

Technical Specifications for Fume Hoods

A. FUME HOOD FOR GENERAL CHEMISTRY:

6 feet Bench Top Fume Hood Quantity: 1 no. and Fume Hood must consist of the following features:

Sl. No.	Specification	Description
1	Type	STANDARD Bench Top Fume hood
2	Size	6 feet Standard model
3	Overall dimensions with base cabinet	1800 mm W X 900 mm D X 2400 mm H
4	Fume hood dimensions:	1800 mm W X 900 mm D X 1555 mm H
5	Base cabinet dimensions	860 mm W X 600 mm D X 655 mm H with castors, 2 No.s
6	Inside fume hood working volume:	1520 mm W X 750 mm D X 1180 mm H
7	Bed size:	1520 mm W X 650 mm D
8	Model and usage	Fume hood for Regular usage in General chemistry
9	Design Basis	American Design Standard: ASHRAE110- 1995 All tests including “Tracer gas containment test” passed. <u>(Third party test certificate mandatory)</u> or European Design Standard: EN-14175- 2003 ‘Inner Plane Containment test’ passed. <u>(Third party test certificate mandatory)</u>
10	Design Structure	Aerodynamic, Floor mounted
11	Airflow Type	Low constant volume
12	Colour combination	May Select as per our Standard Color List
13	Powder coating	Pre-treated with 8 tank chemical processes and powder coated with highly chemical resistant epoxy colors having dry film thickness of 70 to 80 microns. <u>Should pass all conformity performance tests as per IS standards.</u>
14	Material for construction of superstructure	Galvanized Iron (GI) as per IS 277: 2003 standard sheet metal paneling –thickness: 1.0 ± 0.1 mm, all corner post: 1.2 ± 0.1 mm
15	Front top panel	Easily openable top panel for easy access to flow control valve and electrical lighting fixtures for maintenance.
16	Corner Post	Panel profiled corner post should be placed on left and right side of the fume hood.

17	Side wall panels	Closed side panels (<u>left & right-hand sides</u>) with epoxy powder coated GI structure for <u>research laboratories</u> .
18	Construction (Interior)	Back panel and Baffle should be made of chemical & heat resistant, fire retardant, smooth finish, easily cleanable panels made out of durable “ <u>Phenolic Resin Laminate</u> ” 6 ± 0.1 mm thick. ASTM flame spread index < 25. (No other liner is acceptable)
19	Active Kinetics exhaust system	<u>Interstitial</u> active kinetics exhausts system (for light, normal & heavy fumes) with baffle to ensure rapid exhaust of fumes.
20	Airfoil	Aerodynamic design, horizontal fixed airfoil mounted on the worktop made of SS 304 (1.2mm) <u>Teflon Coated</u>
21	Worktop	Chemical resistant splash & spillage proof dished ‘ <u>Jet Black Granite</u> ’ worktop (18 ± 1 mm thick). Skirting of 15 mm from all sides for no chemical spillage.
22	Sink, water tap with drain arrangement	Worktop will have sink sealed with silicon sealant for drainage with water tap on left back side of worktop <ul style="list-style-type: none"> • Oval shaped 100 mm Dia X 200 mm Dep sink
23	Sash (Shutter)	Vertical rising sash counter-balanced with pulley and counter-weight system. <u>Timing belt system</u> should not have SS rope or <u>any other material rope</u> Toughened Float Glass sash (4 to 5 mm thick). Smooth and light sash operation. Clear openable height = 750 ± 5 mm, Impact Resistance of the sash (Toughened Glass) should be four times higher than other sash materials (like Safety Glass and Polycarbonate). Breaking Stress value for fully toughened glass (Tempered Glass) should be 24,000 psi or higher.
24	Wet & Dry Service valves	Remotely operated colour coded <u>Brass Needle Valves</u> for fine control over utilities (as per DIN 12920 norms) <u>total 6 nos.</u> service valves with PU plumbing with 6 mm internal dia, withstands up to 5 kgf pressure (<u>3 on LHS & 3 on RHS</u>) <ul style="list-style-type: none"> • 1 for Raw water (SS-304 braided hose) • 1 for Nitrogen (SS-304 braided hose) • 1 for Vacuum (SS-304 braided hose) • 1 for Compressed air (SS-304 braided hose)
25	Internal nozzles	Brass powder coated fittings should be staggered in the fume hood to avoid the intermingling of the flexible hoses on the back wall. Also the taps should be tapered in shape to use with flexible tubing of sizes from $\frac{1}{4}$ ” to $\frac{1}{2}$ ” in dia
26	Lighting	Fluorescent light (40 watt, 2 Nos.) with vapour-proof fitting for proper illumination. Intensity approx 400 lux at worktop level.
27	Electrical Utilities	10 nos. electrical sockets (230 V, 6/16 A, 50 Hz), 10 nos. MCBs with blower NO/NC switch with Built-in starter & light switch on front fascia. Cables & wires ‘Fire Retardant Low Smoke’ grade. (5LHS+ 5RHS)

28	Built-in Starter	The electrical wiring should be built-in starter suitable to blower motor capacity.
29	Chemical Storage Base Cabinet (Ventilated)	<ul style="list-style-type: none"> • Base cabinet should be ready to receive the fume hood at its top. It should have following features: • Complete rigid steel structure to support Fume hood • Epoxy powder coated • Cabinet Integral work walls should be special chemical and heat resistant, smooth finish, easily cleanable panels should be made of phenolic resin laminated sheets • One removable horizontal partition to store chemicals • Double skin hinged doors • Latching System for the Base Cabinet doors • Polypropylene trays for chemical storage
30	Apparatus Holding Grid (Lattice Assembly)	A grid made up of <u>Duralumin Powder coated rod</u> (Dia. 12.5 ± 0.2 mm) to hold the apparatus. It should cover the entire length of the fume hood and should be built-in at fume hood backside.
31	Level adjusting screws	Made of SS Bolts to adjust the fume hood level by ± 10 mm.
32	Exhaust Port	Unique exhaust port design should ensure that the fumes be exhausted smoothly without any turbulence at the exhaust port. Also it should ensure low noise level.
33	Flow control valve	To regulate airflow.
34	Noise Level	< 70db at 1 meter from fume hood.

B. BLOWER

Centrifugal Blower 1 H.P for Fume Hood

Sr. No	Specification	Description
1	Construction	SISW type, chemical & heat resistant PP + FRP blower with aerodynamically balanced PP impeller, with drain plug.
2	Air Suction Capacity	750 CFM conforming to international face velocity norms and as per safe fume hood airflow pattern.
3	Motor	1 HP Motor 3 Phase TEFC, IP 55, Class F, continuous rating. As per IS 325.
4	Drive	Direct Drive

C. DUCTING

Chemical resistant PP + FRP (**3mm + 2mm**) rigid & flexible ductwork from fume hood to exhaust stack point with weatherproof canopy. Total ducting with horizontal, vertical members, flanges, bends, bracketed supports and gooseneck exhaust stack.

PP + FRP Ducting Charges (Per Square Feet). As per site requirement Minimum quantity given here. Vendor should propose their final quantity in tender. No additional order will be given for ducting = **At actual in Sq Ft**

INSTALLATION:

It will be carried out by skilled team with ductwork design, fitting, fixing of blower, commissioning & testing of the same at a fixed extra cost.

IQ/OQ/PQ:

Entire IQ/OQ/PQ protocols can be filled up and submitted to you after completion of the installation at extra cost.

TESTING:

All fume hoods are “factory tested” as per ASHRAE110:1995 or EN 14175-2003 face velocity norms. Also, “Onsite Validation” will be carried out to ensure working of fume hood as per international norms. “tracer gas containment testing’ can be carried out only in our factory at extra cost.