Realize. Safety first.

Using Liquid Nitrogen in a Pressurized Dewar

Hazards of Liquid Nitrogen

Thermal burns (frost bite) **Pressure buildup** in closed containers **Suffocation** (nitrogen displaces the air in the room)

Note: for more detailed information on cryogenic material safety, please see: http://bit.ly/cryogen-handling

How to protect yourself & others -When transporting pressurized dewars of liquid nitrogen (>4L):

- Because liquid nitrogen can displace oxygen, you never want to be in an enclosed space with a dewar: if they vent or fail, you might suffocate.
- This is why you should never ride on an elevator with a dewar, and should take precautions to ensure no one else does.
- Hang a sign on the dewar that states “WARNING Please wait for the next elevator. Hazardous substances being transported”
- Ideally, there should be someone waiting on the upper floor to meet the dewar, otherwise you will have to run up the stairs in time to catch the elevator. You may have to call the elevator back up to your floor if you don’t make it in time.

Before dispensing from a pressurized dewar

Put on your PPE -Standard lab PPE is required to protect against thermal burns:

- Lab coat
- Safety glasses
- Enclosed shoes
- Long pants (no cuffs)

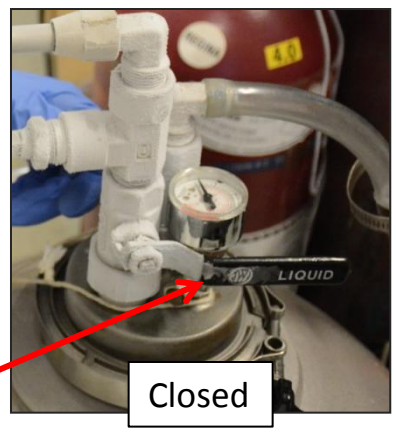
- In addition to the above, thermally insulated gloves that are easy to remove quickly should be worn

- This ensures that if some liquid gets underneath the glove, it can be removed quickly before prolonged exposure to your skin results in thermal burns

How to dispense from a pressurized dewar

- Liquid nitrogen splashes can cause burns, so to help avoid splashing and spraying while dispensing, attach a phase separator to the dewar before dispensing into a smaller dewar for your use.
- Place a **suitable*** small dewar under the dispenser so that the phase separator is as deep within the small dewar as possible

Dispensing



Closed

- You can now turn the valve on the dewar to allow the liquid nitrogen to dispense. Turning the handle so that it is pointing up will cause the liquid nitrogen to be dispensed.
- Once you have dispensed the required amount, close the valve by turning it so that it points to the side

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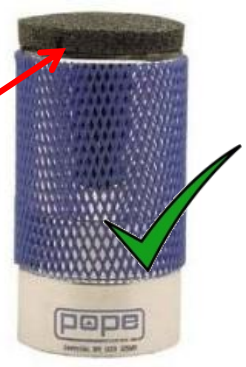
- Only use dewars/flasks designed for cryogenic materials. Not all insulated containers are created equal. A Thermos bottle is not suitable, as they commonly crack and break when filling!
- Use a loose fitting lid to minimize boil-off & loss of liquid nitrogen, but still allowing for venting of liquid nitrogen gas to avoid over-pressurizing the container – pressure buildup will cause the stopper to blow off, or worse, the container may crack/shatter/explode!



Questions? Email us! **health.safety@uregina.ca**