

# Handling Gas Cylinders at Chemistry Building

Gas cylinders ('bottles') must always be handled in company. During handling operations, all gas valves should be closed, unless otherwise indicated.

## Transporting gas cylinders



Figure 1. Gas cylinder trolley

Over long distances, gas cylinders must be transported by means of a gas cylinder trolley (hand truck) (Fig. 1) that allows to fasten the cylinder and to keep it still and upright. The cylinder must be fastened to the trolley by tightening the trolley's chains over the cylinder's body. The cylinder must be transported on the trolley as closely as possible to its end location.

Over short distances, roll the cylinder gently over the edges of the base. Avoid tilting the cylinder. Roll stepwise in alternating senses, so that the cylinder follows a roughly constant trajectory. This applies both when loading/unloading a cylinder to a trolley and when moving it across the floor.

During service or storage, cylinders must always be attached to a support on the wall, typically by means of a chain.

When a cylinder is detached from either a support or a trolley, a person must take hold of it. Take hold of the cylinder from the hook on top of it, rather than from the body.

## Collecting a new gas cylinder



Figure 2. Number of the gas cylinder

New gas cylinders are located in a storage room (D242) on the second floor. Ask the janitor (vahtimestari) at the reception to open the door to the storage room.

Before withdrawing a cylinder out of storage, fill in 'the log file' on the table inside the storage room with the following data:

Date / Gas+grade+size / Number of the gas cylinder (Fig. 2)/ Research group and room no. / Name

Transport the cylinder with a trolley (Fig. 1) to its destination as indicated above. Do not unload the cylinder from the trolley until space has been made available for it on its end location.

## Removing a used cylinder

Close the cylinder's valve and the valves on the gas regulator (the bigger and smaller valve). Do not turn the pressure adjustment valve on the gas regulator (the bigger valve). It is advisable to close other valves on the gas lines as well, if available.

Unscrew the gas regulator from the cylinder's coupling by means of a wrench. Consider that in the case of most gases, the nut closes clockwise, while in the case of H<sub>2</sub> and other gases that come in cylinders with a red dome, the nut closes counter-clockwise.

Detach the used cylinder from the support and roll it to a safe location.



Figure 3. A gas regulator attached to a cylinder

## Installing a new cylinder

Bring the cylinder on the trolley as close to its end location as possible. Detach the cylinder from the trolley and roll it into place. Chain the cylinder to the support.

Make sure that the cylinder's valve is closed (counter-clockwise) and then remove any safety lock or seal from the cylinder's coupling (the gas outlet).

Place the packing gasket onto the inlet of the gas regulator and then attach the latter to the cylinder's coupling. Tighten the regulator's nut with a wrench.

When tightening the gas regulator to the cylinder, it is recommended to tilt the regulator to the opposite direction of the tightening motion. This will allow it to fall into proper place after the tightening operation.

## Checking for leaks

Make sure that the both valves of the gas regulator (the bigger and the smaller one) are closed. Then open the cylinder's valve about ¼ turn. Allow the gas to flow into the gas regulator and then close the cylinder's valve again.

In order to look for possible leaks, apply leak detection spray (TL-4) on the gas connection on both sides of the nut. If no bubbling is observed, run a pressure test.

For the pressure test, mark the position of the needle on the manometer at the bottle-side of the gas regulator. This should indicate the pressure at the time when the bottle was first opened. Allow the gas regulator to hold the gas for a specific period of time. For inert gases, 30 min is acceptable; for H<sub>2</sub> and O<sub>2</sub>, the pressure test should run for 1h or even 1 day. After this time has elapse, check for changes in the position of the needle. A decrease in pressure indicates leaking. The nut must be tightened further. If it is leaking further change the gasket and start the leaking test from the beginning.

## Disposing of a used cylinder

Load the used cylinder to the trolley. Transport it to the second floor and place at one of the allocated spaces (D241) right outside of the gas storage room.

## Ordering a new gas cylinder

Use CHEM order request system <http://kepo.aalto.fi/tilaus/Tilauspyynto.php>.