ATMsse OPTIspin SB20 User Manual

Version of 2020-03-04.

1. Introduction

This user manual explains how to operate the SSE manual coater line in Zone 13 for the coating and softbake of standard (novolak) i-line photoresists and LOR products.

The coater line is composed of several modules:

- HMDS hotplate OPTIhot VB20
- SSE coater OPTIspin SB20
- Präzitherm hotplate PTZ 28-2 ET
- Ceran500 ceramic hotplate

2. Login

- Login on “Z13 SSE Manual coater line” and if required “Z13 Ceram Hotplate” (for LOR 5A curing) with CAE on zone 13 accounting computer.

Z13 SSE Manual Coater line for Positive Photoresist

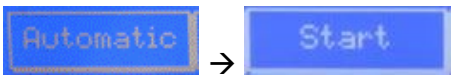
Z13 Ceram Hotplate for high Temperature

3. Surface preparation (HMDS or dehydrate)

- The OPTIhot VB20 is used for surface preparation.

- For dehydratation, just open the cover and leave wafer/chips for 10 minutes on the hotplate. The temperature is set to 135°C and should not be changed.
- For HMDS, place the wafers/chips on the hotplate, verify the lid and **close the cover**.
- On the controller (left one), from the main menu, click on “Selection”:

- Select the process and click OK. The recommended processes are :
  - HMDS standard (dehydrate + HMDS)
  - HMDS NO DEHYDRATE
- To start the process click on “Automatic” and then “Start

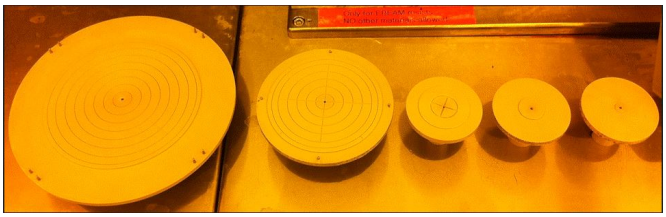


- Make sure to keep the cover closed during the whole process (**HMDS is toxic !**)
- At the end of the process, there will be several cycles of N2 purging and pumping to remove HMDS from the chamber. Check the counter to know when the program is done.

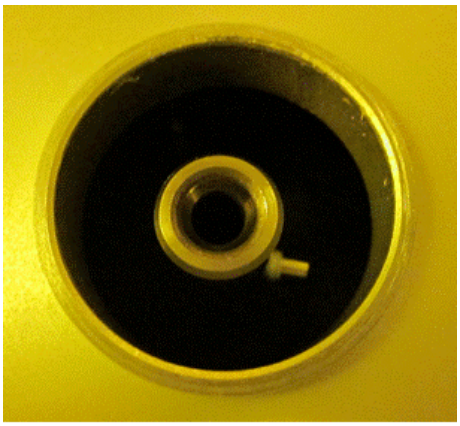
- Wafers can then be removed and loaded on the SSE coater unit.

4. Spin-coating

- To use the coater, you must wear additional protective gloves!
- Select your preferred chuck from the available ones based on the size/diameter of your substrate.



- Open the SSE glass cover in vertical position.
- Verify that the chuck axis is clean of resist residues and then insert the chuck.

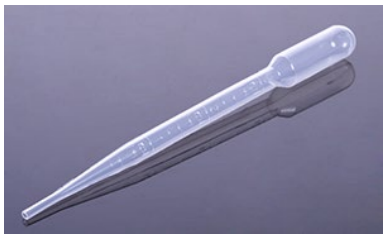


- On the controller (right one), from the main menu, click on “Selection”:

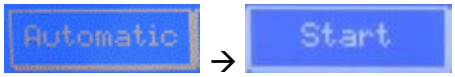
- Select the process and click OK. The recommended processes are :
  - STD_XXXX (wafers and low viscosity PR)
  - HV_XXXX (wafers and high viscosity PR)
  - CHIP_XXXX (small chips)

  XXXX is the rotation speed in [RPM] which is selected based on the spincurve of each photoresist and the target thickness.
- Load the wafer on the chuck and activate the vacuum. The pressure should be close to -0.8 Bar indicating good substrate fixation.

- Use a 3ml pipette to dispense the resist from the bottle onto the wafer. For wafers, a resist pool of 5cm diameter is dispensed at the centre. For small chips, cover the complete surface with photoresist.



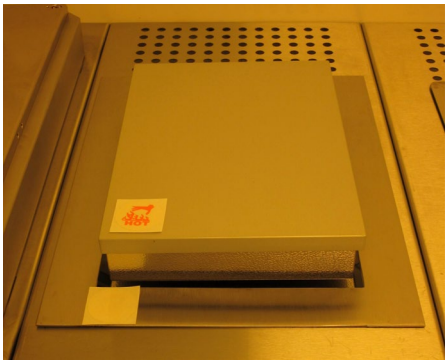
- When done, dispose of the pipette in the dedicated trash and close the SSE glass cover.
- To start the process click on “Automatic” and then “Start



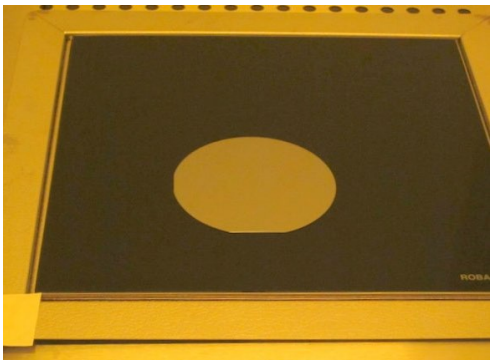
- At the end of the process, the rotation stops and the vacuum is released automatically.
- Wafers can then be removed with a tweezer and loaded on the hotplates for softbaking.

5. Soft-baking

- The präzitherm hotplate PTZ 28-2 ET (right of the coater) is used for the softbake of the photoresist.



- The Ceran500 hotplate (right of the bench) is used for the curing of LOR 5A at 190°C.



- The photoresist or LOR bake temperatures and durations can be found in the process section of the website.

  Note: For the LOR 5A curing at 190°C, you should use a tweezer with metallic end !

- Make sure to set-up the temperature beforehand to reach a stable and uniform condition.
- After coating, place the wafer at the center of the hotplate and record the bake time with a timer.
- When done, cooldown the wafers on a sheet of cleanroom paper before moving to the next step.
- At the end of the process, clean the work area and logout with CAE on zone 13 accounting computer.