

No.: 0016-R02e  
2018-04-10

## OPERATING INSTRUCTIONS

According to Betriebs-sicherheitsverordnung

UNIVERSITÄT  
DUISBURG  
ESSEN

Offen im Denken

Faculty of Chemistry

Institute: AAC

Work place: AAC Labs

Activity: Laboratory work

### EQUIPMENT

#### Liquid Nitrogen Transport Dewars

### DANGERS FOR HUMANS AND ENVIRONMENT



- **Coldness, frostbite and cold burns**
- Skin contact with liquid nitrogen (-198°C) can cause **cold burns / frostbites**.
- **Increased danger of fire-outbreak and explosion**
- If there is air condensation into liquid nitrogen, there will be an enrichment of oxygen (boiling point -196°C), which might cause spontaneous inflammations.
- **Danger of bursting by pressure rise**
- Transportation and storage of liquid nitrogen in containers not intended for liquid nitrogen without pressure equalization may lead to burst at room temperature. At reduced temperatures synthetic containers sustain brittle fractures.
- **Danger of suffocation and lack of oxygen**
- During the refilling process the nitrogen concentration can increase unnoticed in not well ventilated rooms and then acute suffocation is possible.
- (1 l liquid nitrogen corresponds to 700 l gaseous nitrogen).

### PROTECTIVE MEASURES AND RULES OF CONDUCT



- Always wear lab coat, protective goggles and **cold protective gloves**. Possibly wear face shield as splash guard. Notice liquid nitrogen might run into shoes and gloves!
- While using liquid nitrogen only use **cold-resistant material**.
- Transport of filled Dewar only **without pressure and with loosely mounted plug**.
- **Don't store liquid nitrogen in open vessels for a long time**.
- Ventilate the room with filled Dewar sufficiently.
- **Only collect liquid nitrogen in pairs**



- Only use the **freight elevator** to transport the liquid nitrogen. **Never transport persons and filled dewars together in the elevator.** The key for the freight elevator is located at Maria's and Sven's office.

#### 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.

#### BEHAVIOUR IN CASE OF ACCIDENT / FIRST AID



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

#### MAINTENANCE / DISPOSAL

- Maintenance only by authorized, competent persons.
- Switch off the device and disconnect it from the mains.
- Regular inspection of wearing parts.