Glovebox TR1.14 Guidelines

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How to use the antichambers

- Don't introduce in the antichamber closed **containers** with oxygen: insert them **opened or filled with inert gas**.
- If you introduce closed containers, consider that the cap could pop out because of the vacuum and spread your compound in the antichamber, take proper countermeasures.
- **Never introduce solvents containing water.**

Detailed procedure for inserting small objects:

1. Make vacuum in the antichamber (this pulls the internal door in the proper position);
2. refill with nitrogen;
3. **leave the tap in closed position** (if you leave it in refill position acts like a big hole in the GB);
4. open the external door and introduce your objects, all the containers should be opened;
5. close and make vacuum, wait until the vacuum gauge goes under its minimum and some time more;
6. refill slowly (the gas flow could throw your stuff around);
7. when the gauge approaches the max pressure switch again to vacuum (don't leave it at max pressure unless it's the last cycle);
8. repeat two more times (a total of **three vacuum-nitrogen cycles** for the small antichamber);
9. refill, open the internal door, remove your object, close the internal door and **leave the antichamber under vacuum** (doors are leaky).

Detailed procedure for extracting small objects:

1. **Make vacuum** in the antichamber (even if you think it's under nitrogen, it is not: doors of the small antichamber are leacky);
2. refill with nitrogen, open the internal door, put your stuff, close the internal door taking care it goes in the right position;
3. make vacuum in the antichamber (this pulls the internal door in the proper position);
4. refill with nitrogen and **leave the tap in closed position** (if you leave it in refill position acts like a big hole in the GB);
5. open the external door and remove your objects;
6. close the door and **leave under vacuum**.

Procedure for inserting big objects:

- For using the big antichamber follow the same instructions as above but **six vacuum-nitrogen cycles** are suggested.
- If possible, heat the big objects and introduce them while they're still hot.
- Leave the big antichamber in **static vacuum**.

Before starting working

- **Record the date, your name and H_2O, O_2 concentrations** and all significant events (regenerations, malfunctions...) on the glovebox log book.
- If you're going to use the spin coater or **solvents**, even if in small amounts, which damage the catalyzer (methylene chloride, acetonitrile, alcohols, amines), **stop the circulation** purifier while working then, when you finish, make a **quick purge** (10-40 min, in the Functions menu of the GB controller) and switch on again the circulation purifier (nitrogen is much cheaper than a replacement for a damaged catalyst).
- When starting using the GB **lower the internal pressure** to approx 3-5 mbar (using the GB with too high pressure (14 mbar) makes the circulation purifier and the analyzer to shutdown).
- For using the **spin coater vacuum pump**: first switch on the small pump and then open the vacuum tap on the back of the GB (remember to close and switch off later).
- Use **lab coat and clean gloves** (the GB gloves are not clean, at all), if you have a watch, bracelet or rings better to remove them (for reducing the risk of making holes).
- Always use aluminum foil for keeping clean the internal part of the spin coater.

- If you're going to work with solvents put **gloves on also in the internal side** of the GB (do it, they're not uncomfortable, indeed they tighten the black gloves on your fingers giving a better grip).

After using the glovebox

- **Label everything** and keep your products closed and **in a box with your name** on it, periodic cleaning will trash things arbitrarily, keep clean and you won't have to complain in vain.
- **Throw the wastes** in a container and take it with you when you finish working, leave as little mess as possible for the next user, your wet wastes could still contaminate the glovebox.
- Leave the spin coater lid open, this way the droplets and residual solvent vapors can get removed by the purge process.
- Leave the **small antichamber under vacuum** (the doors are leaky).
- Leave the big antichamber in static vacuum.
- If you used the spin coater remember to first **close the vacuum tap** and then to **switch off the small pump**.
- When finished using the GB **increase the internal pressure** to approx 10-12 mbar.

General guidelines

- Remember that the small antichamber doors have leaks, vacuum-nitrogen cycle the antichamber even if it shouldn't be needed: **When in doubt - pump it out!** Do not make any assumptions!
- Keep your samples open only when necessary. This is to avoid GB contamination and contamination of your samples.
- When weighing materials in the glovebox, static electricity is a big problem. To minimize this disturbance use the antistatic gun.
- Never keep needles around, throw them in the proper container, needles and cutting edges (e.g. glass sharp edges, scissors) are gloves' worst enemies.
- Don't use the antichamber vacuum for removing solvents, the pump has no solvents trap.
- Enter and exit the box slowly so that the overpressure doesn't get negative or too high (causing the GB circulation and analyzer to shutdown).