



# Sublym100<sup>TM</sup>

## microfabrication unit



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## Aim of this guide

This application note summarizes all essential steps that must be followed to successfully perform the thermoforming of your Flexdym™ chip using the Sublym microfabrication kit.

## Safety notes

The aim of this quick start guide is to illustrate how to use the heat press system delivered by Eden Microfluidics, so that you can easily and rapidly create Flexdym™ chips. Please, always consult the safety notes or procedures that may be related to your specific heat press system prior to use.

As in all laboratory activities, gloves and lab coats should be worn during the process. It is the user's responsibility to consult the manufacturer's recommendation for the chemicals used and - if required - to ensure adequate ventilation/extraction (e.g., via a fume hood) prior to proceeding.

The biggest risk for the user during the process is burning themselves. The equipment heats up and one must always wear heat resistant gloves while operating. As for all technical equipment the heat press has to be used only by a trained person to prevent any injury to the user damage to the equipment.

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## List of buttons



Turn on / off the power



Press heating button to start heating



Press vacuum button to start the vacuum



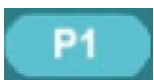
State 1: press to start timing, vacuum pump starts to work  
State 2: at the end on the timer, press to reset the timing



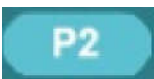
Press to set the temperature



Press to set the time



Program 1



Program 2

For this process, you will need:

- A Sublym system
- Two aluminum plates and their spacers
- A glass, metallic or silicon mold, to create the patterns on the bottom part of the Flexdym™ sheet
- A countermold, to create a smooth surface on the top part of the Flexdym™ sheet
- Two protective Teflon sheets
- A Flexdym™ sheet, scissors
- Dry lube PTFE spray
- Tweezers
- Isopropanol
- Heat resistant gloves

## Preparation

Plug in the vacuum heat press using the provided adaptor if needed

Turn the vacuum heat press ON 








The system will heat up and users should always use protective gloves to protect themselves from a burn.


Put the aluminum plates in the press with the spacers between them.

Close the press.

### Preheating

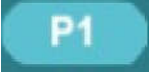








- Set the temperature to 170°C:
  - press SET\_TEMP  once
  - Set the temperature by using the -  and +  buttons
  - Press again SET\_TEMP  once.
- Press HEAT  to start heating the system.
- Wait 30 minutes for the aluminum plates to stabilize at the right temperature.

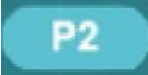


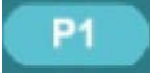
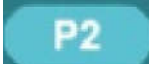
*Once the oven reaches the set temperature, it will start beeping. In order to stop the noise, you should press VACUUM  two times. It will stop the pumping while waiting.*

## Setting up the Program mode (optional)

To set up Program 1 (P1)

- Press P1 
  - Set the temperature to 170°C:
    - Press SET\_TEMP  once,
    - Set the temperature by using the -  and +  buttons
    - Press again TEMP  once.
  - Set the timer:
    - Press SET\_TIME  once
    - Set the temperature by using the -  and +  buttons
    - Press again SET\_TIME  once.
  - P1 is set up.

To set up Program 2 (P2), press P2  and repeat the same sequence as for P1.

- To choose between P1 or P2, press  to select P1 or press  to select P2.

## Process

- Treat your counter mold with PTFE spray.
- Once it has pre-heated, open the press using the silver central button

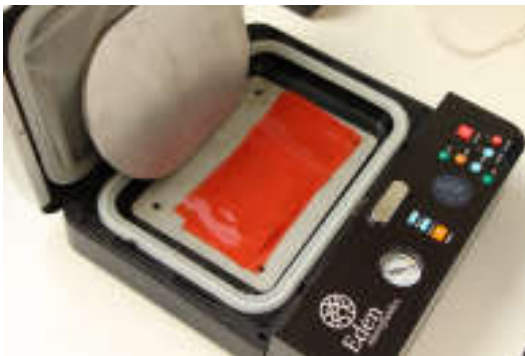


**Be careful!**

**The surfaces will be hot!**

**Use heat protective gloves!**

- Place the elements between the two aluminum plates, so to create the assembly presented in the figure below.



**Aluminum plate**

Protective Teflon sheet

Counter mold

Flexdym sheet

Mold

Protective Teflon sheet

**Aluminum plate**

- Make sure you didn't forget the upper aluminum plate
- Close the press

*Useful tip:*





*If dust collected on your Flexdym™, you can dab the sticky side of an adhesive tape on the surface and isopropanol to remove it.*

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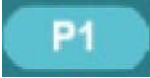


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## A. Manual process

- Turn the vacuum on by pressing 
- Once the pressure indicator stabilizes, wait 2 min while the thermoforming happens
- Turn off the vacuum by pressing 
- Open the oven by pushing the silver button

## B. Using Program mode

- Select the program you wish to select (For demonstration purpose, we will use P1 in this guide)
  - Press 
  - Press Heat  to start heating the system.
  - Wait 30 minutes for the aluminum plates to stabilize at the right temperature.
  - Press  to start the preset run. The vacuum pump will work for the duration of the time set up.
  - At the end of the timer, the vacuum pump will automatically stop.
  - Open the system by pushing central silver button.





**Be careful!**  
**The surfaces will be hot!**  
**Use heat protective gloves!**

- Remove the upper aluminum plate and the upper protective teflon sheet.
- Carefully grab the assembly (counter mold / Flexdym™ / mold) with tweezers and take it out of the system.
- Let the assembly cool down.
- First, remove the counter mold.
- Remove the Flexdym™ sheet by peeling it from the mold.



*Useful tip:*

*If you find it difficult to remove the counter mold or to peel off the Flexdym from the mold, isopropanol can help.*

## Cleaning and maintenance

Your Sublym system needs very little cleaning and maintenance. If you spilled Flexdym™ (because it flowed out), or you forgot the protective Teflon sheet, make sure you clean it as soon as you see it (without burning yourself), as it might stick and become way harder to clean later.

If the pressure doesn't seem to hold as strongly as before, first try applying some weight on the lid. If this fails, you might have to change the joint.

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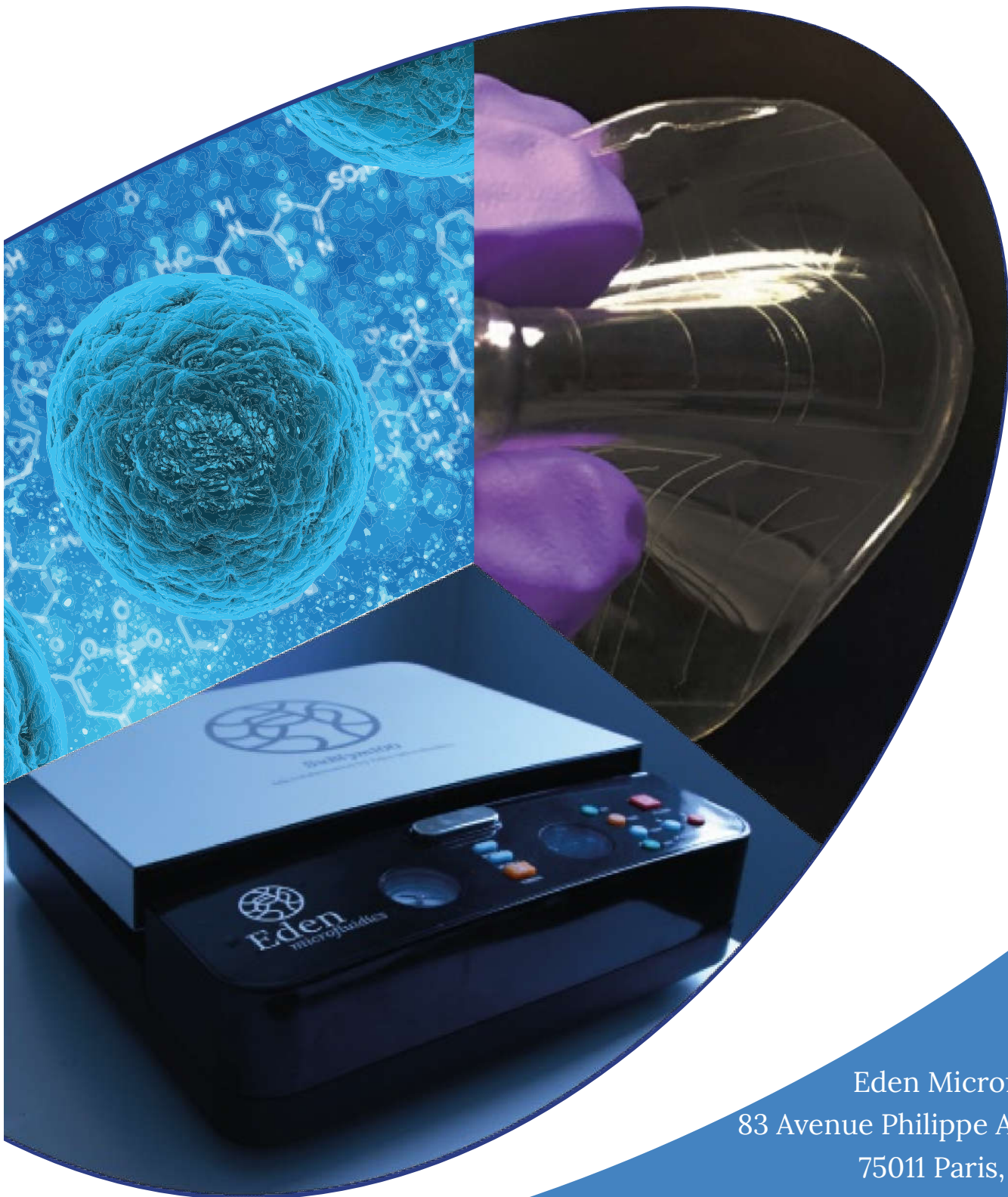
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