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# Harvard Forest Spex Sample Prep Mixer/Mill Protocol

1. Prep samples for mixing/milling. Use steel vials for this process.
    a. Label steel vial with corresponding sample ID (labeling tape works best).
    b. Close one end of vial with lid and Load sample into vial (foliage or soil).
    c. Add 1-2 steel balls and Close the other end of vial. (CAT#3127).
    d. Place vial into holder (holds upto 4 vials).
2. Open mixer/mill lid and Secure holder into clamp. (See familiarize yourself with safety features below for how to do this.).
3. Turn on mixer/mill (switch is located on the back right-hand side of the machine).
4. The timer will come on automatically. The default timer setting is 5 minutes and 0 seconds (5:00). Use the MIN and SEC up/down buttons to change the mixing/milling time. (Holding a button down will advance the time setting rapidly. Max run time is 100:00.).

**Be sure that you have properly clamped all vials in the mill before running**

5. Press the START button to initiate mixing/milling. There is a delay of several seconds before the timer will start counting down.

    Note: If ERROR: LATCH FAILURE is displayed instead of numerals when the START button is pressed, the interlock is not properly engaged. Clear the timer by pressing the STOP button, correct the problem, and press the START button.

6. Once mixing/milling is finished, the timer display will indicate RUN COMPLETE. There is a 5 second delay before the lid can be opened. **Never try to open the lid before interlock releases; this can damage the lid latch.**

    Note: To end grinding prior to the end of the set time, press STOP. This will stop the motor and reset the timer.

7. Open lid, Remove holder from clamp, Empty samples into clean plastic container/vial. (You can remove tape label from steel vial and place onto plastic container/vial.).
8. Clean steel vial and balls with cotton swaps and ethanol. (Use of ethanol instead of water will allow vials to dry quicker and prevent rust.).

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9. Once mixing/milling of all samples is complete, clean steel vials as indicated in step 8. Store vials completed open.

10. Close lid and Turn off mixer/mill (switch is located on the back right-hand side of the machine).

Familiarize yourself with the standard safety features of the machine:

A. Manual Lid Latch – This latch should be closed before the mill is run. To close the latch, pull the tab up and out, engage it with the lid and push the tab down. To open, pull the tab up and out.

B. Pneumatic Cylinder – This cylinder keeps the lid from being closed accidentally or abruptly when the lid is fully open.

C. Clamp – The clamp is opened and closed by the knob at the end of the threaded shaft. The locking tab is on the shaft between the knob and the clamp. When the clamp is closed on a vial, tighten the locking tab. When opening the clamp, first loosen the locking tab. **When opening the clamp – hold the silver vial base to prevent it from falling out!**

D. Safety interlock – located under the lid on upper right hand side – this switch cuts off power when lid is opened. **Do NOT disconnect or damage this switch!**

E. Time-Delay Latch – These latches automatically prevent the lid from being opened until 5 seconds after the mill has stopped running.

F. Refer to the 8000M Mixer/Mill Operating Manual for further information.

Notes:

1. To mill Hemlock foliage grinding for 10 minutes was sufficient for C:N quality samples.

LABEL IT OR LOSE IT!

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