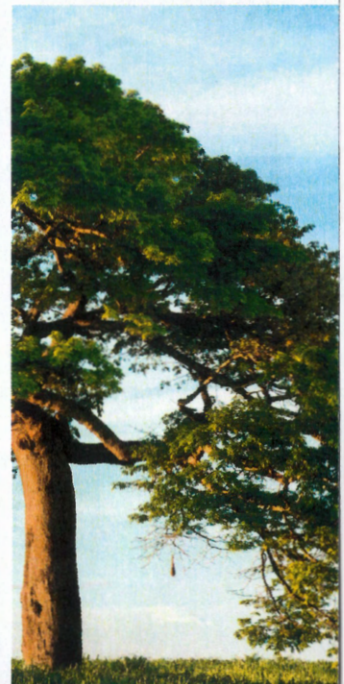
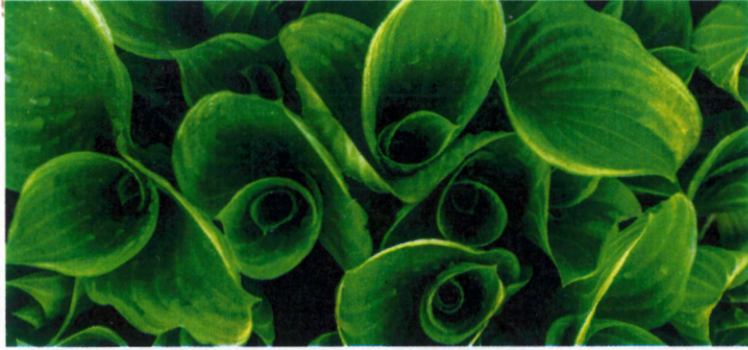
Foam: Different Densities
Different Thickness

Gel: Moulds to body shapes.

Inflatable: Adjustable firmness
Portable

Wedge: Designed to elevate the hips above knees

Nature



Living Rooms



Persona: Gemma

A Socialable adult, who often hosts small gatherings with friends. Many of these gatherings turn into game night, which leads to slight frustrations due to needing to get the games in and out of storage. Due to the nature of the gatherings, being very casual and relaxed, dining tables and chairs don't give the right feeling to the night, so a coffee table is used. But seating at times is an issue due the arrangement, of furniture. Gemma feels very fortunate, as she was able to buy her house when she was 25, which was 2 years ago.

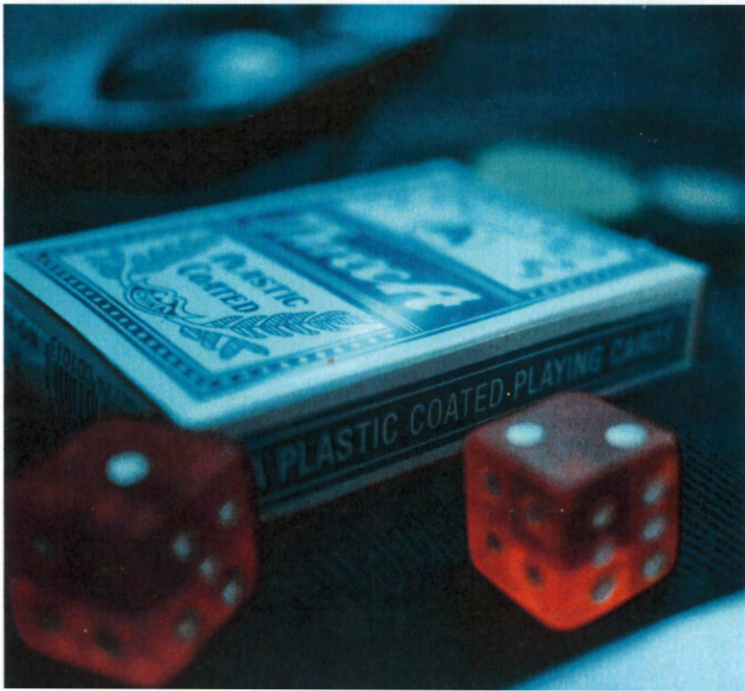
Gemma's Key Wants: and Needs

Something that is easy to move

Something suitable for a casual environment

Something that would allow for storage

Something that uses natural materials, as well as colour



Trends:

Designing Spaces with Furniture:

Due to open floorplanned homes, offices increasing, some people have been using furniture to help break up the space into different areas. This is done in a range of different ways including:

- Room-dividing shelves
- Partition Panels

Also consumers are wanting to optimise the available living space with cost-effective but aesthetically pleasing that help refresh, rejuvenate the living space. These methods include:

- Curvilinear Contours
- Upholstered Landscapes
- Versatile and Decorative
- Feng Shui and Symmetry



Versatile and Decorative:

With the smaller size of the furniture, it gives the pieces flexibility in terms of space as well as function. These pieces can be used in a variety of different ways, which includes seating, decorations, surfaces for work equipment, or plants. Some of these products are multi-functional as storage is frequently incorporated into the design.

Feng Shui and Symmetry

With the placement of furniture affecting the energy in the room, it can lead to 'unusual' layouts in order to optimise the energy. This has the possibility of having a more open and natural interior layout, rather than a 'constructed' feeling.



Room-Dividing Shelves

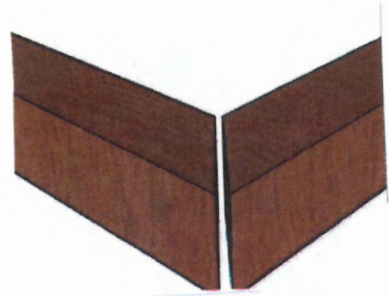
As open floor plans rise in popularity, broken-plan layouts is also rising in relation to this. The shelves divide the open spaces, into smaller areas, with some areas having certain functions. By using open shelving, it allows for air to move through the interior, ~~it works~~ as the air isn't blocked. The shelving allows for a 'customisable wall' as the user is able to place different products on the shelves.



Wood Joinery

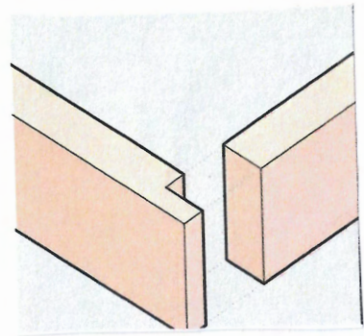
Miter Joint:

The material that would get joined, has an angle cut from each end. The bits of materials are then glued together. Some times other joining methods are used in conjunction in order to improve the strength of the joints. Also, with type of joinery it doesn't show any of the end grain, which allows it to have a relatively seamless look.



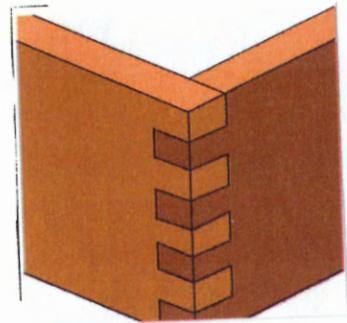
Rabbet Joint:

In order to form this joint, a recess is created at the edge of the material which allows a second piece to fit within the recess. This means that two different materials can be joined together with ease.



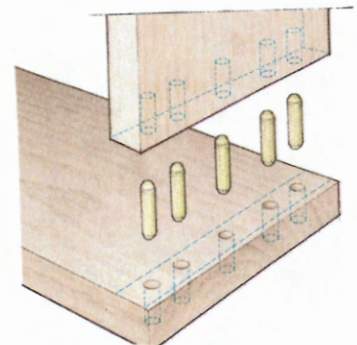
Finger Joint:

Also, known as a box joint, it is able to create a seamless right angle. In order to create this joint, a series of slots are cut out of the material, and on the other piece of material more slots are cut but this time in the opposing places. The two pieces are then glued together. This joining method has a great amount of strength due to the surface area that the glue is able to make contact with.



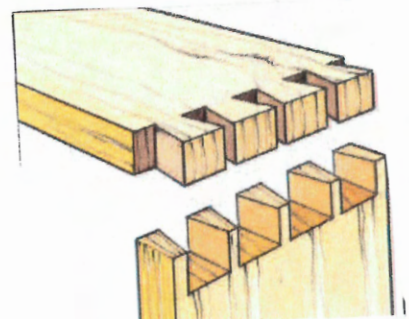
Dowel Joint:

This method relies on dowels that get hidden within the piece of material. This joint is created by drilling holes into the material where they would intersect. Then a dowel is inserted into the hole generally with glue, and the other piece of material is put over the dowels.

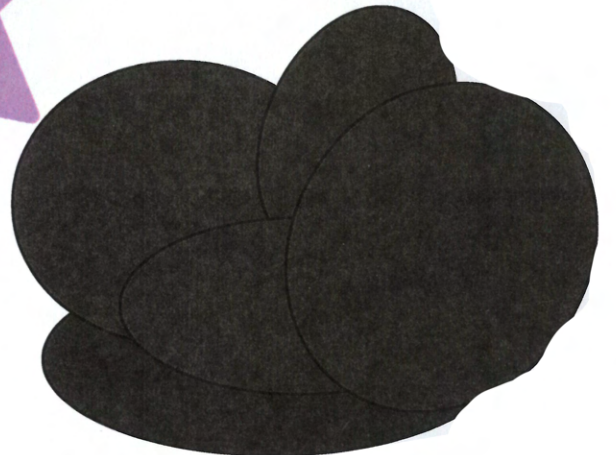
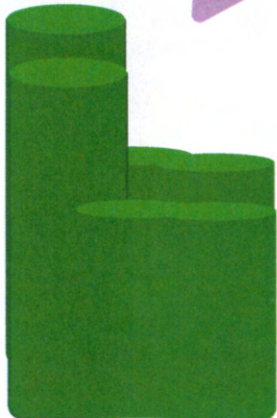
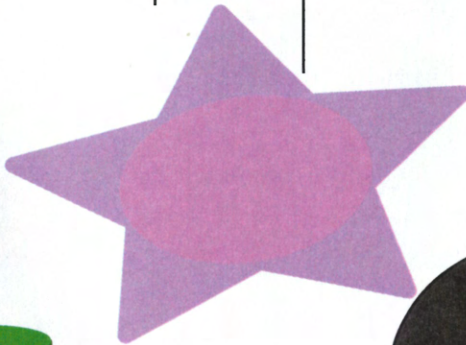
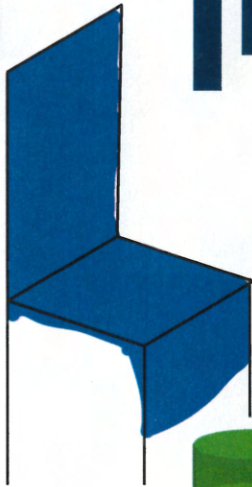
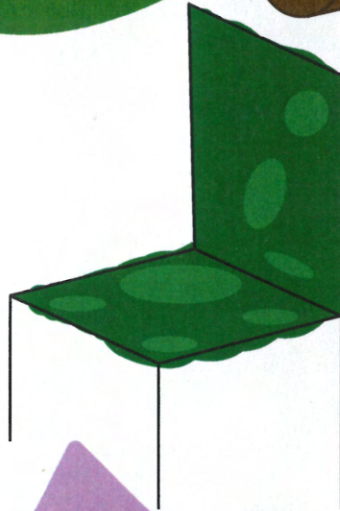
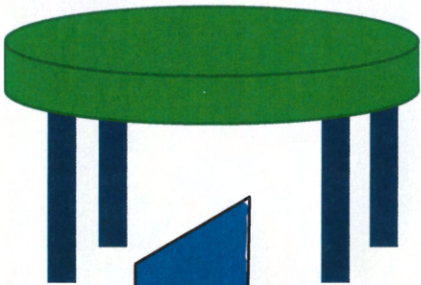
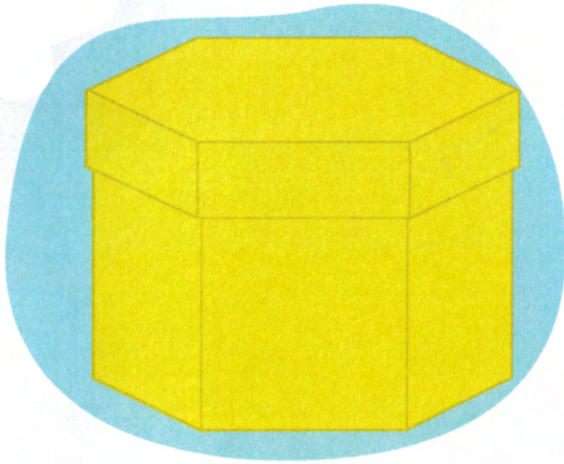
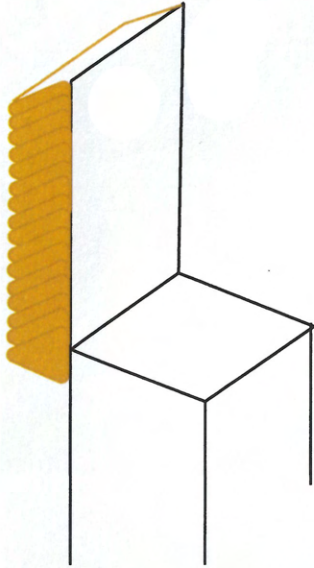


Dovetail Joint:

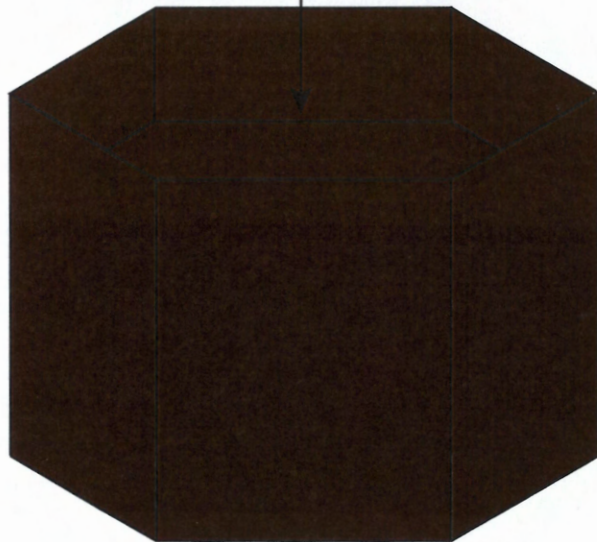
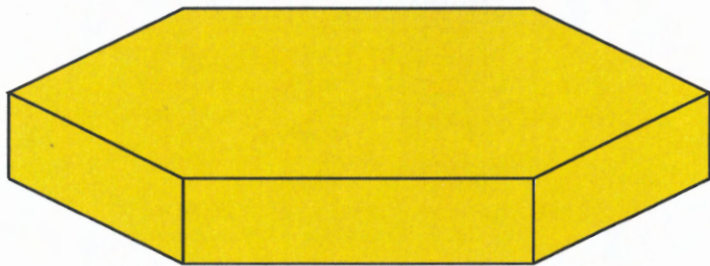
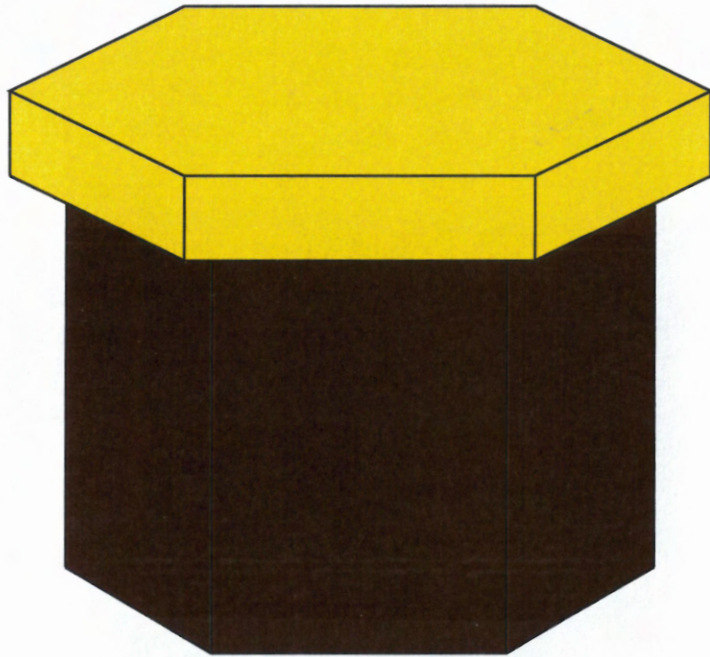
Similar to finger joints, the dovetail joints also has interlocking slots, but instead of being square slots these slots are angled. The angled slots create a more aesthetically pleasing joint. The joint has an increased strength due to the interlocking qualities.



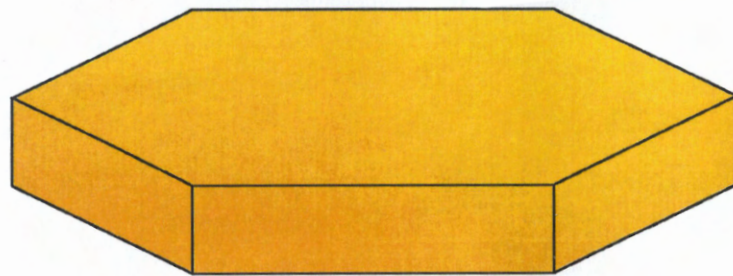
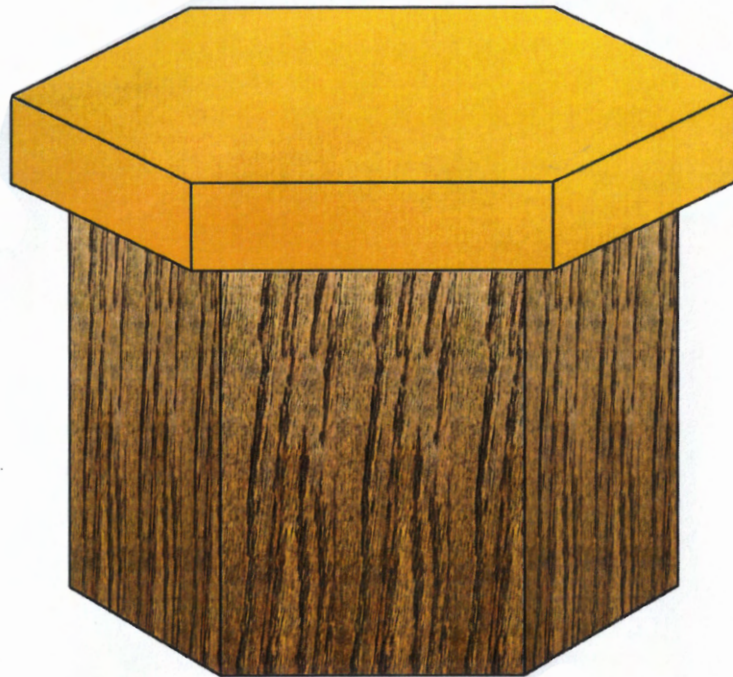
Sketches



Development Sketches



Development Sketch with CMF Idea



Anthropometric Data

Adultdata. The handbook of adult anthropometric and strength measurements. - Data for design safety.

Seat Height

UK. PeopleSize 1998 mm

Sex	Mean	5th%ile	95th%ile
M	425.7	382.6	468.8
F	395.5	351.8	439.2

Hand Depth, Middle Finger Knuckle

UK. PeopleSize 1998 mm

Sex	Mean	5th%	95th%
M	29.7	25.9	33.5
F	26.2	22.1	30.2

Weight

UK. PeopleSize 1998 Kg

Sex	Mean	5th%ile	95th%ile
M	79.75	58.4	101.1
F	66.7	45.0	88.4

Middle Finger Length

UK PeopleSize 1998 mm

Sex	Mean	5th%	95th%
M	84.2	75.3	93.0
F	77.3	69.2	85.3

Hip Breadth, Sitting

UK. PeopleSize 1998 mm

Sex	Mean	5th%ile	95th%ile
M	392.8	342.2	443.3
F	411.5	343.3	479.6

Middle Fingertip to Proximal Joint

Germany, Wagner 1988mm

Sex	Mean	5th%ile	95th%ile
M	53	—	—
F	48	—	—

Distance between Ischia Centres

UK. PeopleSize 1998 mm

Sex	Mean	5th%ile	95%ile
M	117.9	99.4	136.5
F	129.4	112.7	146.1

Buttock to Back of Knee

UK. PeopleSize 1998 mm

Sex	Mean	5th%ile	95th%ile
M	517.2	459.6	574.8
F	495.1	435.1	555.2

Benefits of Using a Stool when Sitting

As stools don't have a back or arm rests it prompts the user to use their core muscles, this then provides health benefits as well as postural because using the core muscles can strengthen the lower back and abdomen.

Also due to the lack support there is an increased chance of falling off, which then leads people to avoid slouching, whilst they are sitting, which in turn helps maintain better balance and posture. However, it can be uncomfortable for users at first as the muscles adjust to the increased workload.

Chairs keep backs at 90 degree angle with legs, which whilst often promoted is not comfortable or the most natural position to sit.

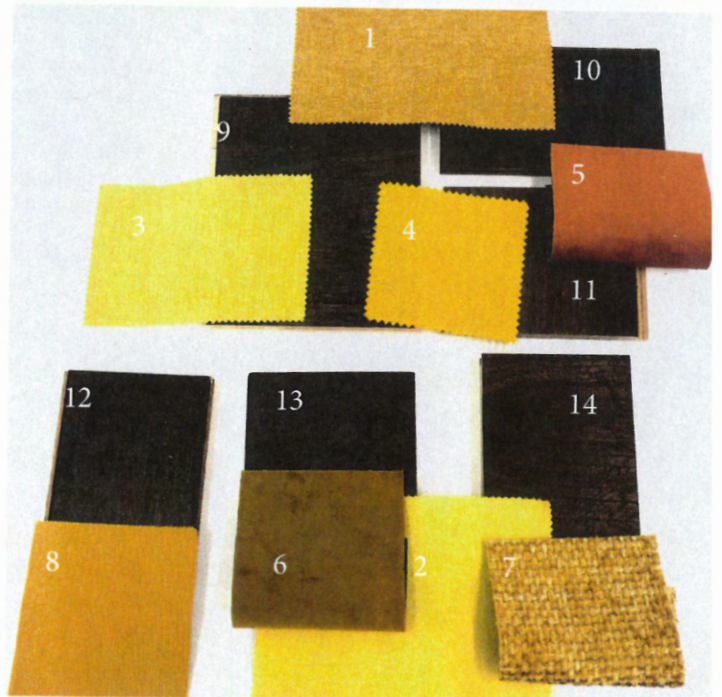
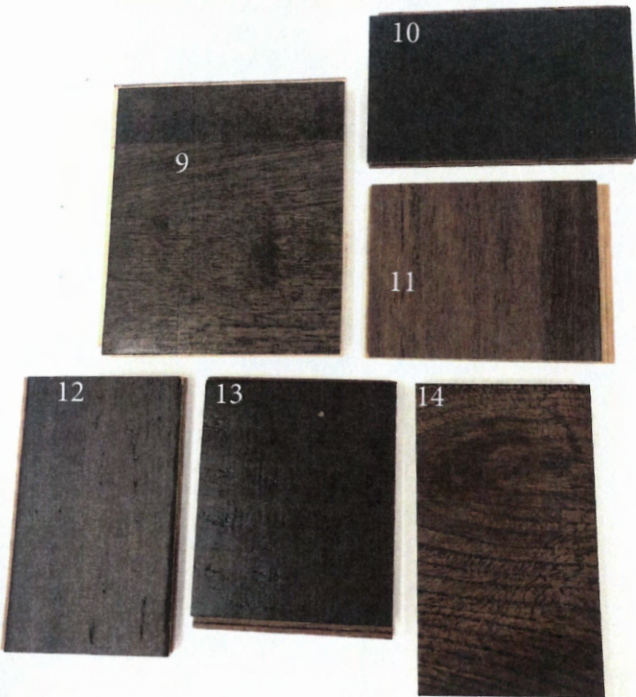
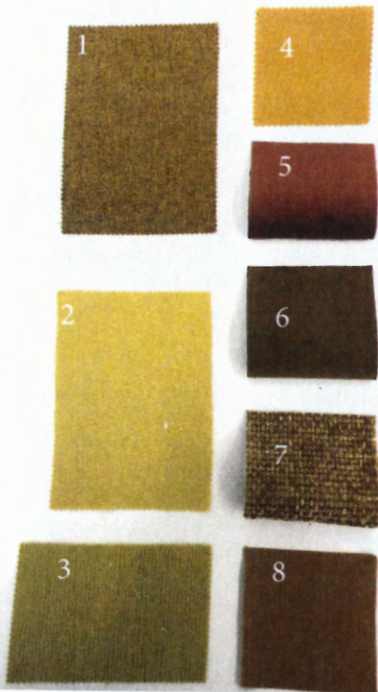
CMT

- Material
- 1 = 100% Polyester
 - 2 = Everyday velvet
 - 3 = 100% cotton
 - 4 = 100% cotton
 - 5 = Velvet
 - 6 = Velvet
 - 7 = Enzo
 - 8 = 100% Organic Cotton

- Colour
- Savanna Ochre
 - Lemon ochre
 - Amara Mustard
 - Burnet Orange
 - Mustard
 - Medallion
 - Honey Mustard

- Material
- 9 = Parawood
 - 10 = Chestnut Bamboo
 - 11 = Hazelnut Bamboo
 - 12 = Chestnut Bamboo
 - 13 = Woven Chestnut Bamboo
 - 14 = Rustic oak

- Finish
- Oiled
 - Matt Lacquer
 - Matt Lacquer
 - Matt Lacquer
 - Matt Lacquer
 - Distressed and Coloured oiled



CMF Choices

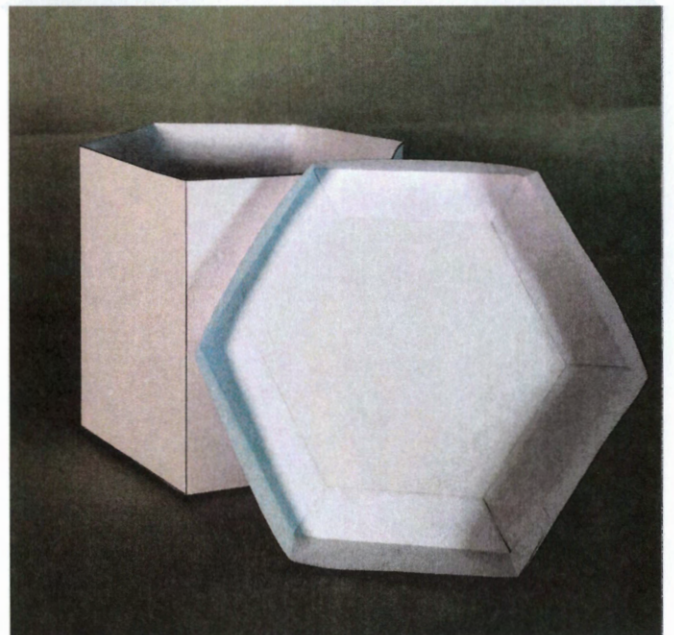
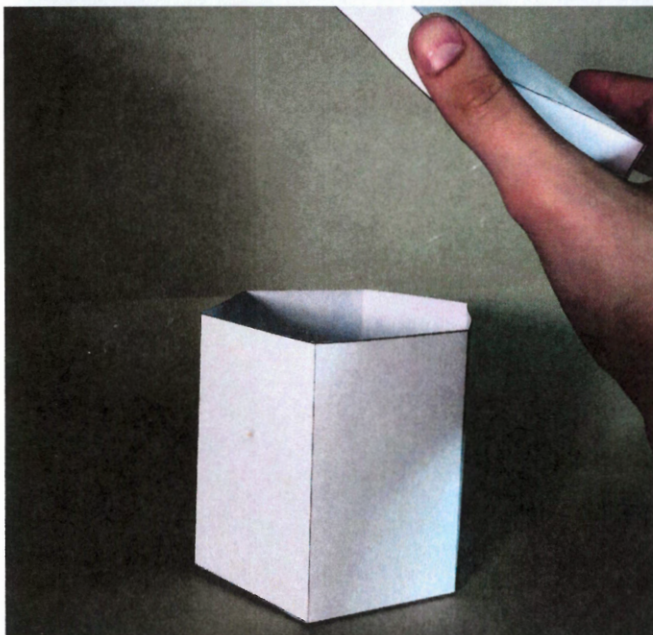
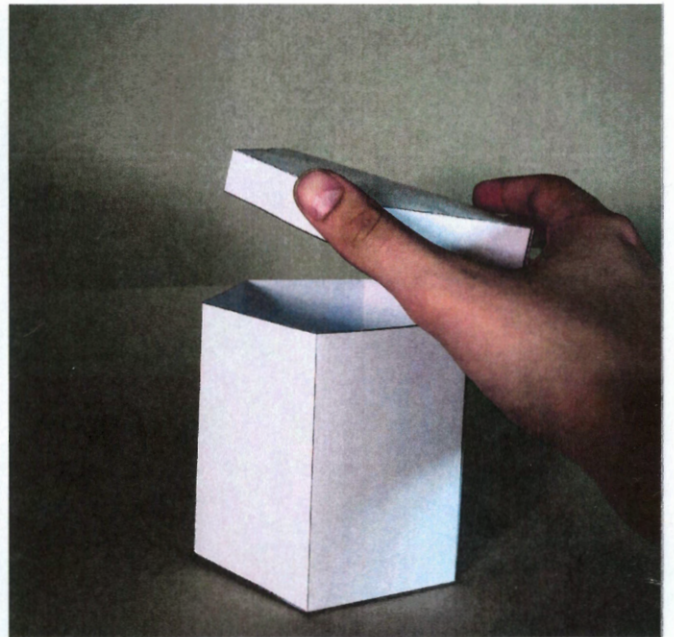
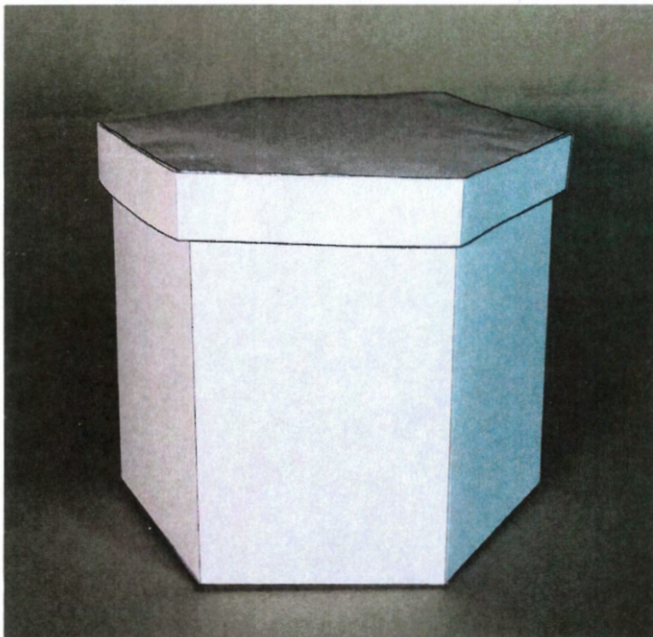
For the shell of the stool Chestnut Bamboo will be used, due to a number of reasons including the eco impact of bamboo, also the colour of the material once the matt lacquer has been applied. Also, by using a matt finish on the bamboo, it means that finger prints are less likely to show up, when the product is being moved.

However, for the cushion a mixture of different fabrics could be used, so when there are multiple stools grouped together it creates a multi toned affect. But the overall aesthetic will be similar, by using different yellows including Honey Mustard as well as Amara Mustard, but the material will remain the same, being 100% Cotton. By having the material the same it would make things easier for the user as they would use the same cleaning supplies on every stool without worrying how the cleaning supplies would react to different materials. Although, in order to give the stools more character, the fabric could be woven in a different way, this would also change the texture of the material.

By using these colour combination, it creates a warm toned ~~the~~ living space, and the yellow colours would be the pop of colour. It would also help to convey the idea of a bees nest as well as honey comb.

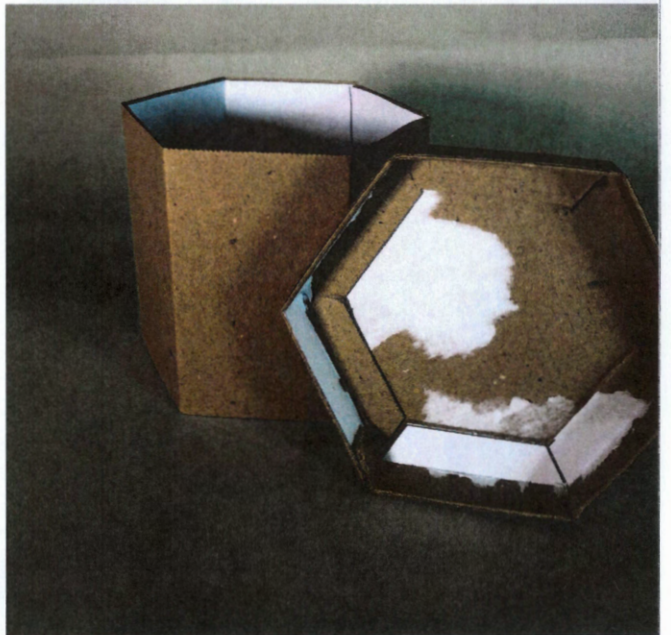
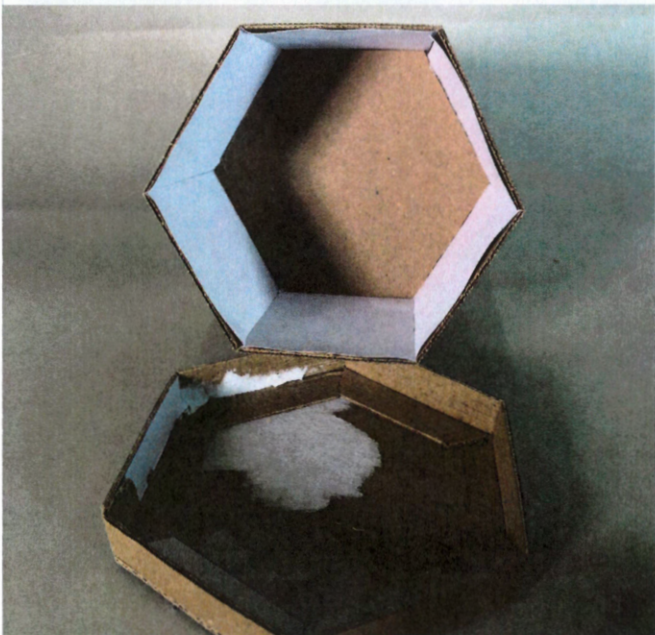
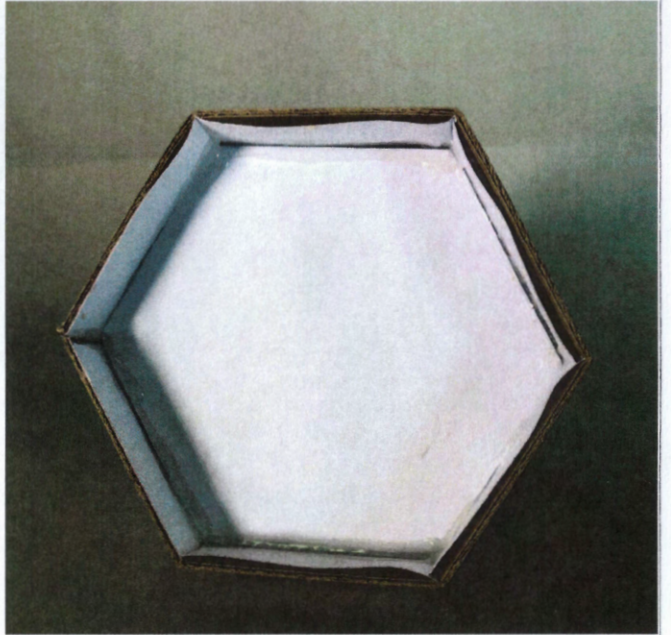
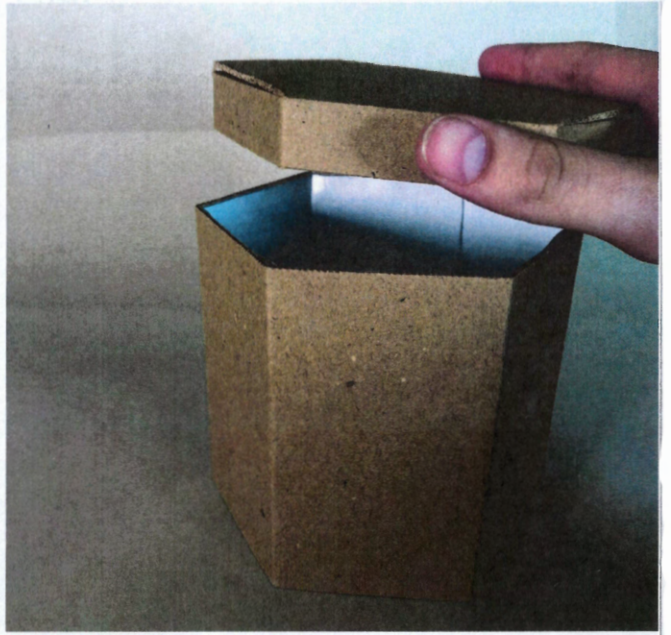
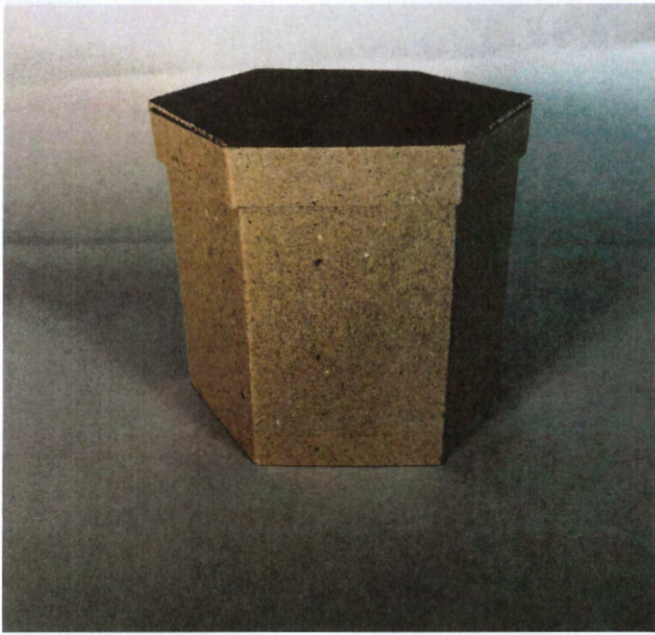
Scale Models

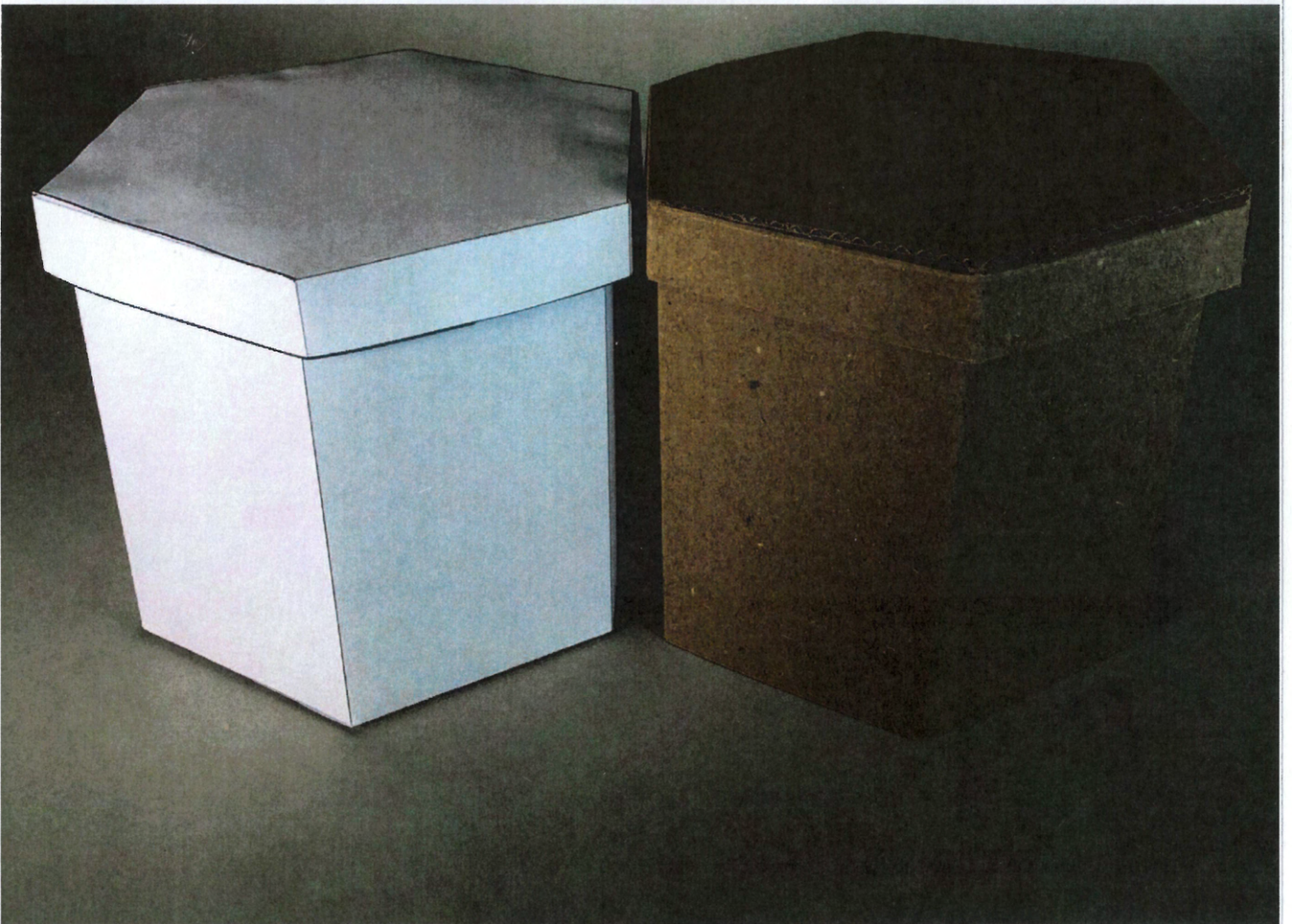
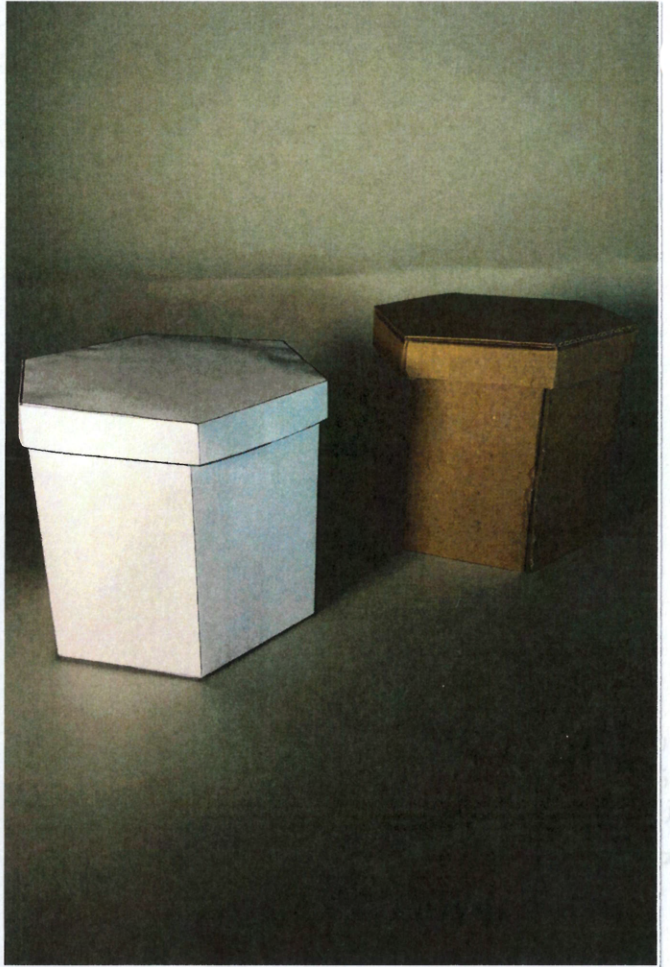
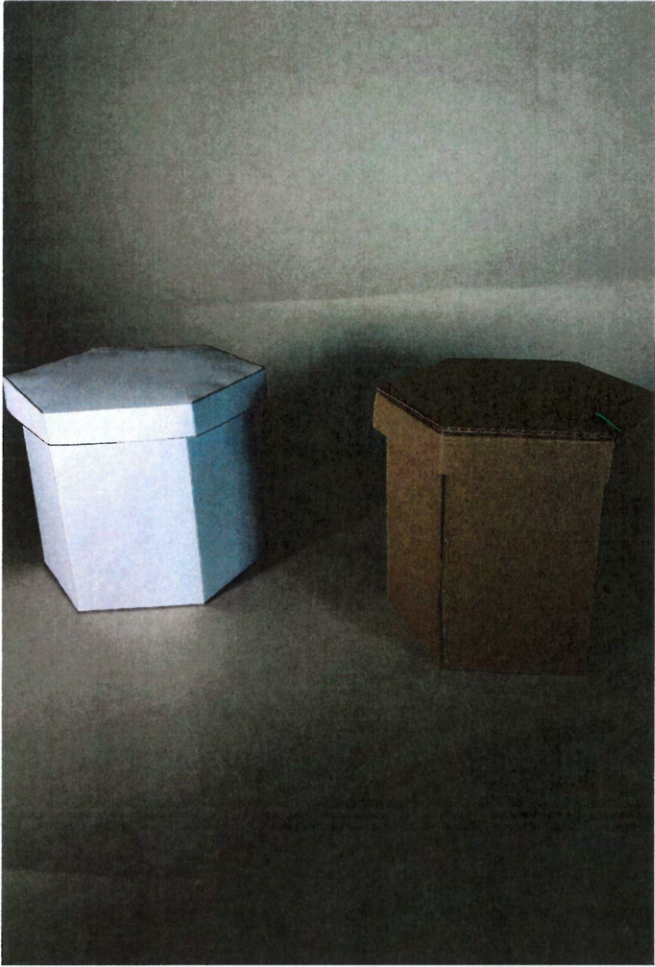
Models were created in order to test out the concept in 3D. It also started thoughts and ideas about how to make and develop the product in order to make it suitable for manufacturing. Once the manufacturing details have been finalised, then it would be looking at, how to make transporting and shipping efficient.



Scale Models

Scale Models





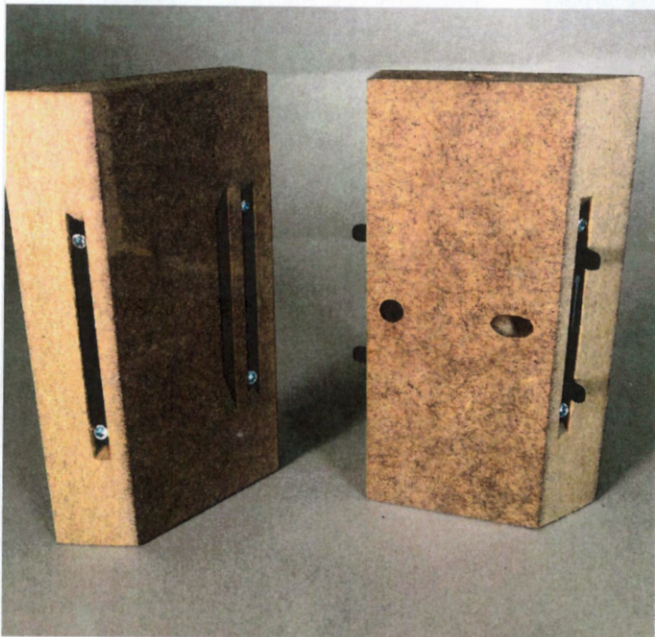
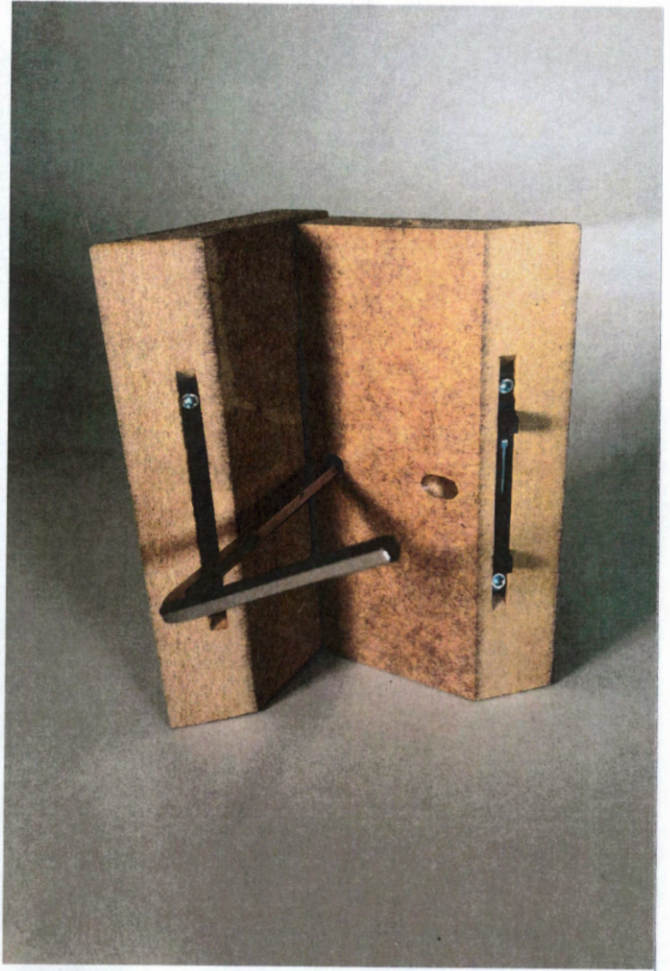
Manufacturing Details

For the outer section of the lower section, it would be made using Miter Joints, as well as Detachable Connector, by Lamello. By using the detachable connector, it would remove the need for glue, leading to the product being able to be flat packed. The connector piece works in a similar way to biscuit joints, even being the same size, which means that additional tools would not need to be purchased. In order to use this piece, an allen key is used in order to turn the rotating lever on the inside. The allen key would be provided so that the user is easily able to assemble the product.

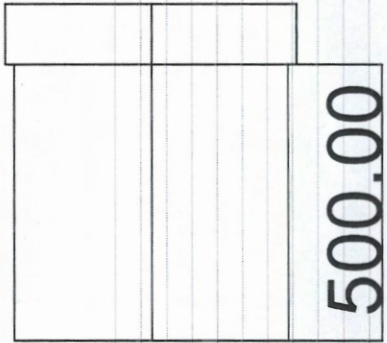
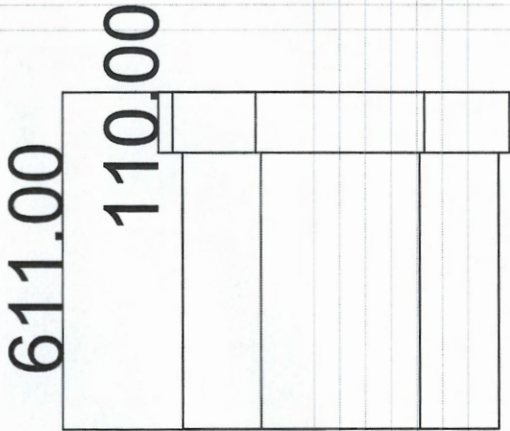
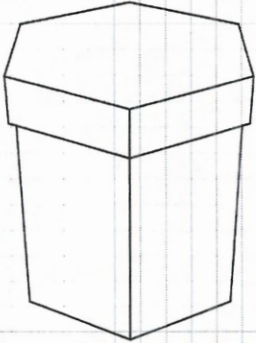
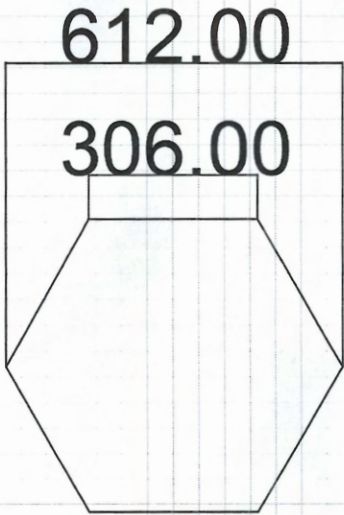
In order for the base plate to fit within the bottom section, a slot would be routed into the bottom section. This shouldn't need glue as it would have a friction fit. Also, the force of the sides would also hold it together. The base plate is also risen up off the ground, this would be beneficial to the user as there isn't as much contact area on the floor, reducing the risk of the floor ~~to~~ being scratched. The base plate is risen 30mm off the ground. Having it this level, means that there is still enough material below it without a high risk of the material splitting. It also gives enough space on the inside for storage.

The seat of the product would be manufactured in multiple stages as it uses ~~one~~ a ~~very~~ range of different materials. The material range from memory foam, cotton to bamboo. The cotton would be wrapped around the memory foam which would be attached to the bamboo. The bamboo section would be made from multiple different pieces, as part of it would slot onto the inside of the bottom section, and the other part will overhang slightly in order to have a bigger seating area, which should be more comfortable for the user.

Detachable Connector

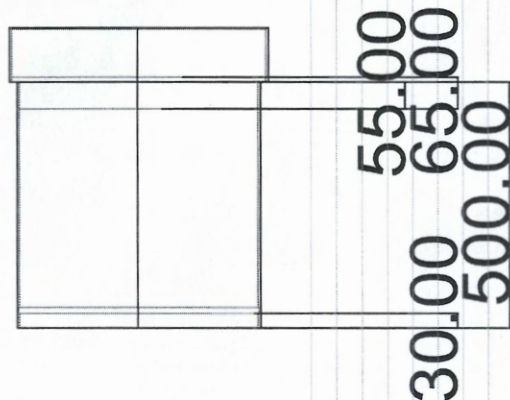
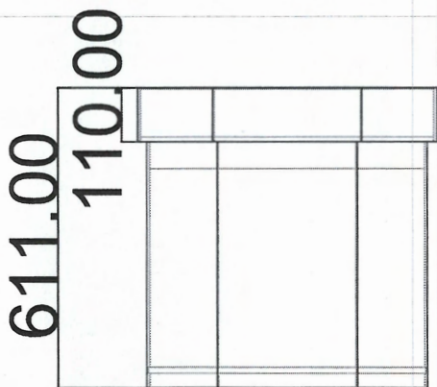
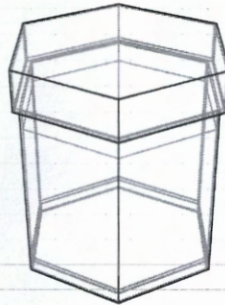
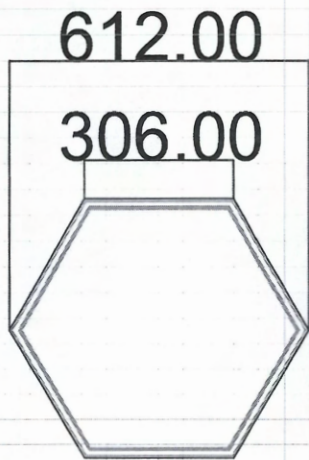


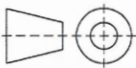
Orthographic External



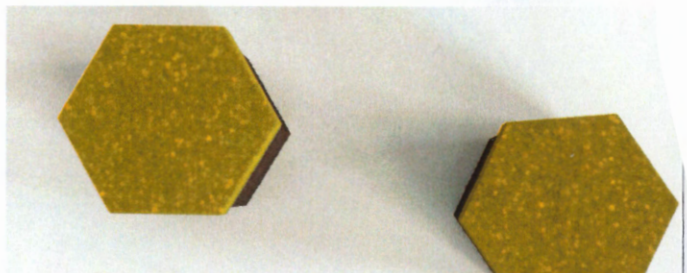
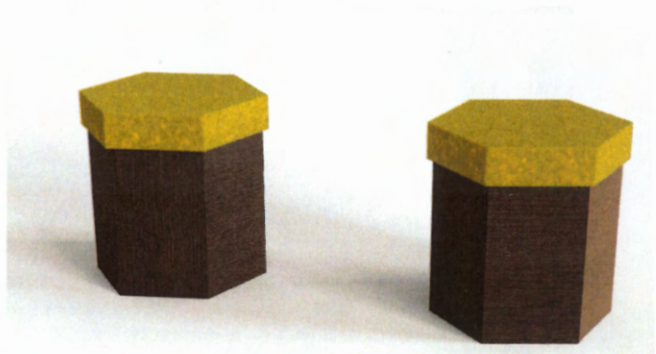
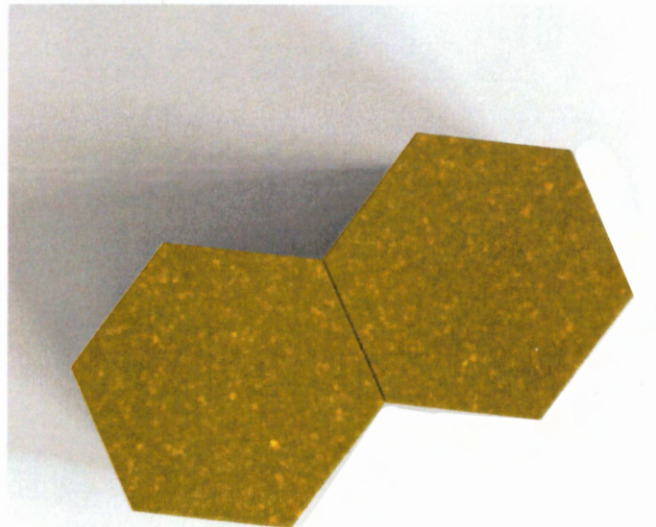
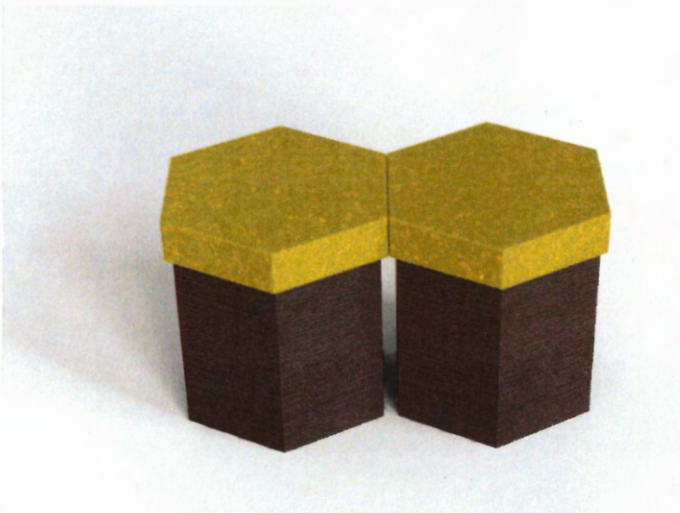
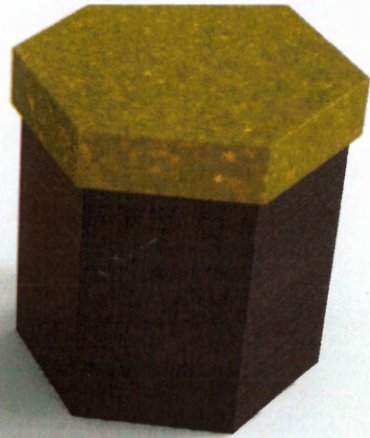
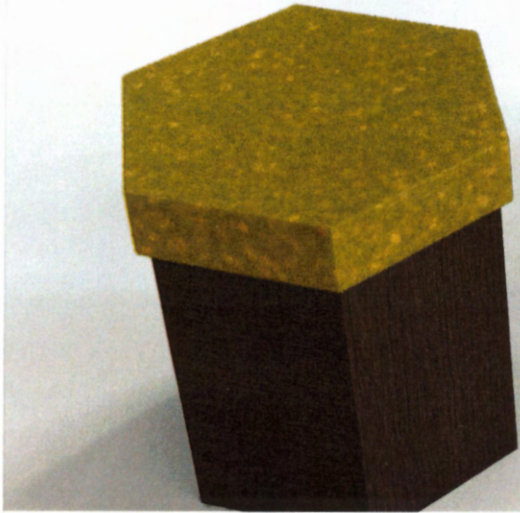
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3rd Angle All dimensions in mm	Name	
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	Title	

Orthographic with Basic Internals

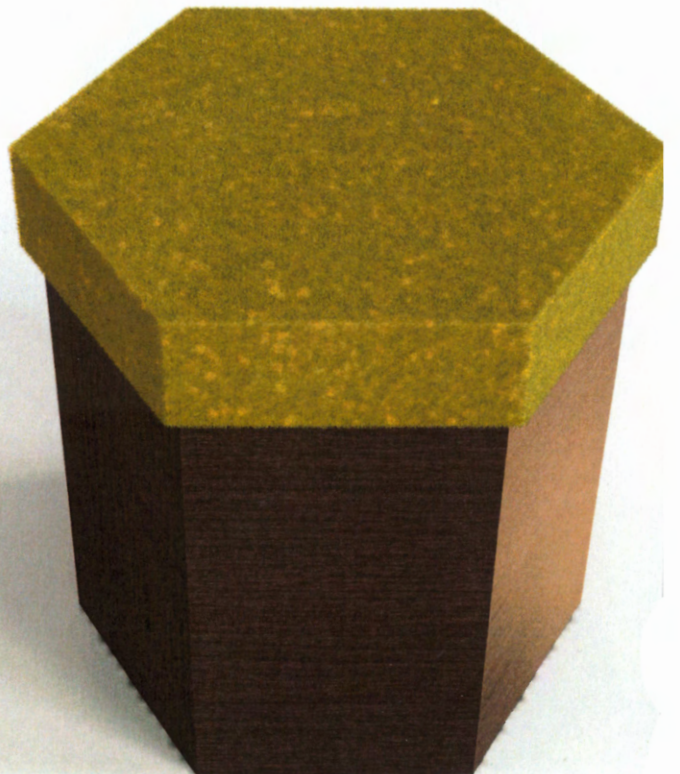
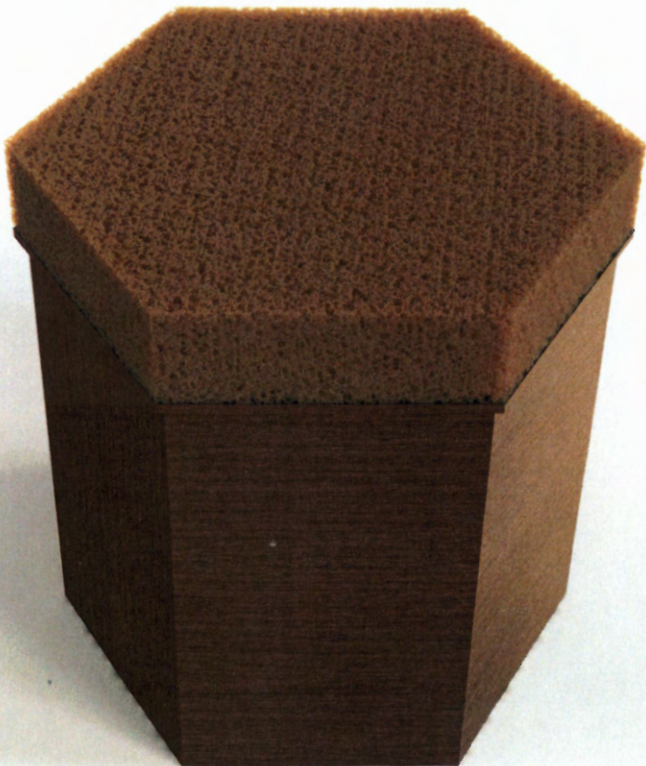
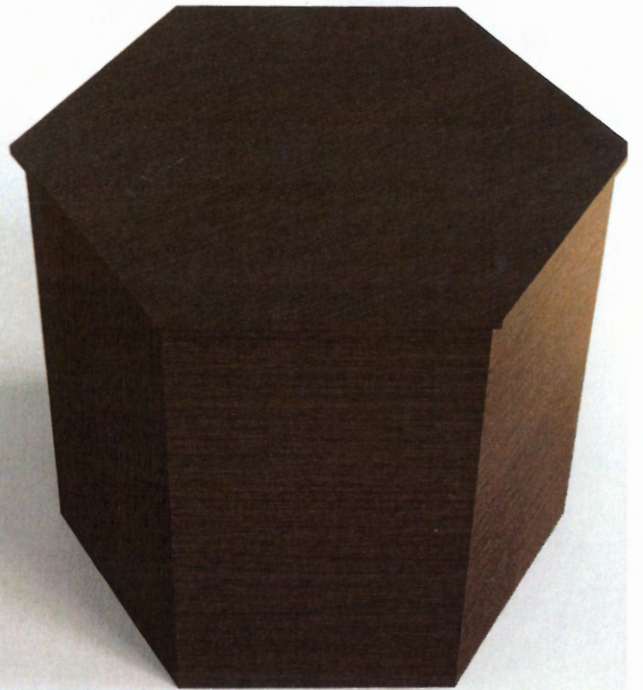
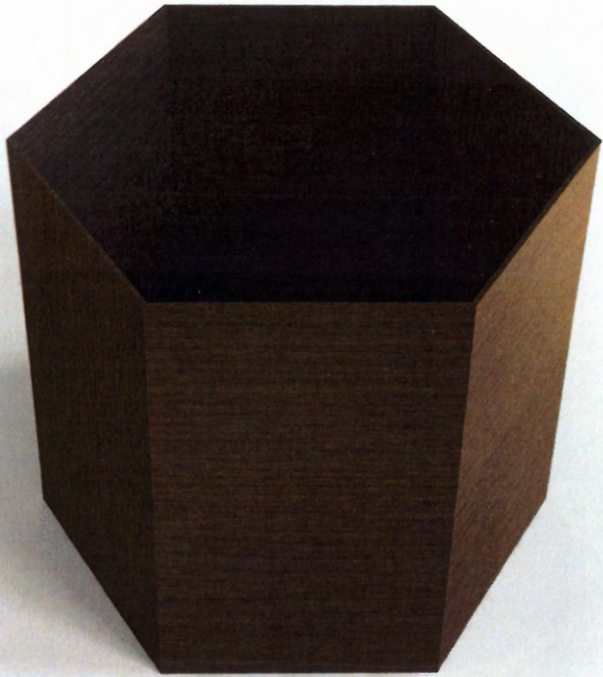


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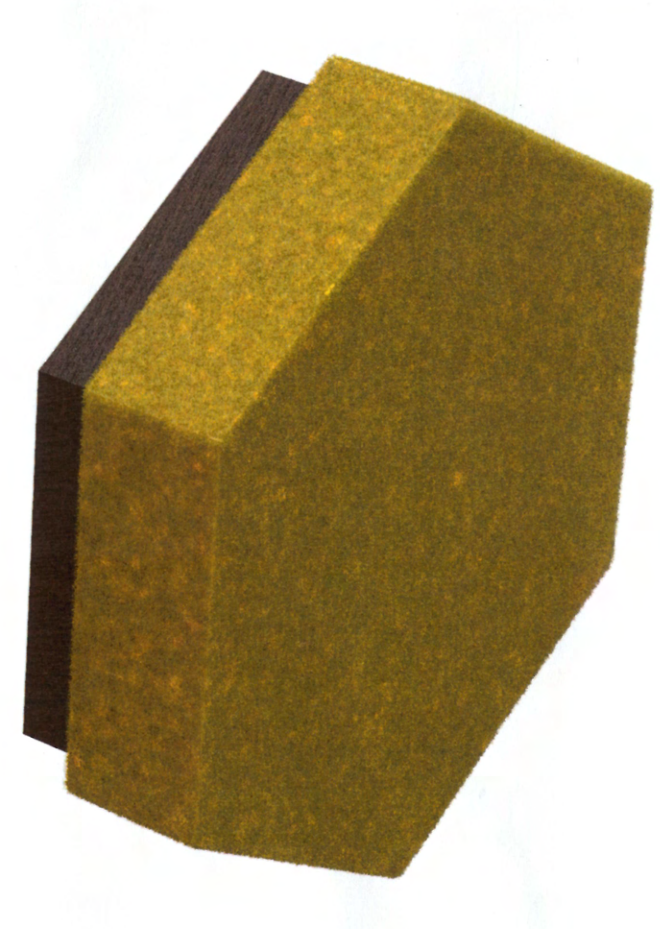
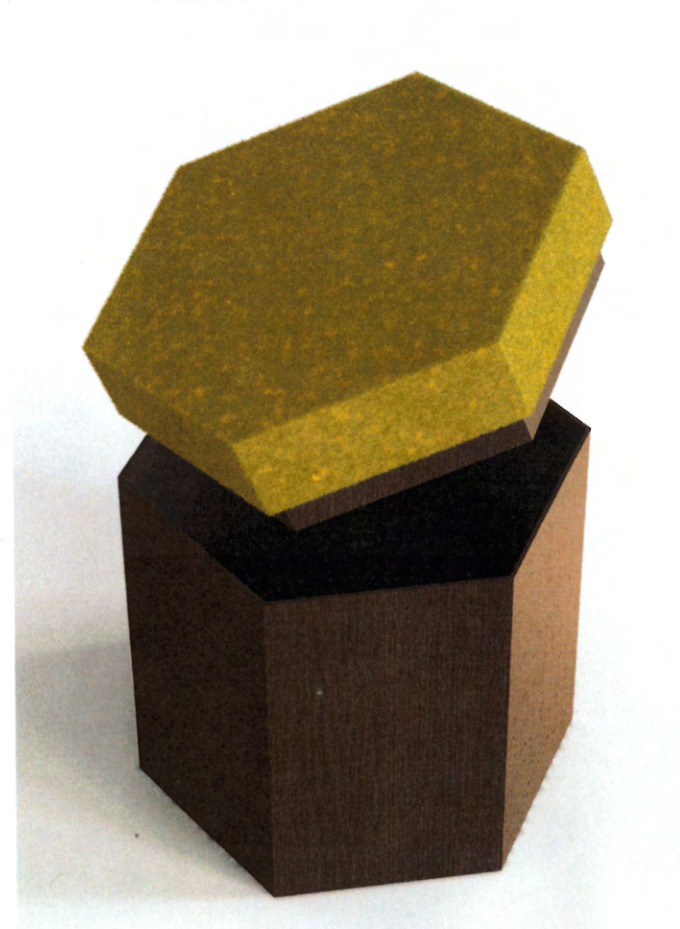
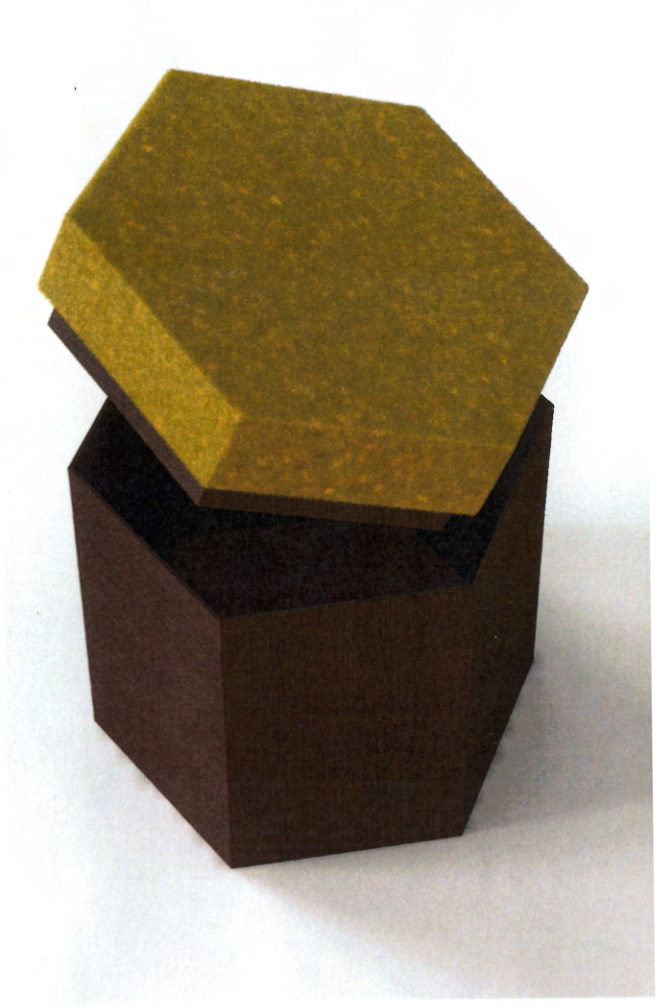
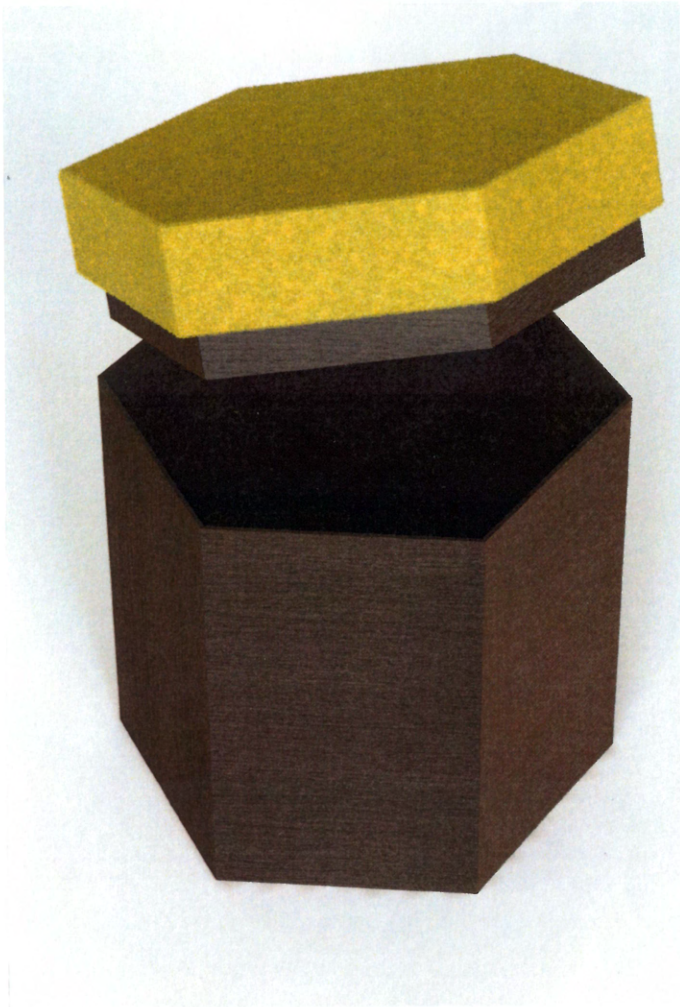
Renders
Two Seater



Basic Assembly Process

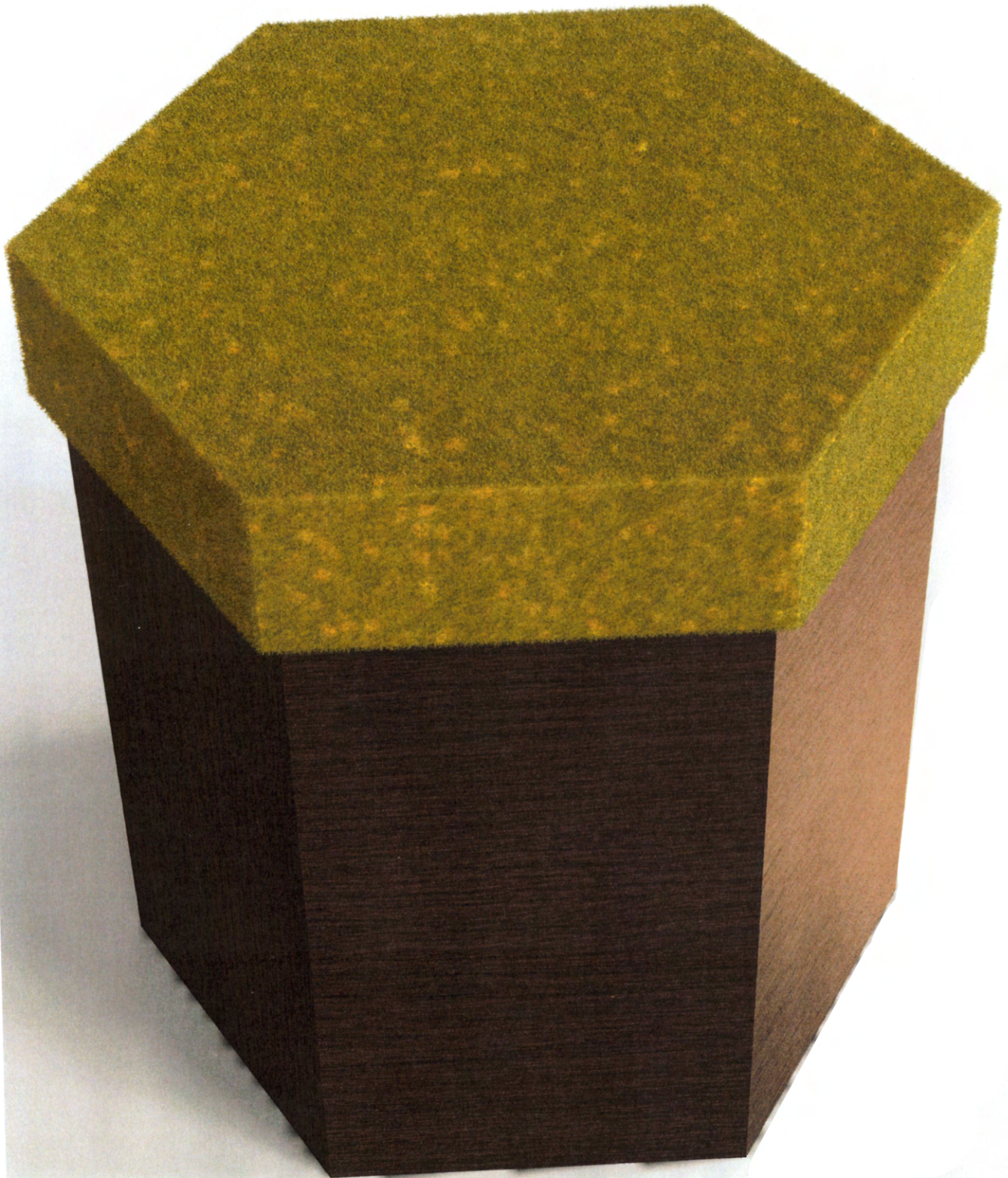


Removing of Lid



With Context Images





The Hive

Introducing The Hive, a modular Seating and Storage Product. The Hive has been inspired by Bees, as well as Bee Hives and Honeycomb, this can be seen within the design of the Product, in terms of the colours used, as well as the shape. The Stool can be used in conjunction with other ones with the same design, in order to create a larger Seat.

On the inside of the Hive, there is space that can be used for Storage. It is able to store a range of items ranging from Board Games to blankets. The stuff stored such be things that don't get used too often, but easy access is still wanted for the occasion it does get used.

The detachable connectors allow it to be flat-packed, which would reduce the size of the packaging, therefore increase the number of singular boxes that would be able to fit within a pallet box, etc. This would then reduce the carbon emission produced when transporting and shipping the product. As the product will need to be assembled by the user, it would give them a lot of pride when it is fully assembled, which should mean that the user would take better care of it.

As it is a bespoke Product, it would have testers for user to try, in high-end retail stores, but for the user to purchase it would be done online, as it would allow them to customise different things such as the colour of the fabric as well as the density of foam used.

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