



## Standard Operating Procedure

### Cryogenic Liquids (Nitrogen)

*SOP is not complete until it has been filled out, signed, and dated by the PI and relevant lab personnel.*

#### Lab specific information

Department	MGCB
Principal Investigator	<a href="#">Click here to enter text.</a>
Office Phone	773 702-1620
Laboratory Safety Contact	<a href="#">Click here to enter text.</a>
Lab Phone	<a href="#">Click here to enter text.</a>
Building	Cummings
Locations covered by this SOP	146 A
Emergency Contact	<a href="#">Click here to enter text.</a>
Date SOP was written	9/11/2020
Date SOP was approved by PI	<a href="#">Click here to enter a date.</a>

#### Scope of the SOP

This procedure provides guidelines on how to correctly use liquid nitrogen tanks.

#### Physical and chemical properties

**CAS number:** Section 1 of an update SDS

**Chemical structure:** N<sub>2</sub>

**Physical State:** Compressed nitrogen gas

**Physical Appearance:** Colorless

**Melting/ Boiling Point:** -73°C (-100°F)

**Other:** [Click here to enter text.](#)

#### Potential hazards / Toxicity

**Hazard category:** Asphyxiation, frostbite, explosion and fire

**Pictogram:** Select all that apply.



**Signal Word:** Section 2 of an updated SDS

**LD<sub>50</sub> or other toxicological information:** Section 11 of an updated SDS

**Chemical Stability or Reactivity:** Section 10 of an update SDS

### Engineering Controls

- ☒ Local exhaust
- ☐ Fume hood: Lab location
- ☐ Glove box
- ☐ Biosafety Cabinet (Class [Click here to enter text.](#))
- ☒ Other (Please specify): Adequate ventilation in the storage room

### Administrative Controls

- ☒ Additional Training (Please specify): [Click here to enter text.](#)
- ☒ Special work practice (Please specify): [Click here to enter text.](#)

### Personal Protective Equipment

#### Body protection:

- ☒ Lab coat
- ☐ Flame-resistant lab coat
- ☐ Barrier lab coat
- ☒ Splash apron
- ☐ Other (Please specify):

#### Gloves:

- ☐ Latex
- ☐ Nitrile
- ☐ Butyl rubber
- ☐ Neoprene

- ☐ Silver shield
- ☐ Double
- ☒ Other (Please specify): Long cryogenic thermal protection gloves

Please see glove compatibilities charts if unsure which glove material is appropriate.

Ansell: [http://www.ansellpro.com/download/Ansell\\_8thEditionChemicalResistanceGuide.pdf](http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf)

Kimberly Clark: <http://www.kcproductselector.com/gloves.aspx>

Showa Best Glove: <http://www.showagroup.com/innovation/chemical-resistance>

MAPA Professional: <http://www.mapa-pro.com/>

#### Eye protection:

- ☒ Safety Glasses
- ☐ Safety Goggles
- ☒ Face shield
- ☐ Other (Please specify): Click here to enter text.

#### Respiratory protection:

- ☒ None required (PEL is not expected to be reached)
- ☐ N-95 respirator
- ☐ Half-face respirator (Cartridge: Click here to enter text.)
- ☐ Full-face respirator (Cartridge: Click here to enter text.)
- ☐ Other (Please specify): Click here to enter text.

**Hygiene measures:** Avoid contact with skin eyes, and clothing. Wash hands before breaks and immediately after handling the product.

### Emergency Procedures

**Dial 123 from a campus phone or 773-702-8181 from a non-campus phone for UCPD**

**Dial 24-hour Airgas telephone 1-866-734-3438 In case of minor leakage**

**Inhalation:** Remove from area into fresh air. Consult a physician. See Section 4 of an updated SDS for any additional information

**Ingestion:** Contact a physician. See Section 4 of an updated SDS for any additional information

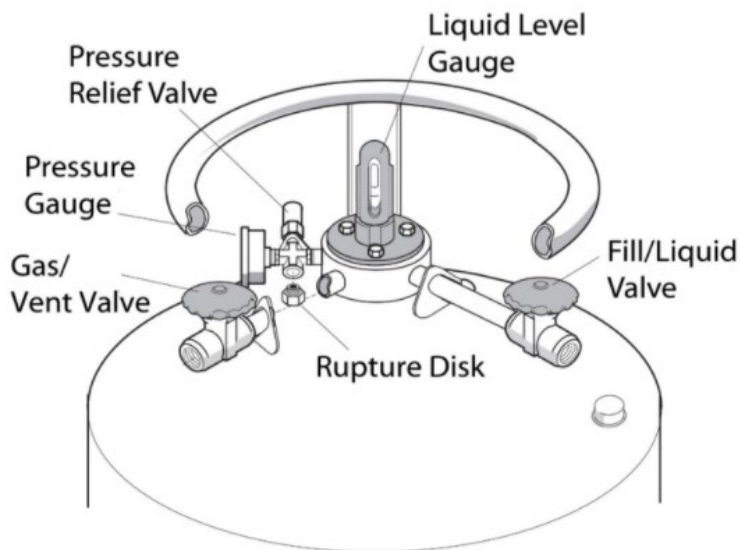
**Skin contact:** Remove any contaminated clothing and wash with copious amounts of water for 15 minutes. Contact a physician. See Section 4 of an updated SDS for any additional information

**Eye contact:** Rinse with copious amounts of water for 15 minutes in an emergency eyewash. Consult a physician. See Section 4 of an updated SDS for any additional information

**Injection:** Section 4 of an updated SDS

## Special handling and storage requirements

**Diagram of Control Part (top of cylinder)**



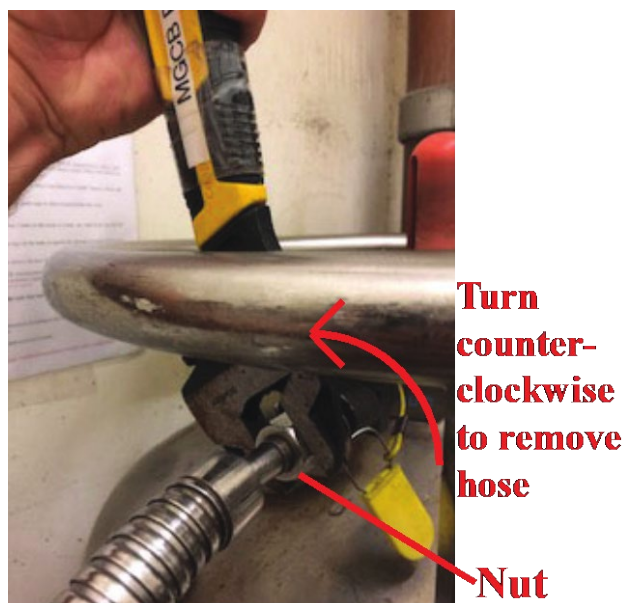
## Basic Withdrawal Procedure

- Open the fill valve and vent valve of the receiving equipment.
- Do not open the pressure building circuit of the liquid cylinder, as this will generate excessive pressure and liquid flow rates.
- Open the liquid valve on the cylinder. This valve can be adjusted to obtain the proper liquid flow rate.
- When the transfer is completed, close the receiving equipment's inlet valve if applicable.
- Close the liquid valve, relieve pressure from hose, and disconnect.

## Hose Transfer Procedure

If the tank is empty you will need to move the hose to a new tank. This is easy to do and these instructions will guide you through it.

- Make sure the valve connecting the hose to the tank is turned to the "closed" position
- Attach the wrench snugly to the nut at the base of the hose where it connects to the tank. The calipers of the wrench can be tightened by the turning mechanism on the wrench. The wrench should be tight enough on the nut so that it doesn't slip when you try to turn it.



- Turn the nut in a counter-clockwise direction until the hose becomes disconnected from the tank.
- Find a new tank that still has the yellow card that reads “Full” and attach the hose to the connection marked “Liquid” on the tank. Take care to attach it to the “Liquid” port and not the “Gas” or “Exhaust” ports. Attach the hose by turning the nut in a clockwise direction with the wrench.

#### Note

Any deviation from this SOP requires approval from PI.

#### Documentation of Training (signature of all users is required)

Prior to conducting any work with liquid nitrogen tank operation, designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.

The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and a copy of the SDS provided by the manufacturer.

The Principal Investigator must ensure that their laboratory personnel have attended appropriate laboratory safety training and are current with any refresher training required.

I have read and understand the content of this SOP:

Printed Name	Signature	Date
Principal Investigator		Click here to enter a date.
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### **Additional Resources**

SOP: <https://www.airgas.com/msds/001188.pdf>