



Request for Quotation

Enquiry No: **IITK/CE/TG/NCAP2018-01**

Date: 5, Mar 2018

Last Date: 16, Mar 2018

Technical bid tender opening on 20th Mar (Tue), 2018 at 3pm in Stores and Purchase section IIT Kanpur.

Financial bid for the technically qualified parties will be opened at a later stage.

Sub: Call for quotation for “TEFLON FILTERS, QUARTZ FIBER FILTERS AND NYLON FILTERS”

Sealed quotations are invited for purchase of *TEFLON FILTERS, QUARTZ FIBER FILTERS AND NYLON FILTERS*. Supplier should mention complete contact details such as E-mail, telephone etc.

Minimum Technical Specifications:

There are three different types of Filter papers, **minimum specifications** given below.

i. For Teflon Filter (PTFE MEMBRANE).

1. Diameter ~ 47 mm with supported ring (46.2 ± 0.4 mm).
2. Thickness 30 to 50 μm .
3. Pore size 2.0 μm as measured by ASTM F 316-94 or similar.
4. pH neutral and Density ~ 0.5 mg/cm^2 , Pressure drop @ 16.67 LPM ~ 30 cm H₂O or less (ASTM D 2986-95a or similar).
5. Weight stability: Filter weight loss shall be less than 20 μg (average change in weight of 50 filters).
 - (a) Test for loose, surface particle contamination. After the initial weighing, install each test filter, in turn, in a filter cassette and drop the cassette from a height of 25cm to a flat hard surface, such as a particle-free wood bench. Repeat two times, for a total of three drop test for each test filter. Remove the test filter from the cassette and weigh the filter. The average change in weight must be less than 20 μg .
 - (b) Test for temperature stability. After weighing each filter, place the test filter in a drying oven set at $40^\circ\text{C} \pm 2^\circ\text{C}$ for not less than 48 hours. Remove, condition, and reweigh each test filter. The average change in weight must be less than 20 μg .
 - (c) Aerosol retention (collection efficiency) greater than 99.7 percent, as measured by the DOP test (ASTM D 2986-91) with 0.3 μm particles at the samplers operating filter face velocity or 16.67 L/min air flow rate.
 - (d) Use for PM_{2.5} sampling or equivalent.
 - (e) Support ring media: polymethylpentene (PMP) or equivalent inert material.
 - (f) Support ring thickness: 0.38 ± 0.04 mm

- (g) Loose particles : <20 µg
- (h) Moisture pickup: not more than 10 µg wt. increase after 24 h exposure to air of 40% RH, relative to wt. after 24 h exposure to air of 35% RH.
- (i) Alkalinity less than 25 micro equivalent/gram of filter (reference: EPA/600-R-94/038b, Sec. 2.12).
- (j) Pressure drop (0.3 µm) @16.67 L/min: 30 cm H₂O column (max)
- (k) Desired Specifications:
Background metal concentration in the filter matrix should be absolutely low to enable sub-ppb level analysis of various metals present in sampled PM namely Na, Mg, Fe, G, Mn, Cu, Zn, Pb, Ba, Sr, Ni, Co, Ar, Se, Mo etc. Vendors must report the avg. level of the individual metal present in blank filter matrix, refer to USEPA compendium method no. IO-3.1 (EPA/625/R-96/010a) and provide a standard certificate of analysis.
- (l) The filter should be USEPA approved/certified for ambient PM sampling. Kindly, provide relevant document.

ii. Tissue Quartz.

1. Diameter ~ 47mm
2. Thickness: Min-300 µm, Max – 600 µm (ASTM D 645-92 or similar)
3. Density: 6.51 mg/cm², stable even at temperature > 950°C.
4. Aerosol retention for 0.3 µm size particle at 16.67 LPM = 99.95% or better (ASTM D 2986-91 or similar)
5. Tensile strength: 200-gram force/20mm (min) (ASTM D 828-93 or similar)
6. pH: 7, Alkalinity less than 25 micro equivalent/gram of filter (reference: EPA/600-R-94/038b, Sec. 2.12).
7. Pb content: <15 µg/filter
8. Desired Specifications
Background metals and organics should be absolutely low to enable sub-ppb level analysis of various metals present in sampled PM normally Na, Mg, Fe, G, Mn, Cu, Zn, Pb, Ba, Sr, Ni, Co, Ar, Se, Mo etc. Vendors must report the avg. level of the individual metal present in blank filter matrix refer to USEPA compendium method no. IO-3.1 (EPA/625/R-96/010a) or similar and provide a standard certificate of analysis.
9. Background level of carbon in the filter matrix should be reported. To enable its use for EC/OC analysis.
10. The filter should be USEPA approved/certified for ambient PM sampling. Kindly, provide relevant document.

iii. Nylon Membrane Dice Filter.

1. Diameter ~ 47 mm, membrane disc type.
2. Aerosol retention for 0.3 µm size particle at 16.67 LPM = 99% or better (ASTM D 2986-91 or similar)
3. Low artefact formation, low impurities
4. Pore size: 1 µm
5. Typical Thickness: 90 µm (3 mils)
6. Maximum Operation Temperature: 180°C (356°F)

7. Maximum NO₃⁻ Background level: 0.025 µg/cm²
8. Background metals should be absolutely low. Vendors must report the avg. level of the individual metal and nitrate contaminants present in blank filter matrix refer to USEPA compendium method no. IO-3.1 (EPA/625/R-96/010a) or similar and provide a standard certificate of analysis.
9. The filter should be USEPA approved/certified for ambient PM sampling. Kindly, provide relevant document.

Terms and Conditions under bulk Tendering for MOEFCC funded NCAP:

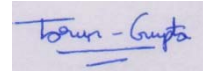
- Quote price should be on per filter basis (PTFE Membrane total Quantity = 10,650 filters, Tissue Quartz total Quantity = 27,800 filters and Nylon Membrane Disc total Quantity = 6,700 filters). The actual number of these three types of filters eventually ordered by each individual institute will vary as per their requirements.
- Quote should be made in two parts: Technical bid and financial bid separately in sealed envelopes.
- Financial bid for products whose technical bid is not acceptable will not be opened.
- If the financial bid is included in the technical bid then quotation will be rejected.
- The sealed envelopes with the quotes should be super scribed mentioning whether it is technical or financial bid.
- Taxes, packaging, forwarding freight charges, if any should be mentioned separately and clearly.
- The filter (s) proposed to be procured under a consortium agreement of various participating Govt. Institutes to ensure standardization and to avail volume discounts.
- The participating institutes will place separate orders for supply of Item(s) as per their individual requirements on same rates, terms and conditions but with separate purchase orders, point of delivery, customs clearance, delivery and payment arrangements. **However, it is desirable that filters of a particular type belong to the same batch for all the participating institutes mentioned here and truly help us in eliminating batch-to-batch inconsistencies.**
- The consortium appointed tendering institute (IIT Kanpur) may negotiate with the lowest and responsive bidder for justification of prices and discounts.
- The bidders are required to deliver the filter in the following institutes:
 - a) IIT Kanpur, Kalyanpur, Uttar Pradesh, 208016 (PI: Prof. Tarun Gupta, Dept. Of Civil Engineering)
 - b) IIT Bombay, Mumbai, Powai, Maharashtra, 400076 (PI: Prof. Chandra Venkataraman, IDP in Climate Studies)
 - c) IIT Delhi, Hauz Khas, New Delhi, Delhi, 110016 (PI: Prof. Gazala Habib, Dept. of Civil Engineering)
 - d) IISER Mohali, Knowledge City, SAS Nagar, Mohali, 140306 (PI: Prof. Baerbel Sinha, Department of Aerosol Research Group)
 - e) IISER Bhopal, Bhopal Bypass Road, Bhauri, Bhopal, Madhya Pradesh 462066 (PI: Prof. Ramya Sunder Raman, Dept. of Earth & Environmental Sciences)
 - f) Bose Institute, Kolkata 700054 (PI: Prof. Abhijit Chatterjee, Department of Environmental Science Section)
 - g) University of Kashmir, Hazratbal, Srinagar 190006 (PI: Prof. Arshid Jehangir, Department of Environment Science)
 - h) BIT Mesra, Ranchi, Jharkhand 835215 (PI: Prof. Gopal Pathak, Department of Civil and Environmental Engineering)
 - i) IIT Madras, IIT Campus, Chennai 600036 (PI: Prof. R. Ravi Krishna, Department of Chemical Engineering)
 - j) National Physical Laboratory, Dr. K.S. krishana Marg, New Delhi 110012 (PI: Dr. T. K. Mandal, Radio & Atmospheric Sciences)
 - k) IIT Hyderabad, Kandi, Sangareddy, Telangana 502285 (PI: Prof. Asif Qureshi, Department of Civil Engineering)
 - l) IITM Pune, Dr. Homi Bhabha Road, Pashan, Pune 411008 (PI: Dr. PSP Rao, Indian Institute of Tropical Meteorology)
- Maximum educational discount, if any, should be offered.

- Uniform rate will apply even if any institute (s) requires re-tendering a single item.
- Vendor must provide the two letters of satisfaction from the reputed government national institutes or research organization where provide two peer-reviewed well respected research articles in that research work quoted filter has been used.
- One authorized representative of each of the bidder (may come at their own expenses) would be permitted to be present at the time of opening of the technical bids. **Technical bid tender opening on 20th Mar (Tue), 2018 at 3pm in Stores and Purchase section IIT Kanpur.**
- All quotations should be in the currency of the country of origin of the instrument and on FOB/FCA basis only.
- Quotation should carry proper certifications like Authorization, Proprietary Certificate, USEPA Certificate etc.
- Institute is exempted for payment of Excise Duty under notification no. 10/97 and partially @ 5.15% custom duty exemption certificate under notification 51/96 and road permit will be provided if applicable.
- The penalty @ 1% per week or part thereof subject to a maximum of 10% of the delivery price will be deducted from the balance payment if supply is not completed within stipulated time period.
- Our standard payment terms & conditions is 90% against delivery and 10% after inspection and approval of its satisfactory performance.
- At any time prior to the deadline for submission of bids, IIT Kanpur may, for any reason, whether on its own initiative or in response to the clarification sought by a prospective BIDDER may modify the bid document by issuing necessary corrigendum.
- The institute reserves the right for accepting and rejecting any quotations without assigning any reason thereof.
- **Last Date for receiving the sealed quotations: 5 pm, 16th March (Fri), 2018.**

Thanking You!

Date: Mar 5th, 2018

Yours faithfully,



Dr. Tarun Gupta
Professor
Department of Civil Engineering
Indian Institute of Technology Kanpur
Kanpur- 208016