

# **SPECIFICATION FOR LAB EQUIPMENT**

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## 1.0 Specifications for Rotary Evaporator

1	Rotary evaporator with integrated heating bath and space saving vertical condenser (1L glass ware for receiving and evaporation flask)
2	System is supplied with motorized lift and shall incorporate with safety stop function.
3	Shall have end position recognition facility to protect the glass ware breaking
4	Water or oil bath shall be supplied with integrated carry handles and heating bath shall have facility for standalone operation.
5	Cooling surface shall be minimum of 1200cm <sup>2</sup> or better
6	Speed controller with 20 – 250 rpm speed range or better and shall have timer functions for time lapse control. Speed and time shall be indicated in digital display.
7	Heating bath temperature range shall be ambient to 180 <sup>0</sup> C with at least 3 liters capacity
8	Power requirement shall be 230V/50Hz
9	Shall have infrared data transfer system from the heating bath to the drive unit.
10	System shall compatible for EN 12697-3 and IP 20 for the safety.
	<b>Chiller</b>
11	CFC free chiller shall have Temp. Range -20 <sup>0</sup> C to room temperature with +/-0.5 <sup>0</sup> C accuracy
12	Stainless steel tank with approx. 3 liters capacity
13	Unit shall have a microprocessor controller with digital display and shall have a touch key pad to operate the functions
14	It shall have a Built in pump with on/off switch and maximum flow rate approx. 17 liters per minute at 300mbar pressure
15	It shall be Space saving and compact
16	Supply voltage : 230 V/ 50 Hz
	<b>Vacuum Pump</b>
17	Oil-free vacuum pump to prevent air pollution and easy maintenance
18	Shall driven by motor without belt for low vibration
19	shall have moisture trap in air inlet for increase life time of the pump
20	unit shall have automatic shut off facility when overheat
21	Maximum vacuum approx. 120mbar at 1450rpm and flow rate shall be at least 30L per minute
22	Capacitor: 3uf/450v
23	1/6HPhorse Power capacity with not more than 50dB noise
24	Power: 220-240V/50Hz
25	After Sales Services: Shall have a good after sales service. Please attach details of after sales service personnel, their qualifications and address of the after sales division etc.
26	Letter of authority required from the manufacturer.
27	Documentary evidence of requested specifications shall be provided by marking on manufacturer's literature.

## 2.0 Specification for 5 digit Micro balance

1	Capacity	80 g - 210 g dual range
		5 decimal reading
2	Readability	0.01mg-0.1mg
3	Platform Size	90mm in diameter or better
4	Units	Milligram, Gram,
5	Application modes	Weighing, Parts Counting with Automatic Sample Recalibration, Percent Weighing, Check weighing, Animal/Dynamic Weighing, Gross/Net/Tare Weighing, Totalization, High Point, Density, Statistics, Pipette Calibration
6	Display	2-Line Liquid Crystal Display (LCD ) with Backlight
7	Communication	RS232 with GLP/GMP Data Output
8	Construction	Metal base and top housing, stainless steel pan, glass draft shield doors with sliding top door, replaceable in-user cover
9	Design Features	Selectable environmental filters, protective in-use cover,, user selectable communications settings, user selectable data print options,
		removable wind ring in stainless steel platform for easy to clean
		Integral weigh below hook for specific density calculations
		up-front level indicator, stability indicator for easy viewing.
		user selectable span calibration points, auto tare, user selectable printing options
		Automatic internal calibration with two internal weights to perform linear calibration to minimize the weighing errors.
10	Stabilization time	Steady weight values within approx 5 sec under laboratory conditions
		user definable project and user ID's, software reset menu, software lockout menu
11	After Sales Services	Shall have a good after sales service. Please attach details of after sales service personnel, their qualifications and address of the after sales division etc.
12	Safety	Stable temperature behavior and Shock proof construction.
13	Letter of authority	required from the manufacturer.
14	Documentary evidence	Documentary evidence of requested specifications shall be provided by marking on manufacturer's literature.
15	Supplied with reference weight set.	
16	Electrical connection : 230 V or 115 V* 50 - 60 Hz, 40 W	

### 3.0 Specifications for Vertical Laminar Flow

1	Microprocessor control vertical lamina flow with LED Display
2	Air speed shall be adjustable
3	Front Sash shall be motor controlled
4	Internal Dimension (L:D:H) : 1380x750x1200 mm
5	External Dimensions: not more than 1500x800x2200 mm
6	Max opening : 600 mm
7	Airflow Velocity: Average of 0.3~0.5m/s
8	Filter Efficiency: >99.999% at 0.3 $\mu$ m
9	Noice Level: < 60dBA
10	Front Sash: Toughened glass, not less than 5mm, thick, resistant to anti-ultraviolet radiation.
11	Work zone material: 304 stainless steel and chemical resistant
12	Main body material: Cold-roller with corrosion-proof coating.
13	Fluorescent Lamp: 30W
14	30W UV Lamp with timer
15	Power consumption: not more than 500W
16	Electrical: 230V/50Hz
17	Gas tap, base stand UV lamp, Fluorescent Lamp shall be supplied with the system.
18	Standard accessories : taps, sink, active carbon filter.
19	Caster: Universal wheel with leveling feet
20	After Sales Services: Shall have a good after sales service. Please attach details of after sales service personnel, their qualifications and address of the after sales division etc.
21	Letter of authority required from the manufacturer.
22	Documentary evidence of requested specifications shall be provided by marking on manufacturer's literature.
23	Installation shall be carried by the supplier using UV resistant PVC pipe minimum of 225mm diameter with volume control damper and non return damper
24	Warranty - minimum 2 years

#### 4.0 Specifications for Shaker

1	Shall be an Orbital Shaker
2	Shall be able to control the speed
3	Shall comply with GS Safety standards and CE standards
4	Moving platform : 700 x 330 mm or better
5	Load: max. 10 kg or better
6	Shaking motion : orbital
7	Timer : Adjustable maximum 3 hrs
8	Shaking amplitude : 10 mm
9	Shaking frequency : 20 - 500 rpm
10	Electrical connection : 230 V ,50-60 Hz, 40 W
11	System supplied with Stainless Steel Shaking Tray, 16 Nos of Clamps for 250 ml flasks and with the universal mount.
12	After Sales Services: Shall have a good after sales service. Please attach details of after sales service personnel, their qualifications and address of the after sales division etc.
13	Letter of authority required from the manufacturer.
14	Documentary evidence of requested specifications shall be provided by marking on manufacturer's literature.

## 5.0 Specifications for Laboratory Bench complete unit

1	Single side laboratory work bench with reagent selves
2	Dimension : (L x W x H) - 1800 x 750 x 2000 mm
3	Material : Table top chemical and heat resistant, resist for all acids solvent and general chemical 16 mm thick epoxy resin top. Grey colour.
4	Body structure chemical and heat resistant powder coated steel structure, chemical and heat resistant phenolic laminated under bench cabinet.
5	Support C frame 60 x 40 x 2 mm thick epoxy powder coated steel frame with ADJ, stainless steel and rubber feet.
6	Handly : 128 mm length stainless steel handly cabinet body and knee back, made from 18 mm thick melamine laminated plywood with 2 mm PVC edging include 4 movable cabinet.
7	Drawers : Under bench cabinet structure : 1 Nos, 600 x 540 x 700 mm 2 doors, 1 nos drawers 450 x 540 x 700 mm 4 drawers. And easy movable.
8	Reagent selving chemical and heat resistant powder coated steel structure, 3 shelves width 250 mm chemical and heat resistant phenolic laminated under bench cabinet.
9	Warranty period 2 years
10	After sales service & maintenance

### Laboratory sink

Laboratory type including sink water faucet 3 way type

Material : Resistant to acids and alkalis : Epoxy material

Dimensions : Intern (L x W x D) : 1200 800 750

With wire drying rack

No overflow water



## 6.0 Specification for Refrigerator

Specifications	EZ-10
Model	Double door
Color	Textured White
Overall Dimensions	H=61" X W=23 1/2" X D=29 1/2"
Refrigerator Storage Capacity	310 L
Power source	AC , 220 Volts to , 50 Hz
Freezer Capacity	2.1 cubic feet
Fridge Interior Dimensions	H=39" x W=19 3/4 " x D=18 1/2"
Freezer Interior Dimensions	H=12" x W=17 3/4" x D=17"
Refrigerator gas	CFC free
compressor	Power saver
Accessories required	Adjustable shelves, chiller tray, temperature
Auto lamp on/off features shall be supplied with all the standard accessories	
Warranty	10 years for compressor and 2 years comprehensive



## 7.0 Specification for Pesticide standards and chemicals

	Specifications	Grade
1	Aldrin 25 mg bottle	Pesticide residue analysis grade
2	Hexachlorobenzene 250 mg bottle	Pesticide residue analysis grade
3	Endosulfan 250 mg bottle	Pesticide residue analysis grade
4	Etofenprox 100 mg bottle	Pesticide residue analysis grade
5	Chloropyrifos 250 mg bottle	Pesticide residue analysis grade
6	Profenophos 250 mg bottle	Pesticide residue analysis grade
7	Melathion 100 mg bottle	Pesticide residue analysis grade
8	Carbosulfan 250 mg bottle	Pesticide residue analysis grade
9	Mancozeb 250 mg bottle	Pesticide residue analysis grade
10	Diazinon 250 mg bottle	Pesticide residue analysis grade
11	Dieldrin 100 mg bottle	Pesticide residue analysis grade
12	Carbofuran 250 mg bottle	Pesticide residue analysis grade
13	Propanil 250 mg bottle	Pesticide residue analysis grade
14	Captan 250 mg bottle	Pesticide residue analysis grade
15	Parathion 250 mg bottle	Pesticide residue analysis grade
16	Petroleum ether 2.5 L Bottle	Pesticide residue /HPLC grade
17	Petroleum ether 2.5 L Bottle	A/R grade
18	Methanol 2.5 L bottle	A/R grade
19	Acetone 2.5 L bottle	Pesticide residue /HPLC grade
20	Sodium sulfate anhydrous 200 g bottle	A/R grade
21	Toluene 1 L	A/R grade
22	Dichloromethane 1 L bottle	Pesticide residue /HPLC grade
23	Diethyl ether 1 L bottle	Pesticide residue /HPLC grade
24	Florisil (30 - 65 mesh)	
25	Acetone 2.5 L bottle	A/R grade

## 8.0 Specification for Supporting glassware

	Specification
1	Round bottom flask ends of the necks are usually conical ground glass joints usually held by a clamp. 1L capacity, Pyrex
2	Round bottom flask ends of the necks are usually conical screw type joints. 1L capacity, Pyrex
3	Volumetric flask, with clear mark, 25 ml capacity, Pyrex
4	Volumetric flask, with clear mark, 50 ml capacity, Pyrex
5	Volumetric flask, with clear mark, 100 ml capacity, Pyrex
6	Volumetric flask, with clear mark, 250 ml capacity, Pyrex
7	Volumetric flask, with clear mark, 500 ml capacity, Pyrex
8	Volumetric flask, with clear mark, 1L capacity, Pyrex
9	Beakers, Pyrex, 25 ml Capacity
10	Beakers, Pyrex, 50 ml Capacity
11	Beakers, Pyrex, 100 ml Capacity
12	Beakers, Pyrex, 250 ml Capacity
13	Beakers, Pyrex, 500ml Capacity
14	Separatory funnel, 1 L capacity, Pyrex
15	Dessicator, capacity drying under atmospheric pressure. Ground glass flanges. 3 L capacity, Pyrex
16	Sintered glass chromatography column, internal diameter 45mm, complete length 53 cm, PTFE stop cock