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Hot Box System

HBS-2001S/HBS-2002D

Instructions for Use

HBS-2001S with Single Flow Meter

DESCRIPTION

The Hot Box System eliminates the risk of personnel and equipment contamination from radioactive gases. It effectively isolates labeling experiments, enabling you to restore complete functionality to your CO_2 incubator. Traditional labeling experiments generate millions of contaminating counts, necessitating frequent incubator decontamination. Now, you can safely conduct [^{35}S] labeling experiments with significantly reduced time and risk. The Single Flow Meter (HBS-2001S) version is designed for use with pre-mixed gases from a single source. The Dual Flow Meter (HBS-2002D) version is optimal for on-site mixing of two gases.

COMPONENTS

HBS-2001S includes:

- Modular Incubator Chamber (1), **Single** Flow Meter (1), Static Filter Post (1), Exhaust Hot Filters (5), Static Hot Filters (5), and Air Filter (1)

HBS-2002D includes:

- Modular Incubator Chamber (1), **Dual** Flow Meter (1), Static Filter Post (1), Exhaust Hot Filters (5), Static Hot Filters (5), and Air Filters (2)

OPERATION

NOTE: All of the following operations should be performed in a ventilated biosafety cabinet that fully exhausts air to the outside. Be sure to follow current guidelines for safe handling of radiochemicals.

To familiarize yourself with Hot Box System, we recommend reviewing the Instructions for Use of our Modular Incubator Chamber (MIC-101).

Attachment of Hot Filters to the Incubator Chamber

1. Place experiment containing ^{35}S-labeled reagent in the clear polycarbonate Modular Incubator Chamber). The chamber can be humidified by placing a petri dish filled with 10 ml of sterile water at the bottom of the chamber. The water in this dish will absorb a small percentage of the ^{35}S volatile.
2. Place one Static Hot Filter (6 in. diameter disk) onto the filter post. Filter should rest on the top ledge of post. (If using 150 mm petri dishes remove post and place static filter on top of petri dish or in a tray above experiment.)
3. Ensure that the O-ring is properly seated into the groove of the base and then place chamber lid on the base.
4. Put the clamp on the chamber at position where base and lid join. Left hand should be held firmly against clamp and chamber. Slowly close clamp handle with right hand making sure clamp is centered.
5. Ensure that the white tubing clamps of the gas inlet and outlet ports are in the OPEN position. Failure to do so will cause excessive back pressure to build up in the system.
6. Insert the first 1/4 of the small end of the Exhaust Hot Filter (Black tube) to the tygon tubing of either port. Do not insert it too far into the tygon tubing, otherwise it will be difficult to remove later. The best way is to line up the end of the tygon tubing with the first barb mark on the Exhaust Hot Filter.

Flow Meter Attachment to the Hot Box Chamber and Air Flushing

Note: For maximum safety, retention time, and efficiency, DO NOT exceed a flow rate greater than 7 LPM and a pressure of 2 PSI.

1. Open the regulator of the gas tank to allow minimum gas flow.
2. Attach an air filter to the flow meter inlet (bottom) tubing.
3. Use additional tubing to attach the flow meter inlet tube (with the air filter) to the gas tank.
4. Adjust both the flow meter and regulator on the gas tank to allow 5-7 liters/minute (LPM) of flow rate.
5. Connect gas outlet tube (top tube) of the flow meter to the Hot Box chamber. Flush the system for 8-10 minutes at a flow rate of 7 LPM. A pressure release valve in-line with the flow meter will open if functional and safe flow rate is exceeded. The pressure release valve will automatically close when pressure is safe.
6. Disconnect the Hot Box from the flow meter.
7. Seal the Hot Box by closing the plastic clamps on the tygon tubing of the gas inlet and outlet ports.
8. Remove the Exhaust Hot Filter from the Hot Box and properly store for use at the end of the experiment.

Flow Meter Notes (Single or Dual)

To start the system, open the flow meter valve slowly to avoid possible damage. Rate of flow is read at the point of maximum horizontal width for spherical floats or at the top of the largest diameter for nonspherical floats. Control valves are turned clockwise to reduce flow, counter clockwise to increase flow. A nylon insert is provided in the threaded section of the valve stem to give a firm touch to the valve and to prevent change of setting due to vibration.

Incubation and Clean-Up

1. Place the sealed Hot Box at your desired temperature either in a conventional continuous flow CO_2 incubator, an oven, or a warm room.
2. At the end of incubation, before opening the Hot Box, reattach the Exhaust Hot Filter (removed in Step 8 above) to the Hot Box outlet port.
3. Open the gas inlet and outlet ports on Hot Box by opening the white clamps.
4. Repeat steps 1-6 of the Air Flushing section above to remove any radioactive volatile not absorbed by the Static Hot Filter inside the Hot Box during the labeling experiment.
5. Remove both the Exhaust and Static Hot Filters and dispose of them in radioactive waste.
6. The water and petri dish used to humidify the Hot Box will be radioactive and should be put in radioactive waste.
7. Insides of the Hot Box and the attached tygon tubing should be monitored for counts. If counts become excessive, decontaminate as appropriate.
8. Seal and store the Hot Box until the next experiment.

CONVERTING A MODULAR INCUBATOR CHAMBER INTO A HOT BOX

If you already have a Modular Incubator Chamber (MIC-101) unit, you can use our Hot Box Conversion Kits (HMIC-3S, HMIC-3D), available at embrient.com. Simply place the filter post into the center hole of the bottom tray, fasten with the white nut, and tighten by hand. One to three trays can be used in the incubator chamber. Always put the tray with post on the bottom of the chamber.

RELATED PRODUCTS & ACCESSORIES

Hot Box Conversion Kit (Single Flow Meter)
HMIC-3S

Hot Box Conversion Kit (Dual Flow Meter)
HMIC-3D

Static and Exhaust Filter Pack (Hot Box System)
HCS-2020, Qty: 5 pack

Air Filters
HFS-2021, Qty: 6/pkg

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