

Standard Operating Procedure for Filling a Liquid Nitrogen Dewar - (specific for the equipment in Dupont)

Note: When filling a liquid nitrogen (LN2) Dewar, the **doors must be open at all times and the Ventilation must be turned on** to prevent asphyxiation from the gas displacing the air in the room.

ALARM: IF AT ANY TIME YOU HEAR OR SEE THE OXYGEN SENSOR ALARMS SOUNDING PLEASE LEAVE THE AREA IMMEDIATELY AND CONTACT 911 FOR ASSISTANCE.

PPE Required:

Gloves: Cryogenic gloves

Eye Protection: Goggles **and** face shield

Additional: Closed toed shoes, long pants, long sleeves or lab coat.

Equipment:

1. Use only equipment approved for cryogenic liquids.
2. Always ensure that relief valves are not clogged or blocked.
3. Only fill 160 liter dewar directly from main filling line. If you need to fill a smaller dewar please contact DOHS (x8475) for assistance.

Procedure: To transfer liquid nitrogen you must:

1. *have attended the Keen liquid nitrogen training session*
 2. *be supervised the first time you fill a dewar*
 3. *always have two people*
 4. *remove cart from aisle way out to the hallway so that egress is not limited*
- *Please contact your supervisor or Larry Smith at 831-0366 for assistance*

To Connect and Fill Dewar:

1. Reposition the 160 liter (tall) LN2 Dewar so that Liquid Port (with liquid tab) tab is facing the main LN2 filling line.
2. Securely attach vent hose to Vent port on the 160 liter LN2 Dewar.
3. Take main filler line hose and attach to Liquid port on 160 liter LN2 Dewar. Make sure just finger tight. Use wrench to tighten to 1/8" of a turn. (Do not over tighten or you will have trouble disconnecting the line).
4. Open the vent tap on the 160 liter LN2 Dewar all the way.
5. Open the liquid tap on the 160 liter LN2 Dewar a few turns.
6. Open the red valve slowly so that it is parallel to interior wall.

To Disconnect Dewar:

7. Close the red valve slowly so that it is perpendicular to interior wall.
8. Close the vent and liquid taps all the way on the 160 liter LN2 Dewar.
9. Open the hose drain valve and let residual bleed out.
10. Wait about 1 minute before removing the line from the Liquid and vent ports on the 160 liter LN2 Dewar.
11. Turn the hose drain valve off.
12. When moving the 160 liter LN2 Dewar the relief valves should be located on the far side of the Dewar to prevent LN2 from releasing/pouring out on you.
13. Turn off lights/ventilation switch.

Exposure: In the case of cold burns (frost bite):

Eye: Flush eye with cold water for 15 minutes and contact 911 for assistance

Skin: Flush affected area with cold water for 15 minutes and contact 911

Inhalation: Remove victim from area to fresh air if it is safe to do so and contact 911

Spills: In the event of an accidental release the rapid expansion of nitrogen will displace oxygen, posing an asphyxiation hazard.

Minor spills - (a few drops) Alert others and leave area immediately. Contact your supervisor and the Departmental Chemical Hygiene Officer (Dr. Bulkowski x 2467).

Major spills -

- Alert others
- Leave area immediately
- Activate external emergency shut off valve
- Pull the building alarm to evacuate
- Exit building

Emergency/Contact numbers:

1. Public Safety 911
2. Department of Occupational Health and Safety 831-8475
3. Chemical Hygiene Officer (Larry Smith) 831-0366