



Material science

Activity Area: Pore etching

Liquide Azote

(criogenic temperatures, liquified)

Danger for humans and enviroment

Contact with the product can cause cold burns and/or frostbite.

In particular by filling procedures inside rooms with bad ventilation the displacement of the breathing air by high nitrogen concentrations is possible. Suffocation risk!

Due to its lower boiling point can condense the atmospheric oxygen- this process can depends on the situation. Gradual enrichment of liquid oxygen is possible. For these reasons the use of compressed air as deliver gas for liq.-N₂ is inadmissible. Liquid oxygen and liquid air form explosion-dangerous mixtures with organic materials. Containers without pressure balance, intended to be used for liquid nitrogen, can lead at ambient temperature to bursting of the containers. With plastic containers cold embrittlement can take place. In case of bursts general fragmentation danger can appear.

Safeguard and directives



- Taps may be installed only in areas with good ventilation and exhaust. The tapping cocks should be as self-closing as possible.
- Fill liquid nitrogen only in well ventilated areas.
- Enter critical rooms (narrow rooms, containers) only under additional safety precautions e.g.. O₂ analyzer etc.
- When transporting liquid nitrogen by vehicles, the the loading space in the vehicles should have a good ventilation and provide safe conditions for the containers. Secure the container e.g. with suitable belts. The transport of liquid nitrogen containers in cars should be avoided.
- By filling and handling of the Dewar vessels always use eye protectors and suitable savety gloves (material: e.g. leathers od. Kevlar). In case of spraying danger always use face protective masks.
- Pay attention to the fact that no liquid should penetrate your shoes. In very short time cold burns can arise. Therefore do not use savety gloves with no fingers.
- Employed persons, who deal with liquid nitrogen, have to be regularly instructed.
- Do not use elevators to transport liquid nitrogen.

Behavior in the case of danger



- Leave immediately the area, if liquid nitrogen runs out, e.g. due to lateral buckling or breakup of Dewar vessels. That applies in particular for badly ventilated areas (e.g. in cellar or cooling chambers).
- For each area have to be met clear instructions in case of danger; Also precaution measures off the job time should be take into account.

Behavior in the case of danger accidents, first aid



Skin contact: Treat cold-burned body parts with lukewarm water. Note that hot water causes additional damages!

Eyes contact: Rinse the eyes immediately at least for 15 minutes with much water.

After inhalation: High concentrations can cause suffocation. Symptoms can be the loss of motivity and consciousness. The victim does not notice its suffocation. The patient should be brought to fresh air using an circulating air-independent oxygen mask. Keep warm and calm. Consult a doctor. In case of respiration stops artificial respiration is bnecessary.

First aid person: Lab personnel

Emergency call: 0-112