

1.0 Blue-M Convection Ovens

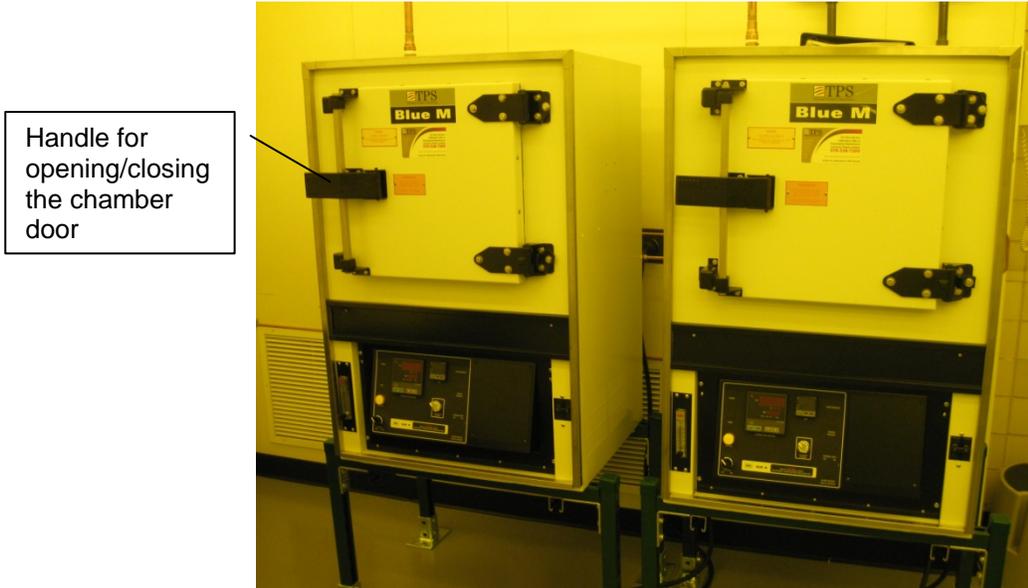


Figure 1: Blue-M Convection Ovens (Model DCC-146-C-ST350).

1.1 Introduction

NUFAB has two Blue-M ovens as shown in Figure 1. Blue-M Ovens are for baking photoresist on silicon or quartz/glass wafers only. Any other parts and materials other than photoresist must be approved by the staff before use. Both ovens are identical and this document applies to both.

The ovens have single set-point temperature controller, profiling is not available. The temperature range is 35°C to 250°C. Inert atmosphere can be obtained by flowing nitrogen if desired.

Only trained and approved (qualified) users may use this tool.

1.2. Features and Specifications:

Temperature Range	35°C to 250°C
Temperature controller	Single set-point PID
Atmosphere	Nitrogen or Air
Maximum Substrate Size	200 mm
Resolution	±0.1°C
Uniformity	±1%
Over-temperature protection	Available with audible alarm
Filtration	HEPA Filter

1.3 Applicable Documents

- a) Operation and maintenance manual.
Hardcopies located at the ovens.

1.4 Safety

- a) Do not use any unapproved materials. Only photoresists on silicon or glass/quartz wafers are allowed. Any other materials must be approved by staff before use.
- b) Do not open oven panels, high voltages are present.
- c) It is connected to compressed nitrogen that can cause asphyxiation.
- d) Do not smell or inhale photoresists or other coating materials, those might be toxic.
- e) Interior surfaces of the ovens and parts inside are hot during operation. Use proper protection to avoid burns.

1.4.1 PPE (Personal Protective Equipment) Required:

Heat resistant gloves and safety glasses or goggles are required to use this equipment.

1.5 Operating Procedure



Figure 2: Front panel of the oven.

1.5.1 Startup

- a) Activate the equipment in FOM.
- b) Turn on the power ON/OFF breaker switch (Figure 2) by lifting it up.
- c) Turn the chamber power switch (Figure 3) to ON position. The temperature controller will energize and the chamber power light will illuminate.
- d) Turn on the cooling power switch (Figure 3), its light will illuminate.
- e) If inert atmosphere is desired, turn on the nitrogen by turning the knob on the flow meter (Figure 2) CCW until the ball in the flow meter rises to about mid scale.

1.5.2 Using Temperature Controllers

There is chamber temperature controller (ST350) that is used to set the temperature of the oven. There is also over-temperature protection controller UT150L (Figure 3). It is set to 261°C (11°C above the rated maximum temperature of the oven). Do not attempt to change this setting. Its purpose is to shut down power to the heater if because of a malfunction temperature reaches this value. It also gives the audible alarm. If the audible alarm is on, inform the staff immediately.

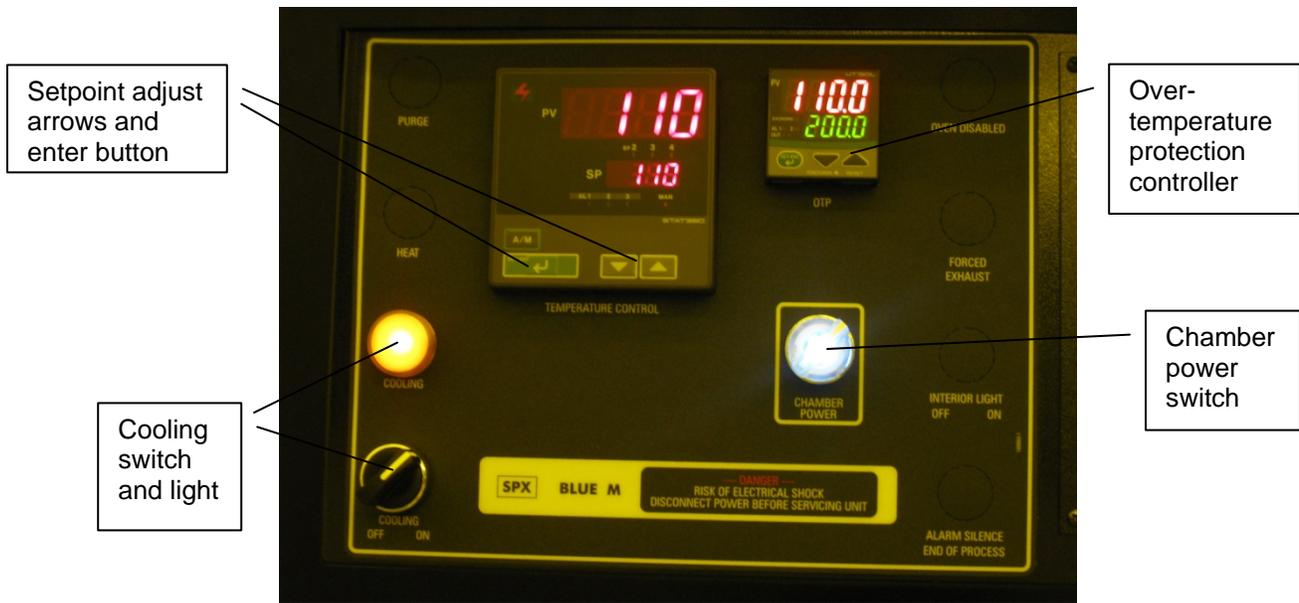


Figure 3: Close-up of the controls.

To change the chamber temperature use the up/down arrows (Figure 3) and the SP display will change accordingly. Use the enter button to set the new set-point value. The bigger chamber temperature display will start changing towards set-point.

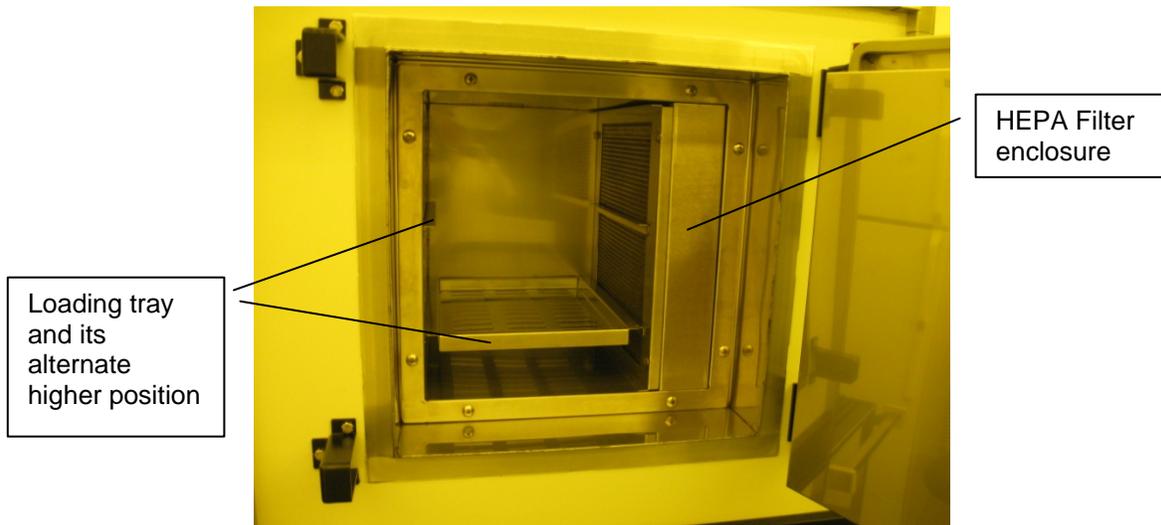


Figure 4: Chamber with door open.

1.5.3 Loading Samples

Once the chamber temperature reaches the desired value, the samples can be loaded. Follow the procedure below for loading the samples.

- a) Open the chamber door by pulling on the handle completely as shown in Figure 1.
- b) Use heat resistant gloves to remove the tray (Figure 2) and place it on a surface that can handle its temperature like a metal rack.

- c) Cover its top surface with aluminum foil and place samples on this. Do not place samples directly on the tray.
- d) Load the tray back in the oven in lower or higher position. There is no known difference in these positions as far as temperature is concerned.
- e) Close the door completely and push on the handle to lock the door.

1.5.4 Unloading samples

The samples can be unloaded once the desired time has elapsed. The procedure is same as in the section above except that the samples are removed from the tray.

1.5.4 Shutdown

- a) If nitrogen is on, turn it off by turning the knob on the flow meter CW (Figure 2) as the ball in the tube comes down all the way.
- b) Turn off the cooling power switch (Figure 3).
- c) Turn the chamber power switch (Figure 3) to OFF position
- d) Turn off the power ON/OFF breaker switch (Figure 2) by dropping it down.
- e) Deactivate the equipment in FOM.