

## **Technical Specifications for Biological Safety Cabinet based on**

### **Class II Type B-2 for BSL-III work**

#### **Body & Dimension**

1. Main body should be made of stainless steel [(304 grade)- Heavy gauge- 16 G]
2. Table top and working zone should be made of stainless steel [(304 grade)- Heavy gauge- 14 G &16 G]
3. Table top should be in two parts:
  - a) Front perforated portion 4” in size
  - b) Non perforated working zone: Table sunken type (trough type) for spillage management that can be lifted easily for cleaning below the table.
4. Work Area should be approximately 900 or 1200 x 600 x 600 mm (3 – 4 feet) in size with shutter opening of 489 mm
5. Overall Size of the cabinet should be approximately 1000 or 1300 x 825 x 2450 mm.
6. Air Flow should be vertical down flow with 100% exhaust.
7. Cleanliness level should be less than 3.5 particles/ litre of 0.5  $\mu\text{m}$  and larger (ISO 14644-1).
8. Noise Level should be less than 65 db.
9. Vibration level: Less than 2.3  $\mu\text{m}$ .
10. Average air flow should be  $90\pm 20$  fpm (down flow).

#### **Standard Accessories:**

1. HEPA filters should be MINIPLEAT with 99.99% efficiency for 0.3 micron with integral metal guards & filter frame gaskets and manufactured in class 1000 super clean air conditioned environment for longer life.
2. Air pressurization system should be statically and dynamically balanced, fitted with special vibration reducing system to suit low noise and vibrations.
3. Front door should be made of polycarbonate/ toughened glass (6 mm), adjustable as per lab requirement, vertical sliding (one piece with counter weight arrangement for finger tip control).
4. Side walls should be made of stainless steel [(304 grade) - Heavy gauge- 14 G].
5. Should have Fluorescent light with low energy choke less to withstand larger fluctuations in voltage, should be placed outside working zone to avoid turbulence.
6. Should have support stand with levelling screws adjustable from 55-85 mm.
7. UV lamp should be in working zone (40 micro watts/ square cm at 254 nm or better) and placed so that the operator cannot see directly i.e. eyes should be always protected.

8. Universal Service fittings for gas and air should be provided with gas burner along with gas cylinder which can be refilled on requirement.
9. Should have Rehabitable pre filters should have efficiency of more than 80%.
10. Should have Switches & Electrical sockets outlets for 15/5 amp.
11. Should have Pressure Monitors like Magnehelic gauge are required to indicate pressure drop across HEPA filter.
12. Should have DOP Port
13. Should have current leakage circuit breaker
14. Should have air tight duct exhaust extension
15. Should have Contaminated plenum in negative pressure to prevent leakage into the environment. Exhaust blower should be placed outside at roof top level.
16. Exhaust blower should be capable for 100% exhaust interconnected with supply air blower; system should only start when the negative pressure is developed.
17. Special provisions should be there, If, by chance the exhaust blower is not working properly, the operator will get a buzzer.
18. Should have Audible alarm to warn the operator if the window is raised above the recommended height of 203 mm (8 inches)
19. Should have Air short circuiting or the bye pass arrangement: By chance there is ingress of fresh air from the top of front shutter, this ingress should not percolate into the working zone: but will be short circuited to return duct at the back. Safety suction points near the upper portion of the front shutter transfer short circuit dirty air into the exhaust/ return duct.
20. Should have Adjustable zero leak proof damper at supply air intake & exhaust ducting.
21. Should have Special provision for system which gives alarm to stop supply air in case the negative pressure goes beyond certain limit to stop contamination egress to laboratory.
22. Should have Spillage trough below the working table of 16G heavy duty stainless steel. This trough should have drain cock.
23. Back holes should be there on vertical walls to provide more work area on table top.
24. Should have Exhaust Ducting at the roof top (approx. 30 feet) from the cabinet site.

**Other Features:**

1. Installation, validation/ performance demonstration should be carried out at site with all ultra modern facilities like Velocity test, Laser based particle test etc.
2. The cabinet should be based on NSF 49/ ANSI 49, ETL, CE certification.

3. Suitable power supply/ UPS should be provided to continue, if the electricity goes off during the work.

**Guarantee:** 3 years guarantee from the date of installation inclusive of one year spare replacements, if any.