Olea

INSTRUCTIONS FOR FABRICATION

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POLIFACTORY
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Distributed Design

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1. Basic info about Olea

Olea is a **steam non-alcoholic distillation system** for obtaining essential oils and hydrolates.

Olea is an open-source system that stimulates makers to explore the potential of essential oil distillation. The project is based on the combination of elements readily available on the market and feasible in makerspaces and Fab Labs, allowing the creation of a system for distillation that is inexpensive compared to alternatives already on the market. The goal is to spread the practice of distillation in environments far from professional ones, expanding the knowledge and use of essential oils and hydrolats in domestic and amateur contexts for plant-based food.

1.1 Bill of materials

The table below provides the list of materials and components for reproducing the product.

Name and tipology	***Link***	***Quantity***	***Price***
Induction cooker (optional)	https://www.ikea.com/it/it/p/ikea-365-pentola-con-cestello-inox-40484294/	1	€ 49,95
Pot with basket (Inox steel 5.0 L) / Pressure cooker	https://www.ikea.com/it/it/p/ikea-365-pentola-con-cestello-inox-40484294/	1	€ 29,95
Steamer basket (Inox steel)	https://www.ikea.com/it/it/p/klockren-cestello-per-cottura-a-vapore-inox-00459277/ https://www.ikea.com/it/it/p/klockren-cestello-per-cottura-a-vapore-inox-00459277/	1	€ 3.95
Dispenser with faucet (5.0 L)	https://www.ikea.com/it/it/p/vardagen-dispenser-con-rubinetto-80452639/	1	€ 19.95
Faucet	https://www.ikea.com/it/it/p/vardagen-supporto-dispenser-con-rubinetto-grigio-scuro-30468119/	1	€ 2.50
Silicon tube (12 mm Diameter)	Silicone Tube	1	€ 11.50
Breathing tube (5 mm Diameter)	Breathing tube	1	€ 0,80
Silicon SORTA-CLEAR 37	Silicon	150 gr	€ 10.80
Metal tube tie	Metal tie	3	€ 0.7
Idraulic junction(mm)	Hardware store	1	€ 4.5
Metal clamps	Metal tie	4	€ 1.2
Copper tube (5 mm Diameter)	Hardware store	800 mm	€10

2. Technology and tools used

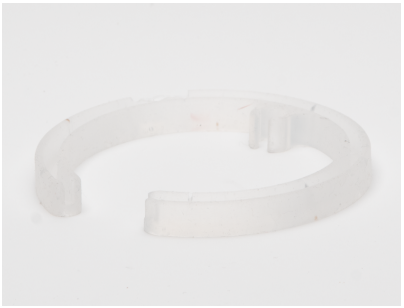
- 3D printing both plastic and resin
- Silicone casting
- Metal Bending

3. Step-by-Step production

3.1 Step-by-step production: SILICONE PARTS

Guard: the silicone sheath placed on the inside of the lid is necessary to prevent excessive steam leakage during distillation. It is essential to make it out of food silicon SORTA CLEAR 37 because it is a food safe material that withstands high temperatures (fig.1).

Coil support: is used to keep the top of the coil (which reaches a high temperature during distillation) in place so that it does not come into contact with the glass of the coil container, risking cracking it. It is essential to make it out of silicone because it is a material that can withstand high temperatures well (fig. 2)

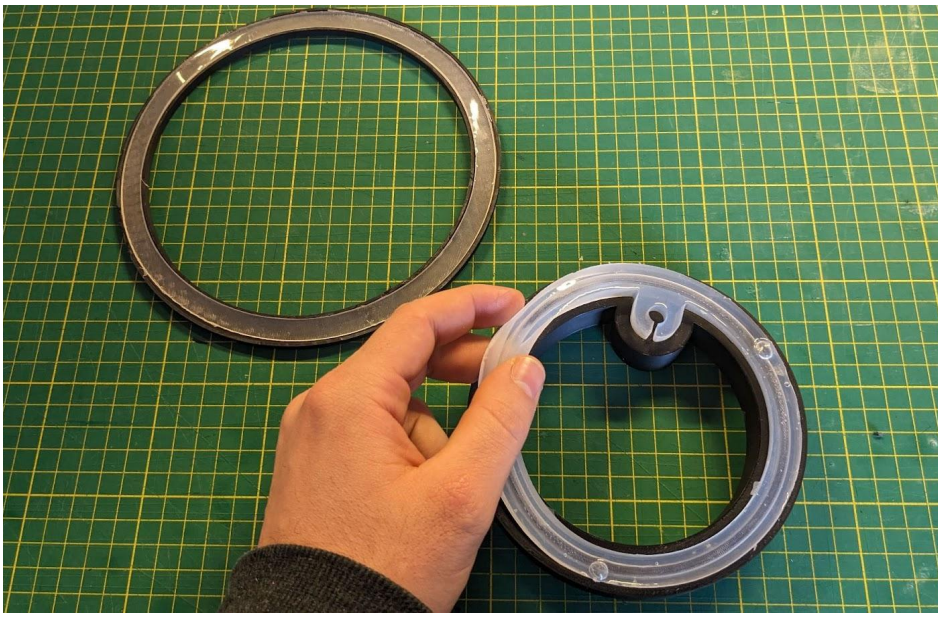


STEP 3.1.1: *Prints the files within the following folder: "Moulds".*

STEP 3.1.2: Print the components separately with a FDM 3D printer using a PLA filament.

STEP 3.1.3: Prepare 40gr of 1A + 40gr of 1B of silicone. Remove all air bubbles using a vacuum chamber. After that, cast the silicone in the molds. Let it dry for at least 4 hours (if you use a different brand from the one indicated on the list you should follow its own instructions).

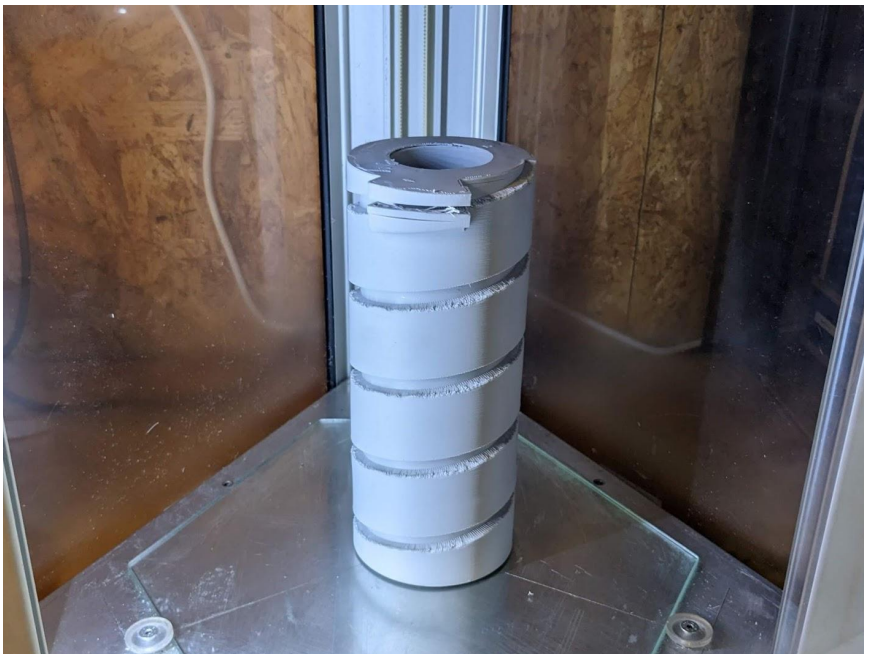
STEP 3.1.4: Once the silicone is ready you can remove every excess of material.



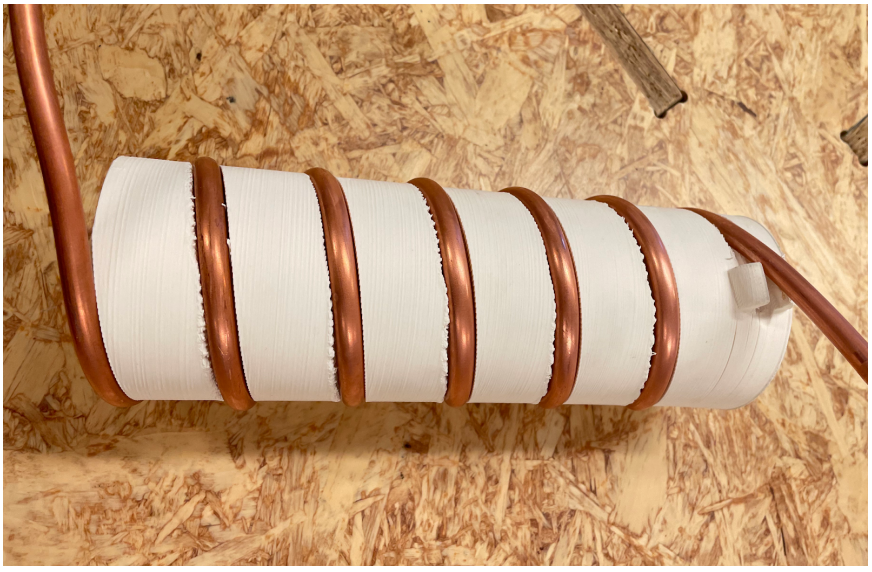
3.2 Step-by-step production: COIL

Coil: The steam coming from the pot runs through the coil. When in contact with the ice the steam condenses and the oil particles separate from the hydrosol.

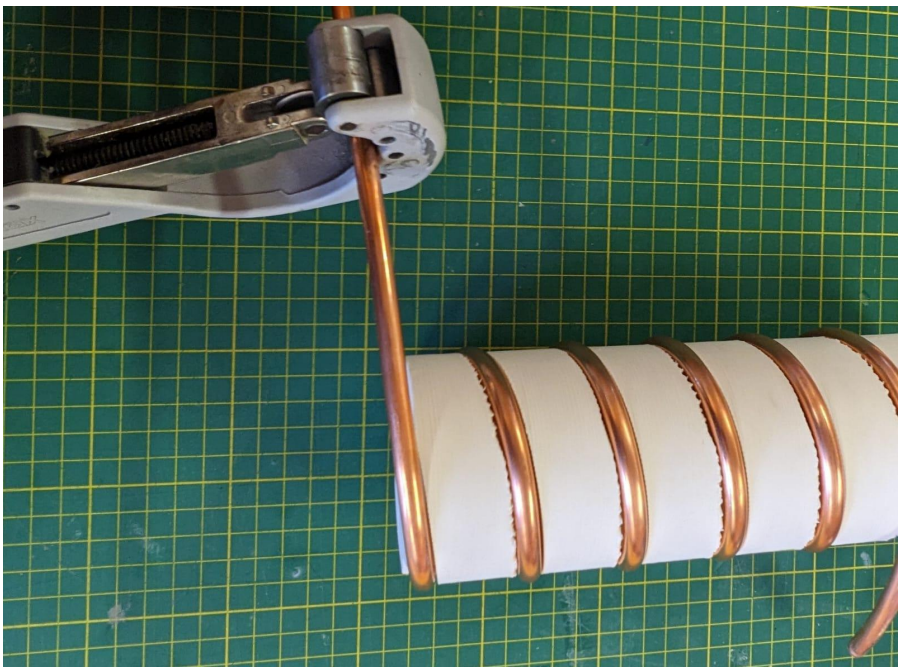
STEP 3.2.1: *Prints the files within the following folder: "Coil jigs".*
Print the component with a FDM 3D printer using a PLA or PETG filament.



STEP 3.2.2: Bend the copper tube following the 3D printed mold.

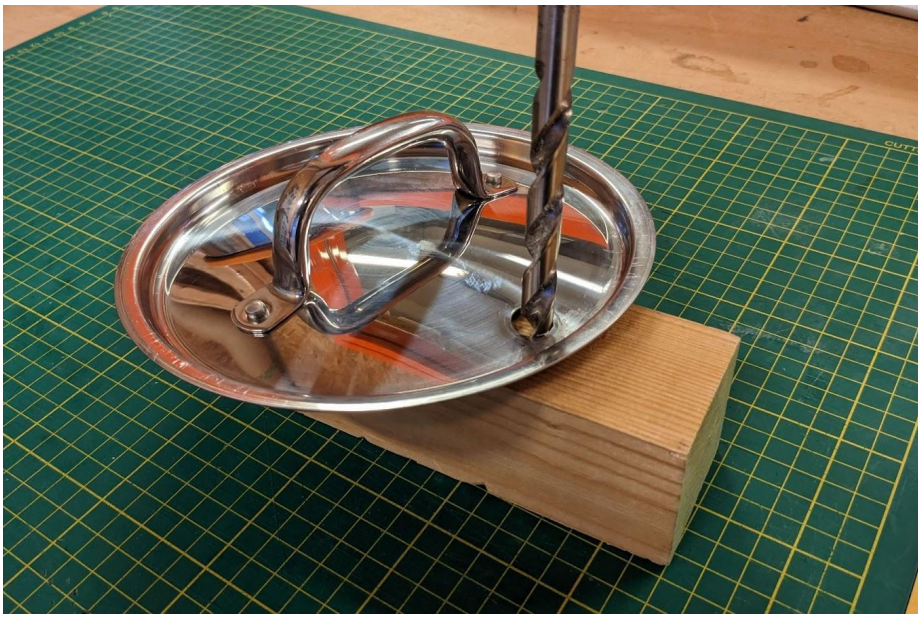


STEP 3.2.3: Remove the copper coil from the mold and cut off the ends.



3.3 Step-by-step production: LID

STEP 3.3.1: The cover is pierced using a 12.5" drill bit.



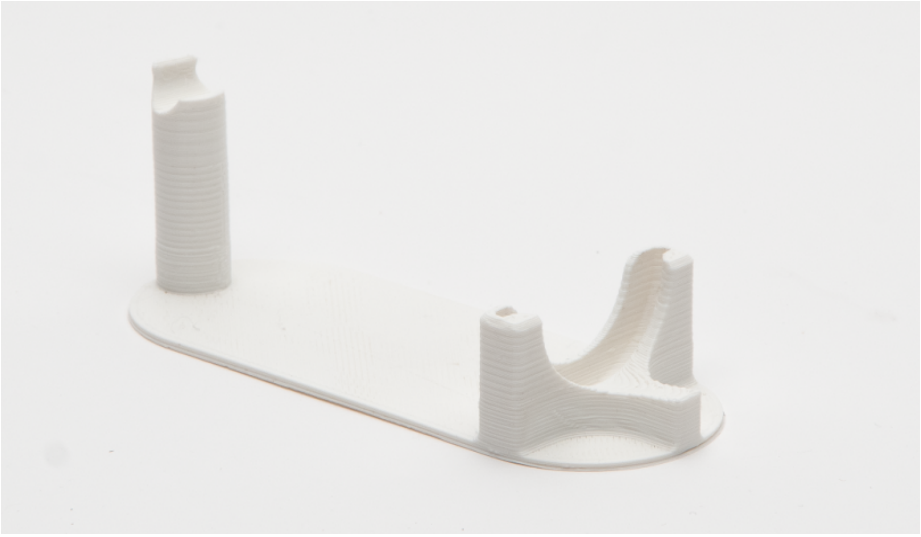
STEP 3.3.2: Insert the hydraulic junction as shown in the picture

3.4 Step-by-step production: COIL BASE

Coil Base: It is used to keep the coil in place and lift it high enough that condensed oil and hydrosol don't get stuck.

STEP 3.4.1: *Prints the files within the following folder: "Coil support".*

STEP 3.4.2: Print the component with a FDM 3D printer using a PLA or PETG filament.



3.5 Step-by-step production: FAUCET AND JUNCTION

Faucet and Junction: These components are printed using resin to prevent overheating and water spilling during the process. The resin is optimal to obtain a watertight component.

STEP 1: *Prints the files within the following folder: "Faucet"*. Use a SLA resin 3D printer.

4. Credits

OLEA is a project developed by G.Chiggiato, I. De Biasi, C.Guarino, F.Montini, V.Rinaudo with the collaboration of Polifactory within the Distributed Design Platform project co-funded by the Creative Europe Programme of the European Union.

5. Downloadable Files

OLEA files can be download at Polifactory

6. Contacts

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