

## Department of Materials Science and Engineering

Date: 02/09/2016  
IITK/MSE/FD

We are interested to purchase one freeze drier for films and powders. The proposed machine should comply with or be better than each of the specifications mentioned in the Technical Specifications Section.

Please carefully note and comply with the following instructions. If any of the instructions are not followed, the submitted bid will be disqualified.

1. Please submit your bids in two separate envelopes named “Technical Bid” and “Price bid”. The Technical bid should contain the detailed technical specifications of the proposed machine, photographs of the machine and other accessories offered. The Technical Bid should not contain any prices. The Price Bid should contain the technical specifications as well as prices in details.
2. The “Technical Bid” should contain one “Technical Compliance” statement, each page of which should have signature and seal of the prospective supplier. In this statement, each of the specifications mentioned in the Technical Specification should be re-written and the value (or range wherever applicable) offered in the proposed machine for the given specification should be specifically mentioned. This should be followed by stating whether the offered machine complies or does not comply with the concerned specification. If value offered by proposed machine for any of the asked specification is not specified or comply/does-not-comply for each specification not specified or any ambiguity is left in the specifications, the bid will be disqualified.
3. The prospective supplier should be either original manufacturer or 100% subsidiary or authorized agent of the original manufacturer of the offered machine. The Technical Bid should contain an original certificate obtained from the principal company to this effect.
4. The prospective supplier should have supplied the offered machine to at least 3 government or government-affiliated institutes, which should be either an IIT, IISc, NIT or a national laboratory like NML, NCL etc. The list of such personals having this machine and their contacts should be included in the Technical Bid.
5. Each of the envelopes should be appropriately marked as either “Technical Bid” or “Price Bid”. Enclose the two sealed envelopes in another bigger sealed envelope and send it to the address mentioned below.
6. The bids should reach the undersigned before 5 pm on **19<sup>th</sup> September 2016**.

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## Technical Specifications

**Laboratory Bench-top Freeze Dryer** This freeze dryer should be an energy efficient, microprocessor controlled, freely programmable and compact user friendly system. It should be CE compliant, HCFC/CFC-free, and should meet environmental and safety regulations of India.

Vender must have installed freeze dryer in IIT Kanpur in past 2-3 year and should enclose the copy of previous purchase orders from IIT Kanpur.

### 1. Technical specifications:

- Ice holding capacity before defrost should be 2.5 kg (or L) or higher.
- Sublimation rate should be 2 kg (or L) of water per 24 hours or higher.
- Condensation/collector temperature: -84 °C or lower
- Drain valve for disposal of defrosted material.
- Collector should be made with stainless steel coil and should be PTFE coated inside the chamber to trap acidic moisture.
- Power supply: AC 220-240V, 50/60 Hz
- A display for setup and operating parameters, such as ice condenser temperature, vacuum level and alarm messages, should be provided.
- It should have alarms for abnormal operation.
- Vacuum break and vacuum control valves should be provided to prevent oil back streaming.
- Should contain a moisture sensor to protect vacuum pump.
- Refrigeration system should be HCFC and CFC free with dual 1/3 hp in cascading mode.
- Vender should quote large mouth flask (No round flask), rubber top for easy clean and retrieval of sample in powder form along with stainless steel connectors 45 deg angled.
- RS-232 port for data logging
- Automatic start-up switch for collector cool-down and vacuum pull- down with manual override switches.

### 2. Compatible 12-Port Drying Chamber

- Type 304 stainless steel
- 1/2" thick acrylic lid with neoprene gasket, complete with 12 neoprene valves with molded plastic knobs that accommodate both 1/2" and 3/4" adapters for connection of flasks.
- One no. of Product Shelves having Dimension - 9.4" H x 6.25" D should be compatible with drying drum.

### 3. Compatible Rotary vane Vacuum Pump

- It should come with filter exhaust
- Capacity of 98 litres/min.
- Power supply: 220-240V, 50Hz Ultimate Vacuum :  $2 \times 10^{-3}$  mBar (1.5  $\mu$  bar)

### 4. Tube Holder Quantity 1

- Stainless steel
- Should accommodate up to 30 each 2.0 ml micro-centrifuge tubes in an upright position inside a compatible flask.

**5. Tube Holder- Quantity 1**

- Stainless steel
- Should accommodate up to 15 each of 12 or 13 mm diameter tubes in an upright position inside a compatible flask.

**6. 80 ml Complete Freeze Flask- Quantity 2**

- Flask Top Adapter Diameter : 1/2" • Dimensions / Flask Bottom : 115 mm × 34 mm
- Should be complete with all parts/accessories such as rubber top, glass bottom and filter paper

**7. 300 ml Complete Freeze Flask - Quantity 2**

- Flask Top Adapter Diameter : 3/4" , Dimensions / Flask Bottom : 45 mm × 59.2 mm
- Should be complete with all parts/accessories such as rubber top, glass bottom and filter paper.

**8. 900 ml Complete Freeze Flask - Quantity 2**

- Flask Top Adapter Diameter : 3/4" , Dimensions / Flask Bottom : 190 mm × 90.2 mm
- Should be complete with all parts/accessories such as rubber top, glass bottom and filter paper

**9. 45° Bend Adapter - Quantity 2**

- Stainless Steel
- 1/2" Flask Top to 1/2" valve

**10 45° Bend Adapter**

- Stainless Steel
- 3/4" Flask Top to 3/4" valve

**11 Soda Acid Trap**

- Should be compatible with dryer and pump.
- Should be complete including all compatible accessories/parts for functioning.