OPERATION OF THE TOUSIMIS SAMDRI-780A CRITICAL POINT DRYER

Version 2.2 November 27, 2001

Note: All the valves are needle valves and it is not necessary to tighten them excessively when closing. Over-tightening the valves will damage the valve seats.

1. Make certain all valves (**INLET, COOL, BLEED,** and **PURGE-VENT**) are closed, chamber lid is on but knurled nuts are loose, and the high pressure CO_2 supply hose is connected.

2. Turn **POWER / LAMP** switch on, and open the CO_2 Tank Valve.

3. L Check that the O-ring is clean, smooth and seated properly in the groove.

4. Open the **COOL VALVE**, cool chamber to 0EC (it should take less than 90 seconds from room temperature). Close the **COOL VALVE**. Open and Close the **COOL VALVE** as needed to maintain the chamber temperature between 5 - 10 EC until the heating step # 11.

5. Remove three knurled nuts and chamber lid. Place sample(s) in chamber, cover sample(s) with approximately one pipette full of 100% EtOH. Replace chamber lid, and hand tighten the three knurled nuts equally.

6. Slowly open the **INLET VALVE** until chamber starts to fill, and allow chamber to completely fill.

7. When chamber is full, open the **INLET VALVE** four full turns. (Check chamber temperature.)

8. **FLUSHING CYCLE:**

   - With **INLET VALVE** open, open **PURGE-VENT VALVE** and allow CO_2 to exhaust from chamber at a moderate rate for 30 seconds and close **PURGE-VENT VALVE**.

   L **CO_2 liquid level must not drop below specimen level** 7

   - Adjust chamber temperature if needed

   - Wait 3 mins for fresh CO_2 to exchange with residual EtOH in specimen(s)

   - Repeat **FLUSHING CYCLE** until all EtOH has been removed (generally three times for most samples)

9. After final flush of chamber, cool chamber to 5EC with **COOLING VALVE**. Close **COOLING VALVE**. Close **INLET VALVE**. Close CO_2 tank valve.

10. Open **PURGE-VENT VALVE** and slowly lower CO_2 liquid level to 2/3 full (mark on back of chamber wall). Close **PURGE-VENT VALVE**.

11. Turn **HEAT SWITCH** on. **HEAT** light will go on until chamber reaches 33 - 36EC, and will turn on and off as needed to maintain temperature above 32EC.

12. As chamber temperature increases the chamber pressure will also increase, if pressure exceeds **1250 PSI** open the **BLEED VALVE** to release some of the pressure.

13. When both pressure and temperature reach **1073 PSI** and **31.1EC** respectively (the critical point) slowly open the **BLEED VALVE** and allow pressure to decrease at a rate of approximately 100 psi/min. (Placing the exhaust hose in a flask of water, adjust **BLEED** rate until bubbles just begin to coalesce - do *NOT* place hose in flask until bleed valve is openned.)

14. When pressure reaches **0 PSI**, fully open **BLEED VALVE** and **PURGE-VENT VALVES**, turn off **HEAT** switch. Remove hose from flask !!!!

15. Remove Knurled nuts and open chamber lid. Carefully remove specimen(s). Replace Chamber lid and loosely replace knurled nuts.

16. Open **COOLING VALVE** to release any remaining CO_2 in high pressure hose.

17. Make certain all valves (**INLET, COOL, BLEED,** and **PURGE-VENT**) are closed, chamber lid is on but knurled nuts are loose, and the CO_2 supply tank is valve closed.

18. Turn **POWER / LAMP SWITCH** off. Sign Log Book.