

Nr: 0010a-R01e
2020-03-25

Betriebsanweisung

According to the
Betriebssicherheitsverordnung

UNIVERSITÄT
DUISBURG
ESSEN

Offen im Denken

Faculty of Chemistry

Institute: AAC

Work place: AAC Labs

Activity: Laboratory work

EQUIPMENT

Liquid, deeply cooled nitrogen

DANGERS FOR HUMANS AND ENVIRONMENT



Cold, frostbite and cold burns

Body contact with liquid nitrogen (-196 ° C) can cause frostbite and cold burns.



Increased fire and explosion hazard

Condensation of air into liquid nitrogen causes the accumulation of liquid oxygen (boiling point -183 ° C). This leads to spontaneous inflammation.



Danger of bursting due to pressure increase

Transportation and storage in non-liquid nitrogen containers without pressure equalization may cause the container to rupture at room temperature. Plastic containers are prone to cold embrittlement.



Lack of oxygen and suffocation

In particular, during unloading and decanting in poorly ventilated rooms it can lead to high nitrogen concentrations in the air with the possibility of acute suffocation. (1 L of liquid nitrogen corresponds to 700 L of gaseous nitrogen).

PROTECTIVE MEASURES AND RULES OF CONDUCT



- Personal protective equipment: **lab suit, goggles, cryo gloves, possibly face shield as splash guard**;
Attention! Liquid nitrogen can run into shoes and gloves!
- When using liquid nitrogen, use only cold resistant material.
- Move filled Dewars only without pressure and with a loose set in plug.
- Do not store liquid nitrogen in open containers for a longer time.
- Ventilate room with filled Dewar sufficiently.

RESPONSE TO MALFUNCTIONS



Shut down device immediately, faults must be reported to:

- Maria Madani, if not present O. Schmitz, M. Sulkowski, F.Uteschil, S. Meckelmann.

BEHAVIOR IN CASE OF ACCIDENT / FIRST AID



- Keep calm.
- Call first responders.
- Emergency call: 0112
- Report accident.

MAINTENANCE / DISPOSAL

- Maintenance only by authorized, competent persons.
- Regular inspection of wearing parts.