CHEMIE.DE® INFORMATION SERVICE

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Burn injuries under freezing (labor protection) conditions?

Optimal protection when handling cryogenic liquefied gases

"A little splash of liquid nitrogen hasn't hurt anybody" – this happens to be a widespread opinion in many laboratories. The real dangers connected to cryogenic gases many people had to learn firsthand, unexpected and painful. Skin irritation, cell and tissue damage or severe burn injuries may occur, depending on the type of contact and exposure time. There are less possibilities of medical treatment than for injuries caused by influence of heat.

Appeal to the persons in charge and safety representatives

The scope of refrigeration applications is diverse and permanently increasing. Cooling and storage of biological or medical samples, cryo-preservation, industrial process cooling, shock and deep freezing of food products, ground freezing in the construction industry, cryogenic shrink connections in the metal and plastic processing ...just to mention a few samples of applications.
Compared to the high increase of liquid nitrogen consumption the awareness and request to invest in protective garment only grow slightly. Experts warn of an increasing accident potential, especially in the handling of cryogenic elements.
Officials also raised their voices to initiate persons in charge and safety representatives to take responsible action on this issue. Graduated Chemistry Mr. W. Rothe of the Unfallkasse Hessen for example, directs his appeal to German universities, where repeatedly have occurred accidents with cryogenic gases, some of them ending deadly. Main reason: Lack of knowledge and deliberate negation of the dangers in the use of refrigerated liquefied media.

Complex product selection

In the niche ultra-cold environment responsible safety representatives often ask for the correct choice of PPE (personal protective equipment). Many many offers and different, frequently changing applications complicate the decision-making. Which protective garment for example is useful for filling and decanting of liquid nitrogen, which for storage and removal of samples in ultra-cold conditions?

Leather gloves not safe for most applications

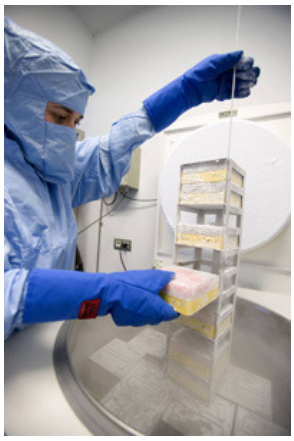
Working in temperatures down to -50 ° C good leather gloves may be suitable.
But under usual room-conditions, in an air humidity of 40-60%, the water molecules adhere to and penetrate the hygroscopic leather. As soon as the wet leather glove is exposed to freezing temperatures the water molecules build a cold bridge. So it is highly doubtful whether leather can offer protection in ultra-cold environment. Under the mentioned conditions experts describe the use of leather as a negligent act.

Quick and competent advice

In accordance to the relevant range of applications LABOplus Handelsgesellschaft helps quick and competent choosing the adequate safety garment and delivers the complete product line ex works Munich. The LABOplus team has set the objectives to improve people's knowledge about cryogenic elements and as a result to improve safety at work.

Since 1986 LABOplus Handelsgesellschaft is the European general importer and representative for TEMPSHIELD Inc. The American manufacturer is specialized in the development and continuous refinement of protective garment which is used for the safe handling of cryogenic gases in laboratories and industrial applications.
When cooling with liquid nitrogen, leading companies of the research and industry sector rely on the high quality of the

original TEMPSHIELD Cryo-Gloves®, Waterproof Cryo-Gloves® and Cryo-Industrial Gloves® which have been developed in cooperation with NASA.



Favorites in protection against liquid nitrogen hazards

The LABOplus product line offers protective gloves, aprons, face protections and gas detectors. All textile products got the CE certification and were tested according to the standards EN 388 (mechanical risks) and EN 420 (general requirements for gloves), received top grades in the test for convective and contact cold resistance (EN 511 *) and are prepared for the different requirements of laboratory and industry applications.

The standard model of Cryo-Gloves® provides a reliable thermal protection when working in cryogenic atmospheres. It offers a high level of flexibility and dexterity and is primarily designed for the use in a laboratory environment.
Example of application: storage of laboratory samples using dry ice or in refrigerators (at -86 ° C / -152 ° C).

The Waterproof Cryo-Gloves® offer the same protective quality and provide an additional inner glove, which prevents the ingress of moisture at the seams. This model should be used when a contact with cryogenic liquids might occur.
Example of application: cryopreservation.

The Cryo Industrial Gloves® are also water resistant, very durable and thank to their Cordura inserts prepared for high and extended mechanical exposure (also for use with metallic surfaces), as mainly existing in industrial environments.
Example of application: shrink technology, decanting and filling of cryogenic gases.

The face protection offered by LABOplus is made of clear, unbreakable polycarbonate. Compared to safety glasses its use is preferable, because it prevents steaming up and provides protection from splashes and vapors for eyes, face and neck.

The complete safety equipment set offers an inexpensive option and includes a pair of Cryo-Gloves® / Waterproof Cryo-Gloves®, a face protection, an apron and two warning signs.
It can be chosen between the Cryo-Temp-Shield-Bundle for use in laboratory environments and the Cryo-Industrial-Bundle mainly for industrial applications.

According to the manufacturer Cryo-Gloves® offer a reliable protection in environments down to -160 ° C.
This high demand has been demonstrated countless times in daily practical use.

In rooms liquid nitrogen can expand extremely and consequently cause an under-run of vital necessary O_2 saturation.
Could you imagine that only 1 liter of liquid nitrogen expands the volume up to approximately 700 liter of gas?

With the GasAlertClipDetector LABOplus offers a simple and maintenance-free preventive device, which does not require neither calibration nor a change of battery or sensor during 24 months of permanent use.
A digital display permanently indicates the remaining duration in months. In case of a suffocating danger because of under-running or exceeding O_2 level the device reliably gives an optical, acoustic, and vibrating alarm.

Do you have any further questions? Please contact us for assistance!

Original TEMPSHIELD Cryo-Gloves® - for working safely in ultra-cold environments!
Laboplus Handelsgesellschaft, Munich

* According to the guidelines of EN 511 product was only tested in temperatures down to -50 ° C., internal manufacture's testing showed a reliable protection in an environment down to -160°C

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