

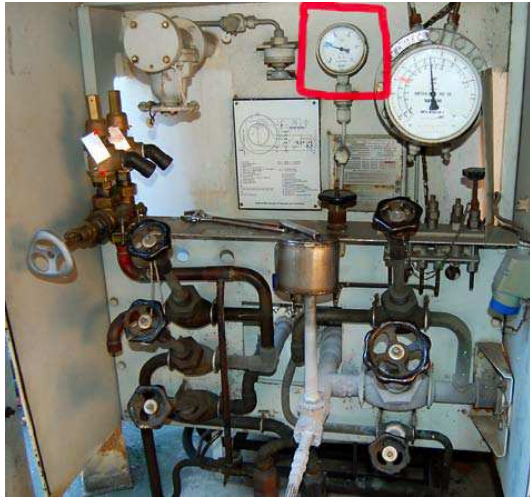
Standard operating procedure for filling liquid nitrogen in transportation vessels. These instructions can be found on the web: <http://www.mn.uio.no/kjemi/english/about/hse/hse-manual/HSE-manual-department-of-chemistry-english-2011.pdf>

CHAPTER 6.3

SOP for filling liquid nitrogen (see **SJA on the next page**):

Only trained persons should fill liquied nitrogen.

1. Use shoes which are covered properly by the trousers, or use shoes which easily may be removed. Use eye protection.
2. Place the container on the ramp under the rack for the filling tube. Put the filling tube in the container.
3. Check the manometer (see picture). If the pressure is over 6 kp/cm², report this to the workshop, stockroom or call 91337173.
4. Open the padlock and remove the tap cover.
5. PUT ON GLOVES.
6. Open the tap carefully. Start with a small flow.
7. When you have finished, replace the tap cover and lock.
8. Put on your GLOVES. Replace the filling tube. **DO NOT TOUCH METAL WHICH IS IN CONTACT WITH LIQUID NITROGEN WITHOUT GLOVES!**
9. If you are using the transport “cage”, be sure that the chain is correctly fastened so that the container can not turn over.
10. If you have to use a lift, put the container in the lift and walk up (down) the stairs. Be sure that nobody else uses the lift and put a poster with ”Liquid nitrogen. No entrance” on the container.



26/10 Vidar Blekastad
Version 14.09.2011

SAFE JOB ANALYSIS (SJA)

Name of unit: Department of Chemistry

This SJA concerns: FILLING LIQUID NITROGEN and transport of the container.

Date: 21/10-2010, Vidar Blekastad

Subtask	What may cause an undesired event	Possible precautions
Placing of the container which has to be filled.	The filling tube may move out of the container and cause spray of liquid nitrogen.	Place the container under the rack for the filling tube. Use shoes that are properly covered by the trousers or use shoes which may easily be removed. USE EYE PROTECTION.
Open the tap	Too high pressure may cause the filling tube to move out of the container. Touching the tube results in frost damage. Filling the empty container too fast may cause violent boiling and backclash, especially on hot days.	Important: Put on gloves before you open the tap. Check the manometer; the pressure should not exceed 6 kp/cm ² . If the pressure is too high, report it to the workshop og stockroom or call 91337173. To avoid backclash: start with a small nitrogen flow.
Moving the container by using the "cage"	The container may accidentally turn over and liquid nitrogen may spill into your shoes and cause severe burns.	Be sure that both chains are correctly fastened.
Transport in lift (elevator)	If the lift stops or the container turns over, nitrogen vapor may displace the oxygen in the lift-room.	Place the nitrogen container in the lift, close off the lift-room with a chain and walk up (down) the stairs.