GENERAL PROCESS AND OPERATION SPECIFICATION

Tegal Plasmaline 421 Asher

I. SCOPE

a. The purpose of this document is to describe requirements and basic operating instructions for the Tegal Plasmaline 421 Asher. This tool is an oxygen barrel asher used to remove organic films (particularly photoresists). Oxygen plasma and heat are used to burn or "ash" organics from substrates that remain after previous processes.

II. SAFETY

a. Be sure that you are trained and signed off to use this equipment.
b. Be sure to keep all doors and protective shields in place before operating this equipment.
c. Use care when operating around high voltage, RF energy, or high temperatures.
d. High-pressure gas cylinders for this tool are stored in the service corridor. Notify staff if you believe a gas is low.
e. The emergency stop is the "AC ON" button.
f. When the chamber is open, do not touch the inside of the chamber.
g. Use caution when loading/unloading samples. The chamber table is usually very hot, so avoid directly touching it, the loading tray, loading boat, or any sample that is being removed. Allow samples to cool before handling them.
h. If you are unsure about any procedure or indication while operating this equipment, contact a staff member or trainer for assistance.

III. APPLICABLE DOCUMENTS, MATERIALS AND REQUIREMENTS

a. For more information on the tool and its processes, AggieFab staff can provide the equipment manual upon request.
b. This tool is intended for a relatively wide range of substrate and target materials.
c. Gases are stored in the service corridor and are available through manual flow controllers on the right side of the tool.

IV. OPERATION

a. <u>Vent chamber:</u>
    i. Press "AC ON".
    ii. Press the orange "START/STOP" button. (if it isn't already lit)
    iii. Set the knob to "STANDBY"
    iv. Flip the "VENT" valve.
    v. Wait for the chamber to reach atmosphere.
    vi. Close the "VENT" valve.
b. <u>Load sample:</u>
    i. <u>CAUTION!</u> The tool may be hot.
    ii. Samples will ash faster if you don't use the loading trey or the boat.
        1. If your samples are small, use a carrier wafer with kapton tape.

c. Pump down:
    i. Turn on the pump.
    ii. Switch the silver "PUMP" switch to "ON".
    iii. Hold the door closed while switching the knob to "CH 2".
        1. The chamber door may be hot.
        2. You should feel the door seal under vacuum.
        3. Only use "CH 2" and "Standby" on the manual side. Ignore the automatic side and the "CH1" settings.
    iv. Make sure "T.C. GAUGE" switch is set to "CHAMBER".
    v. Wait for the chamber to stabilize (should be around 150-200 mT)
        1. Make sure the "VENT" valve is closed.
d. Run Manual Process:
    i. Press "GAS ON".
    ii. Turn on and tune the process gasses:
        1. Turn on the left and right side process gas valves.
        2. Turn on the oxygen and argon flows.
        3. Turn the silver needle valves above the flow meters until desired gas ratio is achieved.
        4. Change the desired chamber pressure/overall flow rate by adjusting the flow meter beside the pump controls.
    iii. Change the "CHANNEL 2" time as desired.
    iv. Press "RF ON".
    v. Press "TIMER ON".
    vi. Wait for timer to expire and the green "COMPLETE" button to light.
        1. The RF power interferes with the temperature gauge. If you want to know the temperature, you'll have to turn off the RF power.
e. Finish process and retrieve sample:
    i. Turn Mode knob to "STANDBY".
    ii. Turn off Argon and Oxygen flow valves.
    iii. Turn off the right and left side process gas valve.
    iv. Turn off pump.
    v. Open the "VENT" valve.
    vi. Wait for the chamber to reach atmosphere.
    vii. Close the "VENT" valve.
    viii. Remove sample. (CAUTION! The tool and sample may be hot)
f. Pump down:
    i. Hold the door closed while switching the knob to "CH 2".
    ii. Wait 5 seconds.
    iii. Turn the knob back to "STANDBY".
    iv. Turn off the tool by pressing "AC ON".
    v. Double check that the "VENT" valve is closed.

V. SIGNATURES AND REVISION HISTORY

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