

GLOVEBOX SAFETY

Safe and prudent practice for glovebox users include performing daily checks to verify the operational condition of the glovebox. These checks include but are not limited to:

- ◇ Integrity of gloves and seals
- ◇ Condition of window, with focus on the areas of connection to the rest of the box
- ◇ Vacuum pump lines, oil level, and pump filter
- ◇ Pressure gauges and indicators are functioning within acceptable ranges
- ◇ Security of compressed gas cylinder lines and regulator fittings
- ◇ Condition of scrubber filters, if applicable

These checks are to be noted in a user log, ideally located near to the relevant glovebox (see following page).



Best practices also include:

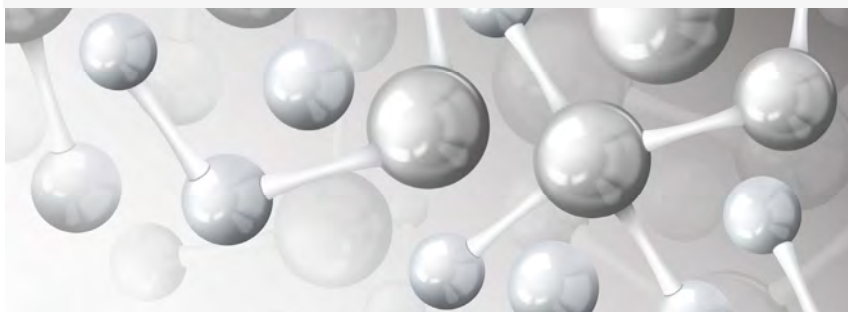
- ◇ The Owners Manual for the glovebox is made available to all users
- ◇ Include a record of the dates compressed gas cylinders are changed in the user log book
- ◇ Performance of annual testing of the gloves or replacement of gloves
- ◇ Regular periodic regeneration of catalysts
- ◇ Regular scheduled inspection by a professional vendor

Safety Reminders:

- ◆ Conspicuously label the glovebox with information about the type of permitted activities including any appropriate hazard warnings.
- ◆ Be aware of the properties of chemicals shipped into the glovebox (water content, solvents, boiling point/evaporation rate). Know when a purge may be necessary. Evaluate the potential for unintended generated side products.
- ◆ Jewelry on hands and wrists shall be removed before entering the glovebox.
- ◆ Be mindful when entering the glovebox and use slow movements. Not only does this help preserve the gloves, it avoids over pressurization of the cabinet.
- ◆ Keep gloves clean by wiping down after every use and/or by using disposable gloves.
- ◆ All users shall be knowledgeable and trained on emergency response to power failure, loss of compressed air or leak, and compromised glove (and repair).

PI/Lab Supervisors are responsible for the following:

- ◆ All users shall receive documented training on the safe operation of the specific glovebox in use in the specific laboratory as well as the planned procedures within. Training documentation shall be kept in the laboratory's specific Chemical Hygiene Plan) and may be requested upon inspection of the laboratory.
- ◆ Ensure daily checks are recorded in a log to be kept near the glovebox for user access. Maintenance, troubleshooting and service records for the glovebox shall also be retained. Ensure use of the glovebox is ceased when malfunctioning or repairs are needed



Glovebox User Log and Daily Checksheet

To facilitate proper communication between users, a paper log is kept next to the glovebox. It is crucial that users accurately fill out the log every time they use the antechambers or purge the atmosphere. Notes recording O₂ level and activities performed are to be included.

Logs shall be kept in the Chemical Hygiene Plan for a period of no less than 3 years. Maintenance and repair records for the glovebox should also be retained for this period.

Daily checks of the glovebox should be performed on the unit to assess operational conditions. Early awareness of equipment malfunction can prevent more catastrophic events. Daily checks include but are not limited to:

Gloves/Seals: Is the integrity of the gloves and seals intact? No degradation, holes, tears or cuts?

Window: Is the point of connection between the window and rest of box appear intact?

Pressure: Are all gauges and indicators functioning within acceptable range?

Vacuum: Are vacuum pump lines, oil level and pump filter in good working order? 1: Time first cycle was begun, follow large chamber pumping procedure.

CGC: Are any compressed gas cylinders secured and regulators properly fitted?

User	Date	O ₂ Level (ppm)	Small Chamber			Large Chamber					Purge Start	Purge Stop	Comments
			1	In?	Out?	1	2	3	In?	Out?			
BL	5/3/16	1.7				8:40	9:15	9:35	✓	10:00			Pipettes
BL	5/3/16	2.0			3:20						3:00	3:10	CH ₂ Cl ₂
AC	5/3/16	<0.1	11:30	✓	11:45								pentanes

How to utilize the log sheet

Small Chamber:

1: Time first cycle was begun, follow small chamber pumping procedure.

Self-check: "In": Has the material been pulled into the glovebox? Did you return the antechamber to active vacuum?

Self-check: "Out": Time the user pulled an object out through the small chamber, exposing the antechamber to atmosphere.

Large Chamber:

1: Time first cycle was begun, follow large chamber pumping procedure.

2: Time second cycle was begun.

3: Time third cycle was begun.

Self-check: "In": Has the material been pulled into the glovebox? Did you return the antechamber to active vacuum?

Self-check: "Out": Time the user opened the large antechamber to atmosphere to remove an object from the glovebox.

Glovebox User Log

[illegible]

Pre-Checks:

Place a checkmark in the relevant columns if inspected and observed to be working order.

Gloves/Seals: Is the integrity of the gloves and seals intact? No degradation, holes, tears or cuts?

Window: Is the point of connection between the window and rest of box appear intact?

Pressure: Are all gauges and indicators functioning within acceptable range?
Vacuum: Are vacuum pump lines, oil level and pump filter in good working order?

CGC: Are any compressed gas cylinders secured and regulators properly fitted?

Small Chamber:

1: Time first cycle was begun, follow small chamber pumping procedure.

Self-check: "In": Has the material been pulled into the glovebox? Did you return the antechamber to active vacuum?

Self-check: "Out": Time the user pulled an object out through the small chamber, exposing the antechamber to atmosphere.

Large Chamber:

1: Time first cycle was begun, follow large chamber pumping procedure.

2: Time second cycle was begun.

3: Time third cycle was begun.

Self-check: In: Has the material been pulled into the glovebox? Did you return the antechamber to active vacuum?

Self-check: Out: Time the user opened the large antechamber to atmosphere to remove an object from the glovebox.