

YES 310TA HMDS Vapor Prime Users Manual



Coral name: <none>
Model: YES-310TA
Location: NanoFab, Building 215, Room A102
Contact: nanofab_litho@nist.gov
Version: 1.0

OVERVIEW:

It is essential a photoresist adheres well to a substrate surface during a lithography process. A substrate's surface must be treated with an adhesion promoter before photoresist is applied to the substrate. The YES oven first completely dehydrates the substrate and then treats it with a hexamethyldisilazane (HMDS) vapor. The YES HMDS oven eliminates single substrate liquid priming and hotplate dehydration baking. The oven is set-up for batch processing of entire cassettes or multi-cassettes. Treated wafers can last several weeks without any change to surface adhesion.

RESTRICTIONS:

- Any materials that cannot withstand 150°C temperatures.
- Substrates should be clean and dry

SAFETY PRECAUTIONS:

- HOT CASSESTES. Use the handles when handling the cassettes. Do not touch cassettes with hands.
- Do not attempt to fill HMDS vessel. All HMDS fills will be performed by NanoFab staff.
- Please contact staff if any ammonia-like odor is detected.

CONTAMINATION CONTROL PROCEDURES

- Proper cleaning of substrates is recommended before starting any lithography process.
- Do not touch cassette with hands. Use proper handle for cassettes

HMDS PROCESS PROCEDURE

1. Determine if temperature controllers are set to the correct temperature of 150°C. Oven should always be left at this temperature. Contact staff is not at correct temperature.
2. Recipe #1 (see recipe below) is set-up for HMDS processing. Press the "ENTER RECIPE NUMBER". Type 1 and press done. Go back to main operator panel.

3. Load substrates into proper stainless steel cassette. Open the oven door, pick up the cassette with proper handle and place cassette in the oven. Close the door.
4. Press the “PRESS TO START” button. Process will begin and should take about 25 minutes.
5. At the completion of the process an audible alarm will sound. Silence the alarm by selecting the “PRESS TO SILENCE ALARM” button. Then select the “PRESS TO RESET” button. This will restart the flow of nitrogen into the oven.
6. Remove cassette using the proper handle and close the door. Be careful cassette and substrates will be very HOT. Place cassette on counter and wait a few minutes before removing substrates.

HMDS – Recipe#1 Summary

- Temperature: 150°C
- Number of dehydration cycle purges: 3
- Number of exit cycle purges: 3
- Process Duration (HMDS): 300 seconds
- Purge Pressure High: 500 Torr
- Purge Pressure Low: 10 Torr
- Base Pressure: 1 Torr
- Hi Abort Pressure: 20 Torr

Sequence:

1. Evacuate chamber to “Purge Pressure Low”
2. Fill chamber with nitrogen to pressure “Purge Pressure High”
3. Repeat cycle purge chamber - steps 1 and 2, three times set by “Number of dehydration cycle purges”
4. Evacuate chamber to “Base Pressure”
5. Open process gas – HMDS vapor into for “Process Duration” set point
6. Evacuate chamber
7. Fill chamber with nitrogen to pressure “Purge Hi”
8. Evacuate chamber to pressure “Purge Low”
9. Repeat cycle purge chamber - steps 7 and 8, three times set by “Number of exit cycle purges”
10. Fill chamber with nitrogen to pressure “Purge Hi”
11. Process complete