Usage Policies Notebook for Yield Engineering
YES 15 HMDS Vapor Prime Oven

Revision date
September 2014

Emergency Plan for HMDS Oven

Standard Operating Procedures for Emergencies

Contact information

Person	Phone number
Lab Manager	Jake Hes, 949-824-8239 (day), 562-522-8328 (alternate)
Director	G.P. Li: 949-824-4194 (day), 949-824-2047 (alternate)
Staff	Mo Kebaili: 949-824-8239 (day), 949-494-5892 (alternate)
Super User	Carlos Ruiz (818) 527-6349 (Anytime, voicemail or text only)

Hazardous chemicals, gases, and conditions

Hazard name	Description of hazard
Vacuum	Implosion
High temperature	Burn or ignition source
High voltage	Electrical shock, ignition source
Isopropyl alcohol	Flammable solvent
HMDS Vapor	Harmful

Authorized users for CHA Thermal Metal Evaporator

The following users have been authorized to use this equipment.

Name	Date	staff Initials

Usage Policies for HMDS Oven

Standard policies for usage

The YES vacuum oven that can be used for HMDS vapor priming. Using hexamethyldisilazane (HMDS), the unit functions as a standard vacuum vapor primer. Clean wafers are dehydrated through a series of heated (150C) evacuation and dry N2 (nitrogen) refills. HMDS vapor then evaporates into the evacuated chamber forming a monolayer on the wafer surfaces. Vapor priming is used to improve the adhesion of the photoresist to the wafer.

Contact information

The INRF staff or the lab manager can be reached at 824-8239 or 824-9831.

Authorized users

Only the INRF registered users who have completed the training and passed the certification may use this equipment. The users may only use the portion of the system for which they have been trained.

Training

The users must have received direct training from the staff in order to use this equipment. The users are expected to understand the nature of the system, as well as the proper control and use of the crystal monitor. Training varies slightly, depending on the material to be deposited on the substrate. Contact the staff for details or to arrange for a training session.

Usage logs

The users are required to log all activity in the log sheets provided. All users must log when they use the evaporator (date and time), which material they deposited, and when they completed their process in the user log sheet. If the users notice anything unusual, they should record it in the user log sheet, and add details in the maintenance log sheet. Any maintenance to the tool must be logged in the maintenance log sheet (maintenance staff only).

Safety equipment

There is no specific safety equipment for use on this tool, however, cleanroom gloves and tweezers should be used when handling substrates in the evaporator chamber. Care should be taken not to avoid hitting their head on the chamber or pinching their fingers upon lowering the hoist.

Safety

Heat – The inside chamber and inside door will be very hot (up to 150 ºC) and will cause severe burns if touched. Do not touch the sample tray or inside oven walls.
Hot Wafer Cassettes. 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 INRF Staff Please contact staff if any ammonia-like odor is detected.

Standard equipment and materials

The laboratory provides the following gas: N_2. Other gases must be cleared with the lab manager.

User maintenance

Please clean substrates prior to use

Waste disposal

Dispose of broken glass and broken wafers in the appropriate container. Dispose of alcohol soaked wipes in a waste container marked for flammable solid waste.

Scheduling

Reservation can be done on-line also the system can be used on a first-come, first served usage if no reservation was made.

Other issues

Users should record the base pressure on the log sheet prior to venting the chamber.

Users should remain physically present at the tool during evaporation to monitor the deposition rate and the current set point, and they should also monitor the chamber pressure during operation.

On completion of the evaporation, the system should be left in the idle mode, with the high vacuum valve open. Users should record the roughing time into the log sheet.

Any new materials introduced into the system need to be cleared with the lab manager or the staff.

At no time should a user adjust a system pressure regulator.

Non-standard use

Users may not modify any hardware on this equipment. For the usage of non-standard processes, gases or materials, contact the staff or the lab manager.

Usage Notes for HMDS Oven

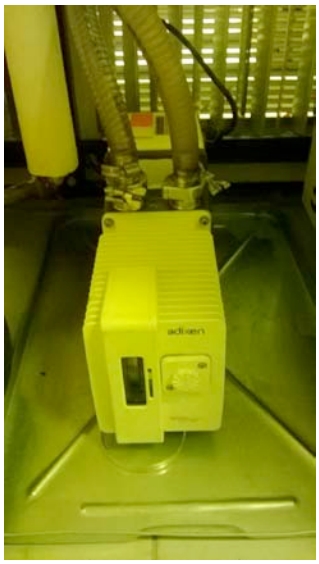
Guide for using the HMDS Oven correctly

YES HMDS Vapor Prime Oven

Follow these steps for evaporation of metal on a silicon or glass substrate.

1. **Initial System check and setup:**
   a. The system is not in used by other lab users.
   b. Check the log sheet and verify that the system was working properly with the last user.
   c. Check to see that the oven is turned on(If off turn power on)

   d. Check to see that the pump is on, the oil level and cleanliness(If off turn Vacuum Pump on)

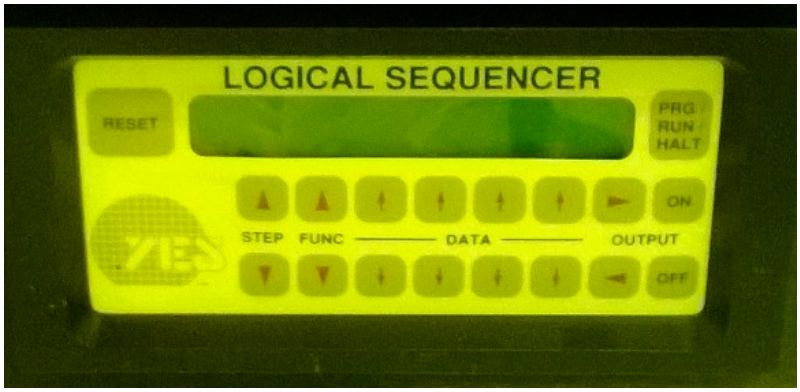


e. Check Vacuum Gauge to verify they are in range

f. Check HMDS level, if low contact staff

2. **Operation:**
   a. If the oven was just turned on, wait for temperature to reach 102-104 ˚ C. If oven has been on for a while and temperature does not reach 102 ˚ C, please contact staff.

   b. Sequence 1 is used for HMDS Vapor Prime Process, while Sequence 2 is used for substrate dehydration.
   c. Press the STEP button to select the proper sequence.
   d. Pull the door open and insert substrates into cassette
   e. Close the
   f. door
   g. Press the black START button



h. An alarm will sound with flashing buton ~30 minutes for sequence 1, and ~60 minutes for sequence 2
i. Pull the door and remove samples
j. Close the door, and hit the reset button