

**Request for Quote (RFQ) from domestic (India-based) manufacturers,
Indian original equipment manufacturer or its authorized Indian distributor
for two port glove box with freezer**

Summary

Tender number: OC/DPH/2021/ two port glove box with freezer
Tender date: 27th January 2022
Item description: Two port glove box with freezer
Tender type: Two bid system:
Technical Bid (Part A)
Commercial Bid (Part B)
Place of tender submission: Office of the Chairman
Department of Organic Chemistry
Indian Institute of Science
Bangalore 560012
Last date & time for
Submission of tender: 15th February 2022, 5:00 PM

Dear Sir/Madam,

This is a Request for Quote (RFQ) from domestic (India-based) manufacturers, Indian OEM, or its authorized Indian distributor only for procurement of two port glove box with freezer at the Department of Organic Chemistry (OC), Indian Institute of Science, Bangalore.

All interested vendors shall submit a response demonstrating their capabilities to produce the requested equipment to the primary point of contact listed below.

With respect to this tender, the rules laid out by the Government of India in order No. P45021/2/2017-pp-BE-II issued by the Public Procurement Section, Department or Promotion of Industry and Internal Trade, Ministry of Commerce, and Industry, dated 4th June 2020, will be followed. As per this order, the government has defined a 'Class-I local supplier' as "a supplier or service provider whose goods, services or work offered for procurement, has local content equal to or more than 50%". A 'Class-II local supplier' is "a supplier or service provider, whose goods, services or works offered for procurement, has local content more than 20% but less than 50%". Only Class-I and Class-II local suppliers are eligible to participate in this open domestic tender. Any "Non-local supplier," i.e., "a supplier or service provider, whose goods, services or works offered for procurement, has local content less than 20%" is ineligible to participate in this tender.

The deadline for submission of proposals is 15th February 2022 by 5:00 PM. Proposals should arrive at:

Office of the Chairman

Department of Organic Chemistry

Indian Institute of Science

Bangalore 560012

India

Direct all questions concerning the acquisition to Dr. Durga Prasada Rao Hari by email only at: dphari@iisc.ac.in

General Terms and Conditions

1. Quote should come only from domestic (India-based) manufacturers, Indian original equipment manufacturer (OEM), or their authorized Indian distributor.
2. The bid should be submitted in the two-cover system, i.e., technical, and commercial bids separately in sealed envelopes. The technical bid should contain all commercial terms and conditions, except the price.
3. The technical bid must contain a point-by-point technical compliance document. The technical proposal should include a compliance table that should explain your compliance in a "yes" or "no" response against each of the items in the table listed in this RFQ. If the answer is "no," the second column should state the extent of the deviation. The third column should state the reason for the deviation if any. The fourth column can be used to compare your tool with that of your competitors or provide details as requested in the technical requirement table below.
4. In the commercial bid, the price (in INR) should include all discounts.
5. Provide certificates for the country origin of manufacturing for each line item. Price of every line item in the commercial bid should be quoted along with the total quoted price for the instrument to be operational (installed and ready to use) in our facility.
6. The vendor should have qualified technical service personnel for the equipment based in India (preferably in Bangalore).

7. The covering letter should clearly state that whether the vendor is a Class-I or Class-II local supplier. Failing this, the bid will be automatically rejected.
8. The vendor to state the percentage of the local content and provide self-certification that the item offered meets the minimum local content requirement. They should also give details of the location(s) at which the local value addition is made.
9. The lead time for the delivery of the equipment should not be more than three months from the date of receipt of our purchase order. It should be clearly mentioned in the technical and commercial bids.
10. All the quotations must be valid for at least 90 days at the time of submission.
11. A list of customers and references details and contact information should be provided.
12. The Bidder must not be blocked/banned/suspended or have a record of any service-related dispute with any organization in India or elsewhere. A declaration to this effect should be provided.
13. Items in addition to that listed in the technical table that you would like to bring to our attention, such as datasheets, technical plots, etc. can be listed at the end of the compliance table.
14. Vendors are encouraged to highlight the advantage of their tools over comparable tools from the competitors.
15. If needed, a meeting for any technical clarifications can be scheduled with the undersigned by sending an email.
16. The Institute reserves the right to accept or reject any bid or to annul the bidding process and reject all bids at any time before the award of contract without thereby incurring any liability of the affected bidder or bidders.
17. Warranty terms and additional warranty options are a must for all the components—a minimum of three years of complete system warranty and (Annual Maintenance Contract) AMC for two years.
18. Terms and conditions for the annual maintenance contract beyond the warranty period should be mentioned.
19. After the purchase order award, the vendor must provide an Order Acknowledgement within 30 days from the receipt of the Purchase Order.
20. Please quote the price of each optional line item separately. The quotations should be on for-IISc Bangalore basis in INR only.
21. The vendor should have supplied at least one glove box in IISc, Bangalore (please furnish details).
22. If the goods are found to be defective, they have to be replaced or rectified at the cost of the supplier within 30 days from the date of receipt of written communication from us. If there is any delay in replacement or rectification, the warranty period should be correspondingly extended.

Technical requirements: Please note that the requirements listed below are only guidelines. Vendors are requested to quote for equipment that meets the criteria to the best extent possible and list deviations, if any. Deviations are NOT an automatic reason for disqualification. A technical group will discuss them before making an informed decision.

Technical specifications

Enclosure:

- The working space of each glove box should be at least 850-900 mm in height, 1100-1250 mm in length, and 730-790 mm in depth.
- The window materials should be impact-resistant polycarbonate that is at least 10 mm thick.
- The main body must be SS304, or SS316 brushed stainless steel, at least 2-2.5 mm thick.
- The trays, rails, and other components in the antechambers should also be of 304 grade or 316 grade or similar corrosion/chemical resistant grades of brushed stainless steel.
- The external should either be powder coated or Spray paint finish.
- We strongly prefer a system in which the space underneath the glove box is empty.
- We need a modular system that can be expanded further. The side panels must be removable to accommodate future expansions.
- Glove Ports: Delrin(POM) Natural white/PP.

Programmatic Logic Control (PLC):

- The glove box should be controllable with independent and fully integrated Siemens PLC, with a touch panel interface.
- The touch panel interface should serve as a central control unit for all glove box functions and procedures.
- All glove box functions should be accessible via the touch panel.
- Graphical display of the box pressure, O₂, and moisture levels should be available in the touch panel interface.
- Automatic Box purge should be possible via PLC.
- PLC should trigger an automatic box purge either due to high O₂ or moisture or both in the glove box or an automatic timer option to trigger box purge at a pre-set time for a pre-set duration. Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided.
- Gas (argon or nitrogen) flow rate of 180-200 liters/min or greater during purging should be possible.
- The O₂ and moisture trigger set-point range for automatic box purging should be between 10-999 ppm. Touch panel implementations showing this should be provided. A copy of relevant documentation in a manual should also be provided.

Purifier:

- Single Column Gas purification system 7-inch Siemens touch screen HMI, remote and graphical PLC controller with Auto-regeneration.
- The glove box should have at least one independent purifier capable of purifying the glove box ambient to attain purity of <1 ppm H₂O and O₂.

- The removable capacity should be a minimum of 35-43 liters for oxygen and at least 1200-1500 grams for moisture.
- The purifier should be fully regenerable with an automatic/programmed control using forming gas (10% H₂ or lower) or Ar or N₂.
- The gas circulation blower should be capable of a circulation rate of at least 80-110 m³/hour. The maximum and minimum circulation rates of the blower should be provided and should work without any heat exchanger.
- The blower speed should be dynamically controlled via program logic based on the moisture and O₂ content in the glove box to make the blower operation power efficient. Implementation diagrams or specifications that prove this is possible must be provided.
- The purifier loop must have at least two H13 or H14 dust filters (HEPA filters) -- one for filtering inlet gas (N₂ or Ar) and one for filtering the box ambient before it goes out to the gas circulation system.
- Oil bubblers should NOT be used in any of the gas circulation lines. The mechanism for pressure regulation should be clearly mentioned.
- NO component in the gas circulation line (except for the vacuum pumps) should use oil or oil-containing parts.
- Eco Mode Operation.
- Auto purge with time sequence or ppm of O₂ and H₂O.

Solvent Absorption Unit:

- The solvent trap should absorb volatile organic solvents like DMF, THF, methanol, toluene, IPA, acetone, methanol, DMSO, acetonitrile. The capacity of the solvent trap must be 4.5kg - 6kg or more.
- The solvent absorption unit should be upgradable to regenerable via PLC with a regeneration option provided in the touch panel controls. Touch panel implementations showing this should be provided. A copy of relevant documentation in a manual should also be provided.
- The Solvent absorption unit should have both inline and bypass modes.

- 20 - -30 Freezer RHS of the Glove Box:

- 17-22 Litter capacity
- Designed for the low-temperature storage of chemicals, which need to be processed or held in a pure inert atmosphere, these glove box freezers can be dedicated systems or used in conjunction with other process operations.

Sensors:

- A solid-state/Electrochemical oxygen sensor capable of measuring oxygen levels from 0.1 ppm to 1000 ppm should be provided.
- A solid-state moisture sensor capable of measuring moisture levels from 0.1 ppm to 500/3000 ppm should be provided.

Box pressure:

- Box pressure should be controllable automatically (via programmatic logic) within a pressure range of -15 to +15 mbar.
- The desired pressure should be settable via the touch panel interface. Touch panel implementations showing this should be provided. A copy of relevant documentation from the user manual should also be provided.

Gloves and Glove Port Covers:

- There should be 2 POM (polypropylene is preferred) glove ports for each box, and butyl gloves should be provided for these glove ports.
- The size of each glove port should be at least 9-inch in diameter.
- The glove ports should be O-ring sealed against the gloves.
- At least one additional pair of butyl gloves should be supplied with the box. Include the cost of gloves in the commercial bid.
- Must include at least one glove port cover.
- The thickness of the butyl gloves should be a minimum of 0.4 mm.

Automatic Large Antechamber:

- The box must have one large antechamber for sample transfer.
- The antechamber should be cylindrical with a diameter of at least 360-400 mm and a length of ~550-600 mm.
- The doors should preferably be with a swing-type hydraulic-assisted opening mechanism to conserve working space.
- There should also be a tray preferably mounted on telescopic rails, which can be slid back and forth. The tray should facilitate the transfer of tools and chemicals.
- The chamber must have an automatic PLC controlled evacuate and purge system with a pressure gauge.

Mini antechambers:

- The box must have one mini antechamber for sample transfer.
- The antechamber should be at least 145-155 mm in diameter and 380-420 mm in length.
- The antechamber should have a tray to enable sample transfer.
- The chamber must have a manual pump and purge system: with pressure gauge, manual valve, and connection to vacuum pump.
- The antechamber should have a door that can seal the antechamber for evacuation.
- Stainless steel Tray

Feedthroughs:

- The box should have at least 4 KF-40 feedthroughs. These can be connected to liquid, electrical, or vacuum feedthroughs.
- The system must have at least one electrical feedthrough with 15 A connector that are compatible with 220 V – 240 V supply.

High performance compact dry vacuum pump:

The box should come with a High-performance compact dry vacuum pump of at least 30 m³/h capacity.

- Pumping Speed NXRI 30 m³/h.
- Ultimate vacuum (total pressure) 0.03 mbar (0.022 Torr).
- Inlet flange NW25.
- Outlet flange NW25.
- Maximum permitted outlet pressure 0.2 bar gauge.
- Maximum continuous inlet pressure 1013 mbar.
- Operating temperature range +5 to +40°C.
- Nominal rotational speed 15000 rpm.
- Voltage input 100-127/200-240 V (+/-10%), switchable.
- Frequency 50/60 Hz.
- Power connector 1-ph IEC EN60320 C19.
- Power at ultimate 450 W.
- Leak tightness < 1x10⁻⁶ mbar ls⁻¹.
- Noise at ultimate vacuum 55 dB(A).
- Vibration at inlet flange < 2.0 mm/s.
- The pump ON/OFF should be controllable via the touch panel. Touch panel implementations showing this should be provided.

Ionizing Air Blower

- Ionizing Air Blower anti-static instrument should be provided inside the Glove Box.
- efficiency. The Aerostat PC operates on AC technology and is designed to provide ionization to a targeted work surface.
- Features
- Discharge time of 1.5 seconds at 1 foot*
- Lightweight, compact and quiet for unobtrusive use
- Built-in emitter point cleaner
- Variable speed fan for airflow control
- Status lamp indicates high voltage is present at the emitter points
- Integrated heater for warm air flow
- Optional Fan Air Filter

Accessories:

The following accessories should be supplied along with the glove box

- One nitrogen cylinder filled with UHP grade gas.
- One regeneration cylinder with mixer gas (nitrogen 90% - hydrogen 10%).
- One stainless steel regulator for nitrogen cylinder with 200-250 l/m flowrate.
- One stainless steel regulator for regeneration gas with 25 - 30 l/m flowrate.
- 0.4mm 9-inch dia 32-inch length butyl Gloves.
- One LED lamp inside the glove box. There must be a switch on the outside of the body or touchscreen to turn the light on/off.
- A foot pedal for controlling box pressure should be provided.

- At least two height-adjustable stainless-steel shelves of at least 1000 mm in length and at least 200 mm in depth should be provided. These should be centrally located so that any chemicals or tools are accessible from glove ports.
- All electrical connections should comply with line power specifications in India. Single phase voltage range is 220-240 V, and the three-phase voltage range is 415 - 440 V. The line frequency is 50Hz.
- The circulation system should make it possible to have positive pressure regulation without vacuum pump.

Other requirements:

- Installation and Training: should be provided free of cost.
- The cost of shipping to IISc should be included.
- List of acceptance tests for on-site (vendor) inspection and after installation at IISc.
- A set of basic experiments for performing routine checks of acceptable operation with clear instructions to be provided.
- Maintain <1 ppm of H₂O and O₂ for 24-hour period.
- Demonstrate automated routines for catalyst regeneration
- Demonstrate automated routines for maintaining target pressure.
- The payment terms should be specified in the commercial proposal, which should be consistent with IISc's domestic purchase policies.
- Please provide details of the number of trained personnel in India, the number in the southern region, or Bangalore who can service the instrument.
- Please include other options currently available which can be added in the future.

Dr. Durga Prasada Rao Hari
Assistant Professor
Department of Organic Chemistry
Indian Institute of Science
Bangalore 560012
Tel: 080-2293-2848