



HOW TO FILL LN₂ ON 7T PHARMASCAN AT VIVARIUM

1. **General**

- a. Everyone that is participating at the filling session has to be familiar with safety rules regarding MRI and cryogenics and has to have worked with cryogenics before.
- b. It is important to wear proper protection while handling cryogenics – thick gloves that can isolate against low temperature, goggles to protect the eyes from splashing liquid and possibly ear protection at the beginning of the filling procedure.
- c. During filling, one should avoid transfer of N₂ gas into the magnet (only liquid N₂ should be transferred).

2. **Preparation**

- a. Bring the LN₂ tank from the storage room on the 4th floor down to the MR room.
 - No one is allowed to use the elevator together with the tank
 - The tank should be placed outside the red line mark on the floor
- b. Check the pressure in the tank. It should be between 100-120. If it is bigger than 120, open the pressure (gas) release valve.
- c. Prepare the transfer tube: remove the screw from the top of the magnet and slide it onto one end of the N₂ transfer pipe. In addition, slide one or two appropriately sized gaskets onto the transfer pipe.
- d. Connect the other end of the transfer tube to the valve marked “liquid” on the LN₂ tank.
- a. Check that all O-rings are ok. If broken, replace.

3. **To begin filling**

- a. While holding one end of the transfer tube firmly in your hand, open the main valve on the LN₂ tank. You will fill a push and hear a loud hissing while gas (i.e, pressure) is being emptied from the tank.
- b. Wait until you see a flame of liquid coming out (the loud sound will stop at this point). If the flame is too short, open the valve more and vice-versa. When the flame is right, close the valve (try to remember by how much you had to rotate the valve).
- c. Open the exhaust pipe at the back of the magnet. It is important not to open it too soon because water vapor could condense inside the magnet.
- d. Insert the transfer tube into the magnet from the top.
- e. Open the main valve on the LN₂ tank again (by the same amount as in step b-c).

4. **During filling**

- a. Wait that the system stabilizes. One should see a white flame coming out of the magnet reaching the wall at the back.
- b. **The % of Nitrogen on the cryo-monitor should start increasing.**
- c. If the filling rate is correct, one should hear a ticking sound when placing an ear onto the bottom side of the LN₂ tank.
- d. When either the exhaust sound changes or the back flame dies out, the tank is probably empty. Close the main valve on the LN₂ tank immediately!
- e. If/When the monitor is showing 100%, start paying attention to the exhaust pipe at the back. When the magnet is completely full, you will see liquid pouring out the back pipe. Close the main valve on the LN₂ tank immediately!

5. **Finishing up**

- a. Take out the transfer tube from the magnet. Use heat gun to thaw the screw.
- b. Take the screw and the gasket off from the transfer tube and screw it tightly back onto the opening on top of the magnet.
- c. Disconnect the transfer tube from the LN₂ tank. Use a set of wrenches if necessary.
- d. Close the exhaust pipe at the back of the magnet. Use heat gun if necessary.
- e. Close again all the valves on the LN₂ tank, especially if there is still liquid in the tank.
- f. Write a log of N₂ fill into the logbook.