



## WORK INSTRUCTION FOR FILLING AND TRANSPORT OF LIQUID NITROGEN

Theme:  
Work instruction  
Date:  
19.10.23  
Page:  
1 av 1

### USE

- Local training must be completed prior to filling of liquid nitrogen.
- Nitrogen tanks should be marked with warning label for liquid N<sub>2</sub>, and use containers designed for transport; thermos or special tank.
- Use appropriate protective equipment: safety glasses, leather apron, leather gloves (or similar suitable gloves) and tight shoes.
- The container must stand firm, safe and at a suitable distance from the faucet.
- The hose must not be inserted too far into the container, due to a risk of splashing.
- Attach the hose so that it cannot fall out (permanent attachment point).
- Do not overfill the tank.
- Do not leave the container during filling.
- Ensure adequate ventilation.
- Transport gently in the corridor: If possible, transport in culvert.
- If possible use the freight elevator (large), not passenger elevator. You **must not** be in the lift with full containers over 80 litres. Send container alone in a lift with a warning label, to prevent other people from entering the lift.
- If nitrogen filled containers are transported in a car, container must be secured and fastened properly. Use the university's own vehicles, not private.
- Cryo containers should be controlled every year, and recertified every 5<sup>th</sup> year.

### FIRST AID

If you get liquid nitrogen on bare skin, do not rub the wound, but rinse with lukewarm water. Always seek medical attention in case of deep frostbite or tissue damage.

### GENERAL

Liquid nitrogen has a melting point of -210 degrees Celsius and a boiling point of -196 degrees Celsius and can cause severe freeze burns to the skin.

In contact with air, oxygen condenses and will be enriched in the liquid nitrogen. Containers should not stand in contact with air for prolonged periods. When working with liquid nitrogen it is often exposed to room temperature and the temperature gradient will be significant and the possibility of both nitrogen splash and explosion is high. To avoid injury to yourself and employees, it is important to be aware of what kind of protective gear you should use and what type of containers that is suitable for transporting nitrogen.

1 liter of liquid nitrogen will make 706 liters in gaseous form and liquid nitrogen that passes into the gas form will cause the oxygen content of the air to decrease. Working with liquid nitrogen should therefore take place in large, well-ventilated rooms. Avoid small enclosed spaces (cold room, lift etc).

Training of how to retrieve nitrogen from the main tank shall be provided by skilled staff. Contact your local HSE Coordinator for more information.