

Varian Evaporator Manual

Standby conditions

1. Roughing pump is off and Roughing Valve is closed.
2. Crystal Monitor cooling lines are closed (horizontal).
3. HIVAC valve is **open** and chamber is at low vacuum.
4. Crystal monitor and heater power supply are off.
5. Ion Gauges should be on and vacuum should be getting better.

Loading your sample

1. Close "HIVAC" valve by turning the micrometer fully clockwise.
2. Turn off Upper chamber Ion gauge by depressing the "ON" button of the controller.
3. Vent chamber using "Vent" valve hooked to Lab N2 (takes a couple of min).
4. Close "Vent" valve.
5. Raise bell jar by pressing and holding the toggle switch in the "UP" position on the Hoist Control panel. .
6. Clean the Black Bell jar O-Ring with a clean, dry wipe. Clean the O-Ring mating surface with a different part of the wipe.
7. Load sample onto Copper block using scotch tape, make sure there are no pieces of tape left from previous depositions, always keep the block clean.
8. Place sample block facedown onto sample plate.
 - a. It is okay to have the shutter open when you do this. Close shutter after you are done positioning your sample block.
9. Load 1-4 metals on post in a Clockwise direction. Remember to always turn the source turret in a Counter Clockwise direction.
 - a. It is a good idea to practice turning the source turret to get a feel for when the posts make good contact with the spring contact.
10. Make sure there is a clean piece of transparency taped to the inside of the Bell jar. Make sure you use only Copper or Aluminum tape for this, these are easier to remove compared to scotch tape, and thus helps in keeping chamber clean.
11. Gently lower the bell jar by pressing the toggle switch into the "DOWN" position of the Hoist Control Panel. You will have to steady the bell jar with your free hand as it lowers onto the chamber.
12. Turn on the Roughing Pump by pressing the "Start" button on the Roughing Pump Control.
13. Open Roughing Valve.
14. After analog vacuum gauge reaches 100 mTorr, close the Roughing Valve and open the "HIVAC" Valve slowly to the mark designated on the side of the machine.
15. Turn off the Roughing Pump by pressing the "Stop" button on the Roughing pump control..
16. At this point you can turn on the Upper chamber Ion gauge to check the pressure by depressing the "ON" button on the controller.

Depositing Films

1. Wait for pressure to drop below 2×10^{-6} Torr.
2. Open the cooling water valve to the vertical position. This valve is located on the floor in front of the Roughing Pump.
3. Depress the "ON" on the Inficon Deposition monitor.
4. Choose your metal film and check the parameters.
5. Double check that your source is selected and the turret post is firmly seated.
6. Make sure the Current dial on the heater power supply is turned all the way off.
7. Turn on the heater power supply slowly.
8. Turn the Dial Clockwise a small increment. You should see the needle jump immediately to 40-50% full scale. This is normal.
 - a. If the indicator does not show any current flow, you must immediately turn the dial to 0 and turn off the Heater Power Supply.
 - b. Then wiggle the source turret until it is seated more firmly.
 - c. Repeat Step 8 until you see the dial jump when current is first applied.
9. Step up the current slowly in stages until the Xtal Monitor begins to read deposition.
10. Allow about 10-30 Angstrom to be deposited with the shutter closed to burn off any contamination of the source.
11. Open the shutter and zero the Xtal Monitor simultaneously.
 - a. NEVER exceed a deposition rate of 10A/sec with this device.
12. After you have deposited the desired thickness, close the shutter and slowly turn down the dial on the Heater Power Supply till it is at 0.
13. Turn off the Heater Power Supply.
14. Wait 15-20 Min for sample to cool.
15. For multiple depositions, repeat Steps 4-15
16. Turn off the cooling water by turning water valve to the horizontal position.

Removing Sample

1. Close "HIVAC" valve by turning the micrometer fully clockwise.
2. Vent chamber using vent valve hooked to Lab N2.
3. After bell jar pops open, close vent valve.
4. Raise bell jar using the hydraulic lift.
5. Clean the Black Bell jar O-Ring with a clean, dry wipe. Clean the O-Ring mating surface with a different wipe.
6. Remove Sample block and source boats. Clean up any debris in the Chamber with a Vacuum Cleaner.
7. Replace transparency sheet on the inside of the bell jar with Aluminum/Copper tape.
8. Gently lower the bell jar by pressing the toggle switch to "Down" on the Hoist Control. You will have to steady the bell jar with your free hand as it lowers onto the chamber.
9. Turn on the Roughing Pump by pressing "Start" button on Roughing pump control..
10. Open Roughing Valve.
11. After analog vacuum gauge reaches lower than 100 microns, close the Roughing Valve and open the Hivac Valve.
12. Turn off the Roughing Pump by pressing the "Stop" button on Roughing pump control.
13. The system is now in Standby Mode.
14. Sign Out of the Log Book.

Boats (1 7/8" L X 1/2" W X 1/16" D)

Tungsten – Lesker Part # EVSME5005W – Price \$11.50 – Qty: 5 per pkg. (per 8 Apr 08)

Tantalum – Lesker Part # EVSME5005TA – Price \$22.86 – Qty: 5 per pkg. (Per 8 Apr 08)

Molybdenum – Lesker Part # EVSME5005MO – Price \$13.57 – Qty: 5 per pkg. (Per 8 Apr 08)

Source Materials (Approx. 1/8" X 1/8" pieces)

Gold - Au – EVMAUXX50G - \$45.00 per gram – Qty: 5 per pkg. (Per 8 Apr 08)

Gold/Germanium – AuGe –

Nickel – Ni – EVMNI45EXEA - \$45.00 per 25g (per 8 Apr 08)