



BioSafety Cabinet:- is a ventilated enclosure offering protection to the user, the product and the environment from aerosols arising from the handling of potentially hazardous micro-organisms. The continuous airflow is discharged to the atmosphere via a HEPA filter.

The three States of Protection

- 1-Personal Protection from harmful agents within the cabinet.
- 2-Product Protection to avoid contamination of the samples.
- 3-Environmental Protection from contaminants contained within the cabinet.

Biological safety cabinets are divided into three classifications.

Classification	Biosafety Level	Application
Class I	1, 2, 3	Low to moderate risk biological agents
Class II	1, 2, 3	Low to moderate risk biological agents
Class III	4	High risk biological agents

❖ **Biosafety cabinets are divided into three classes: I, II and III.**

1-Class 1 Cabinets:-

Class I biological safety cabinets are partially enclosed work stations that protect the worker and the environment from contamination. Class I biological safety cabinets are used in microbiology labs, in pharmaceutical research and development, and in cancer research labs to protect the environment from bacteria, viruses, and carcinogens. The class I safety cabinet has an open front, for access to the materials inside of it, negative air pressure to pull air from outside of the cabinet, and a HEPA

filter that air from inside the cabinet goes through, before returning to the lab or being vented outside, to remove the contaminants.

2-Class II Type A2 Biological Safety Cabinet / Tissue Culture Hood (Biosafety Cabinet):

A class II biological safety cabinet is a partially enclosed workspace that has built in protection for the worker, the environment, and the material inside of it. Class II biological safety cabinets have open fronts, a vertical laminar air flow, so outside air is run through a filter before it gets inside, and a HEPA filter for filtering air from inside before it goes outside the cabinet. Used in microbiology labs, pharmaceutical labs, and cancer research labs, class II biological safety cabinets protect the bacteria, viruses, and carcinogens being manipulated inside the cabinet while shielding them from outside contamination. There are four types of class II cabinets, A, B1, B2, and B3, each having different requirements for how much air must be vented outside the building.

The size, cost of running and maintenance, and the type of material to be handled will all help decide which type of class II biological safety cabinet is right for any given laboratory.

3-Class 3 Cabinets:-

Class III biological safety cabinets, also known as glove boxes or isolation glove boxes, are enclosed work areas designed to protect the worker, the environment, and the sample from contamination. The laboratory technician can manipulate materials inside the class III biological safety cabinet by using rubber gloves that are attached to the cabinet. Outside air is filtered through a HEPA filter prior to entry, and air leaving the class III biological safety cabinet is filtered through two HEPA filters before being vented outside. Anaerobic chambers are also available. These units allow researchers to easily process, culture and examine samples without exposure to atmospheric oxygen. Accessories for Class III cabinets include heating elements, filter and ionizers. When choosing a class III biological safety cabinet consider space available, price, lighting options, and energy efficiency.