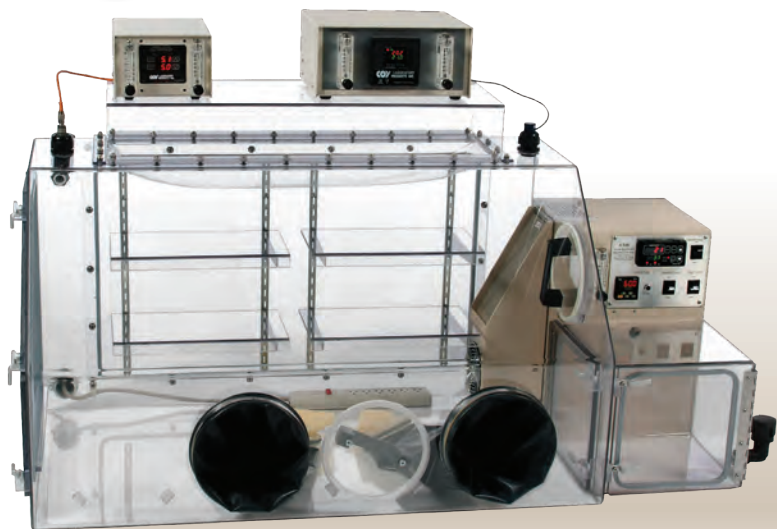


O₂ Control Glove Boxes for Tissue Culture



How the O₂ and CO₂ Control Systems Work

With a gas source connected to the controllers, the microprocessors control gas purges based on sensor readings and user-adjustable setpoints. Typical units for hypoxic/normoxic tissue culture will require nitrogen and CO₂ sources while units for hyperoxic studies will require an oxygen source as well. There is a constant LED display of glove box gas levels. The systems, combined with the sealed glove box and airlock, provide a more accurate and uninterrupted environment than an incubator or cabinet system by eliminating exposure to nonexperimental conditions.

How the Airlock Works

Coy O₂ Control Glove Boxes are equipped with a purge-only airlock, which is a transfer chamber that equilibrates O₂ levels by purging excess O₂ prior to opening the door into the actual glove box and placing items within. Ideal purge times are provided by Coy for various O₂ levels. Automatic units use a specific preset time for purges based on protocol and desired glove box O₂ levels. Once preset, the airlock is operated with the touch of a button by lab personnel. With manual units, the user operates a valve and times the purge.

How to Control for Heat and Humidity

This Coy O₂ Control Glove Box for Tissue Culture has temperature control up to 40°C.

For long-term incubation (greater than 12 hours), users will want to maintain high humidity levels to prevent samples from drying out. Coy offers a small humidified incubation box that allows samples to be incubated at levels of moisture at or near saturation while minimizing the amount of moisture that escapes into the glove box.

The combination of the temperature differential between the heated glove box and the lab, open media, and a humidified incubation box may cause high levels of moisture throughout the glove box, which can lead to condensation. Humidity should be controlled to noncondensing levels, which provides a comfortable working atmosphere and protects users' analytical equipment and the sensors while minimizing potential microbial contamination.

Coy provides two solutions for controlling and removing moisture from the glove box — a desiccant-based system or an automatic dehumidifier. The dehumidifier is an electronic system with digital displays and easy adjustments that free users from routine maintenance. The desiccant system involves alumina desiccant contained in a wire mesh and placed over the glove box's circulation system. The desiccant system is less costly than the dehumidifier option, but to succeed, it requires alert personnel who have an understanding of how the system works.

Perform Incubation, Culture Maintenance and Analysis in the *Same Environment*

Hypoxic, Normoxic, Hyperoxic — even Anoxic

Our Most Widely Used Tissue Culture Glove Box Features an Automatic Airlock, Temperature Control and Automatic Dehumidifier

Other standard features and equipment:

- » Control of O₂ in 0.1% increments
- » Control of CO₂ in 0.1% increments
- » Gloveless sleeves
 - Operator's arms and hands may enter the box through a cuff-and-sleeve system without compromising the environment
 - Arm port plugs seal box when operator is not working in it
 - Gloves may be attached to sleeves if there are concerns about potential contamination
- » Patented diaphragm top to compensate for small volume changes, increasing user ergonomic comfort
- » Large side door for initial equipment installation
- » Adjustable interior shelves
- » Interior power supply

Coy's modular designs and accessories, along with our 40 years of in-house customization experience, allow us to configure an economical glove box for your lab.



Key Accessories

CO₂ Control System

The Coy CO₂ Control System allows for precise control and monitoring of CO₂ gases inside the glove box. A sensor relays information to the controller, which then opens the appropriate solenoid controlling a CO₂ or N₂ gas to equilibrate the CO₂ levels based on the user-adjustable setpoint. The digital display allows the user to monitor the CO₂ levels constantly.

Microscope View Port (See Imaging Glove Box photo at right)

Microscopes, which are valuable tools for intrabox work, are easier to use with this optically clear flexible vinyl port. The port is sealed to the box wall and is installed directly over the microscope's eyepieces, enabling easy use of the oculars. Cultures may go directly from incubation to the microscope allowing the researcher to see transient effects that may be lost when imaging and/or media change is done outside of a controlled environment. Custom sizing of glove boxes to fit specific microscopes is available.

Humidified Incubation Box

The Coy Humidified Incubation Box for tissue culture is a separate cabinet that sits inside the glove box. It allows cultures to be humidified with the same atmosphere content (gas and temperature) as the glove box without immediately increasing the humidity of the rest of the box. Capacity: 36 x 100 mm petri dishes or well plates can be stored in each unit if stacked two high. Size: 12" L x 6" D x 16" H / 305 x 152 x 406 mm. (Custom sizes are available.)



Recirculating Atmosphere Filtration System (HEPA)

This system filters the box atmosphere and controls contamination through a standard HEPA filter. The external pump-activated system has the filter mounted outside the box. The system draws the internal atmosphere out of the box, through the external filter and back into the box. Equipped with quick disconnect fittings, the filter is fast and easy to change without compromising filter and glove box integrity. Other types of filters can be added to meet other filtration needs.

UV Light and UV-Resistant Acrylic Upgrade

A combination of fluorescent and 254-nanometer UV lights provides illumination and decontamination of the work area. An upgrade of the entire box to UV-resistant acrylic material, which absorbs UV light to protect the user, is recommended.

Anoxic Upgrade Kit

Coy offers a kit for upgrading O₂ Control Glove Boxes to enable the user to create an anoxic environment, 0-5 parts per million O₂, using catalyst reacting with a nonflammable gas mix.

Feed-Thru Adaptor

Electrical wiring, tubing or cords are input through factory-installed feed-thru adaptors sealed through the glove box wall.



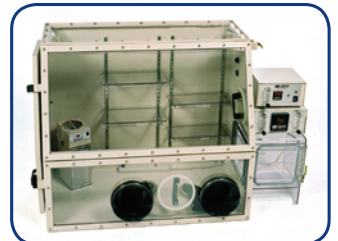
Imaging Glove Box: This alternative to microscope stage chambers and enclosures for live cell imaging provides a constant environment during media change and imaging.

Material and Size Choices

Coy O₂ Control Glove Boxes for tissue culture are available in polycarbonate (three standard sizes) and aluminum (two standard sizes). The choice of material depends on your research needs and budget. Aluminum is generally more robust and, therefore, has more service years than polycarbonate. Polycarbonate is a less expensive option and is easily customizable.

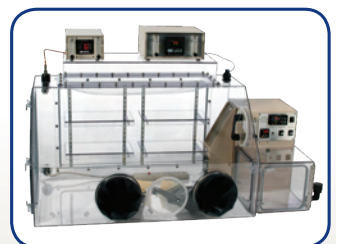
Aluminum sizes, internal workspace:

- 1 person: 41" L x 23" D x 35" H
with two glove ports
1041 x 584 x 889 mm
- 2 person: 59" L x 23" D x 35" H
with four glove ports
1499 x 584 x 889 mm



Polycarbonate sizes, internal workspace:

- Mini: 23" L x 23" D x 23" H
584 x 584 x 584 mm
- 1 person: 41" L x 23" D x 23" H
1041 x 584 x 584 mm
- 2 person: 59" L x 23" D x 23" H
1499 x 584 x 584 mm



Control Ranges

O₂ » 0-60% in 0.1% increments and control tolerance

CO₂ » 0-20% in 0.1% increment and control tolerance

Temperature control » ambient +4° to 40°C

Humidity in glove box » 33% and higher
(adjust to create noncondensing environment)

Humidity in incubation box » saturated at temperature