



Eden
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EpoxyTM

Epoxy/silicone mold
fabrication unit

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General description

Epoxy™ is a multi-functional and easy-to-use solution to replicate molds into epoxy resins.

The two-step system allow first the fabrication of a counter-mold in silicone (e.g., polydimethylsiloxane), which is then used to replicate the master in epoxy.

Safety notes

The aim of this quick start guide is to illustrate how to use equipments provided by Eden Microfluidics for Epoxy mold fabrication. Please, always consult the safety notes or procedures that may be related to your specific equipment prior to use.

As with 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.

Do not exceed maximum temperature stated in the equipment specification.

Table of contents

General Description.....	3
Safety notes.....	3
Table of contents.....	4
Materials	5
How to proceed	6
Mounting assembly	7
Specifications.....	8
Cleaning and maintenance	9

Materials

Materials provided :

- 1x Base
- 1x Silicone mold frame
- 1x Opening frame
- 1x Epoxy μ slide mold frame
- 1x O-ring, 126x3
- 4x Compression springs
- 4x Shoulder screws, 6x20/M5
- 6x Countersunk screws, 5/M3

Materials and equipments needed :

- Silicone (base + hardener)
- Epoxy (resin + hardener)
- Adhesive tape
- Master mold (Si+SU8 / Si-etched / glass-etched...)
- Oven
- Desiccator + vacuum source

How to proceed

Please refer to the mounting assembly, page 7.

To prevent degradation of the frames, we advise against the use of metallic tools for disassembly or unmolding procedures.

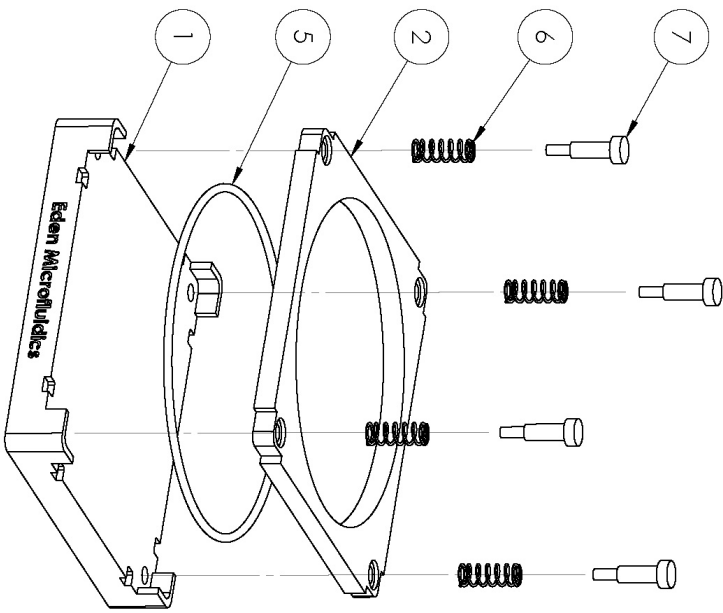
Step 1 : Silicone couter-mold fabrication

- Prepare and degas silicone mixture as recommended by the manufacturer
- Align and tape the master onto the **Base** (1) part. Make sure that the tape seals entirely the master to prevent any silicone leakage.
- Screw the **Silicone mold frame** (2) onto the **Base** (1) with the **O-ring** (5), as described in the drawing, page 7. Ensure that the O-ring and all surfaces are clean and dry.
- Cast silicone mixture in the opening frame and cure it according the manufacturer's protocol
- Unmold the **silicone counter-mold** (9*)

Step 2 : Epoxy mold replicate

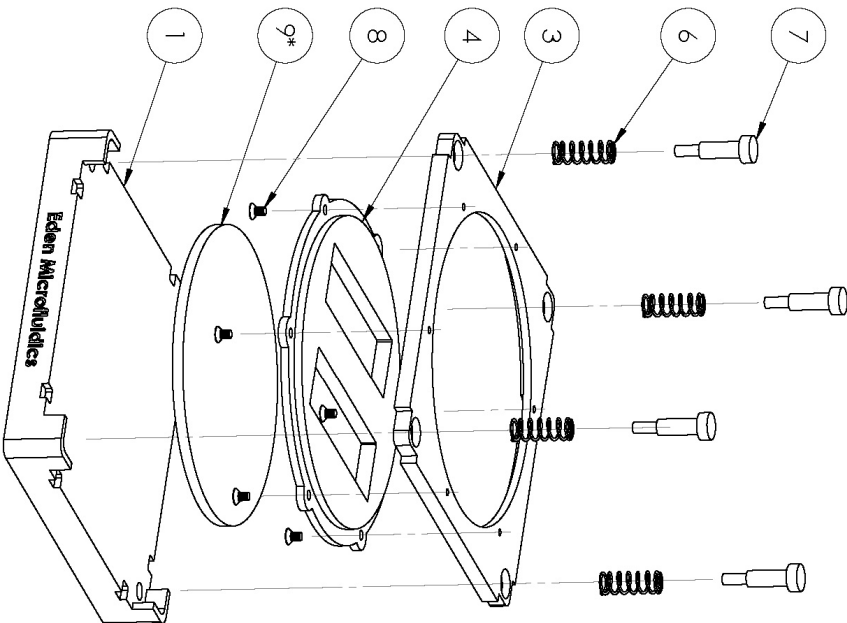
- Prepare and degas epoxy mixture as recommended by the manufacturer
- Place the silicone counter-mold onto the **Base** (1) part
- Align the silicone pattern with the **Epoxy mold frame** (3,4) and screw both frames together
- Cast epoxy solution onto the **silicone counter-mold** (9*) and cure it as recommended by the manufacturer
- Unmold gently epoxy mold(s) from the frame

Silicone molding assembly



- 1 : Base
- 2 : Silicone mold frame
- 3 : Opening frame
- 4 : Epoxy ylide mold frame (PTFE)
- 5 : Oring 126x3

Epoxy molding assembly



- 6 : 4x Compression springs
- 7 : 4x 6x20/M5 shoulder screws
- 8 : 6x 5/M3 countersunk screws
- 9* : Silicone Mold (not included; made during step 1)

Specifications

Specifications	Silicone molding kit		Epoxy molding kit
Weight	0.85 kg		0.9 kg
Temperature max	100°C		240°C
Suitable silicone thickness	From 3 to 7 mm thick		
Chemical compatibility	Anodized Al	NBR (O-ring)	PTFE
Acetone	✓	✗	✓
Alcohol : Ethyl	✓	✓	✓
Alcohol : Isopropyl	✓	<i>Not recommended</i>	✓
Alcohol : Methyl	✓	✓	✓
Bleach Solutions	✗	✗	✓
Detergent	✓	✓	✓
Methyl Dichloride	✗	✗	✓

Cleaning and maintenance

Make sure that the silicone is totally cured before unmolding it.

We recommend after each use to clean the aluminium and PTFE frames with acetone and ethanol and the O-ring with ethanol only.

Avoid contact between metallic tools and the frames, as it might damage the surface finish of the frames.

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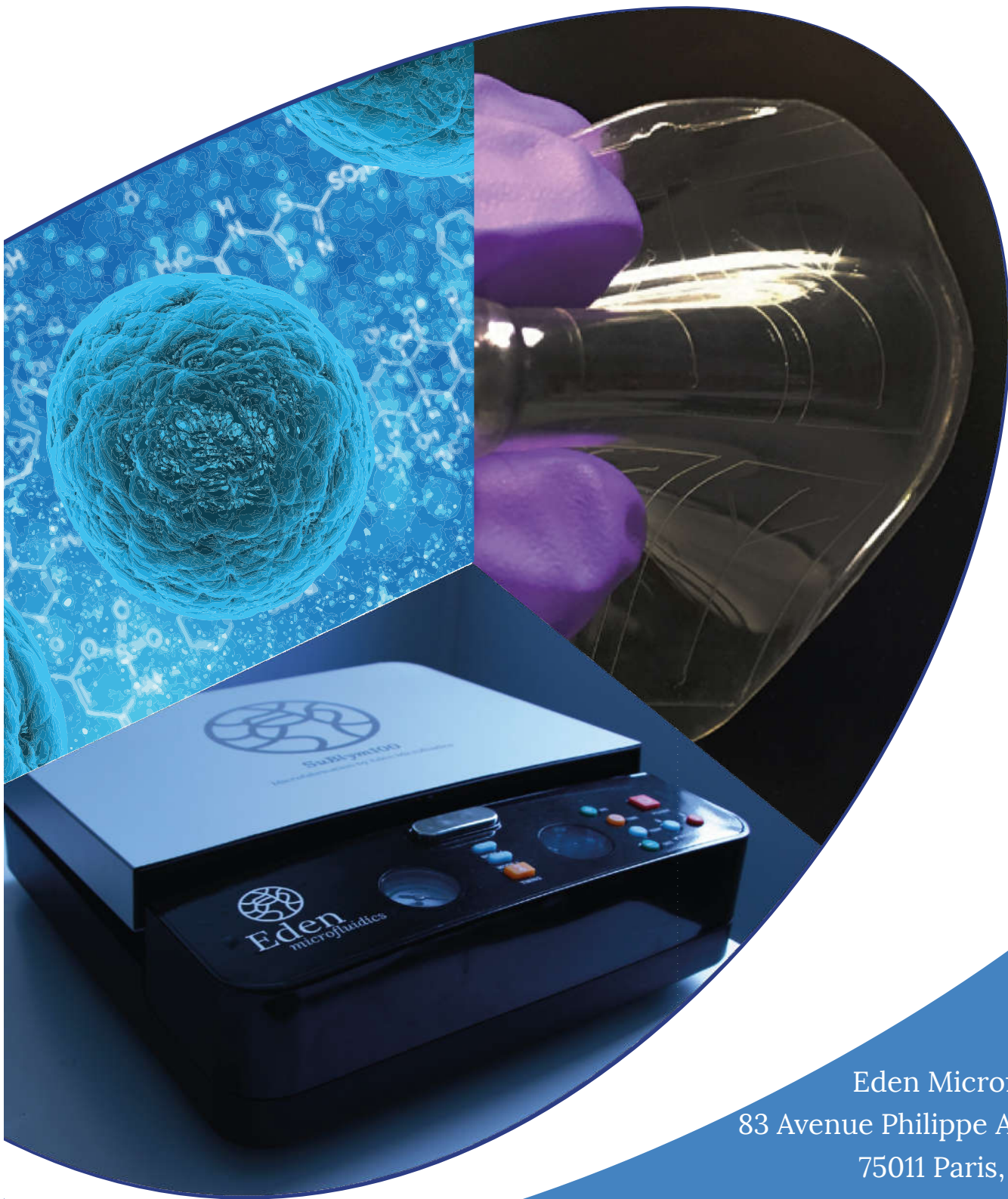
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