

**Government of India
Bhabha Atomic Research Centre
Ion Accelerator Development Division**

Enquiry and Specification for Tender No IADD/SVS/2019/OPA/ 26242 due on 26/02/2019

To,

Subject: Minor fabrication and supply of metallized alumina discs (quantity: 30 nos)

Dear Sir,

Please let us have your competitive rate for *Minor fabrication and supply of metallized alumina discs (Quantity 30 nos)* as per following details:

1. The scope of work involves supply of thirty numbers of metallized alumina discs.
2. The alumina discs must be fabricated as per specifications and drawings provided (Annexure I).
3. The supplier shall prepare the detailed fabrication drawings and must submit the drawings to undersigned for approval before starting the fabrication. Digital copies of the 3D model and drawings shall be provided to the indenter, along with hard copy of the drawings. .
4. The supplier has to provide two separate **sealed** envelopes, one for technical compliance and other for commercial quotation with terms and conditions. **If both, technical and commercial offers are not in separate sealed envelopes, the offer will be summarily rejected.**
5. For technical compliance, supplier shall prepare a compliance table mentioning each and every technical specification given in Annexure I (the table should include all the specs given in the specification table and the points mentioned in test results and additional requirements). **Quotation without compliance table will be rejected.**
6. The bidder should have supplied metalized alumina ceramic to any government research unit like BARC/RRCAT/DRDO/ISRO at least on one previous occasion. All the copies of earlier work orders or purchase orders that demonstrate the required experience should be attached with the quotations. **If the supplier is unable to demonstrate suitable experience indicated above, the offer is liable to be rejected.**

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Rights and Privileges:

Indenter reserves the right to inspect any machinery or material or equipment furnished or used by vendor or to reject any, which is found defective in workmanship, quality, and design or otherwise unsuitable for use which is not in accordance with the specification.

Note: In case any further clarification is required, the bidders may contact the undersigned at phone no. 022-2559-1475.

Your quotation duly filled in the prescribed format, addressed to “Head, IADD, Van-de-Graff Bldg, BARC, Trombay, Mumbai – 400085” in a sealed envelope quoting tender number and due date, must reach on or before **26/02/2019** date by 3 PM **through speed post only**. On top of envelop it must also be written “kind attention to Sonal Sharma, IADD”.

Sonal Sharma
SO/E, IADD

Enclosures:

Specifications and drawing(Annexure I)

Annexure I

I. Technical Specifications

Scope of Work

The alumina/ceramic disc will act as window between the air side and vacuum side of the coaxial RF coupler. Since the coupler will operate under ultra-high vacuum (UHV) of 1×10^{-8} Torr or better, the alumina quality cannot be compromised.

This disc should be metallized on inner and outer diameter surfaces. The metallization on the ceramic periphery (outer rim) would consist of Mo-Mn layer (~20-30 μ m) with Ni-plating (~2-10 μ m) and should be uniform. The metallization should be firm and should not be removed simply by scratching it with nail. No part of the metallization should penetrate over the disc surface. Following parameters of specifications should be met.

Specification table

1.	Material	Alumina ceramic
2.	Purity	$\geq 99.7\%$
3.	Metallization	Inner & outer diameter surfaces
4.	Mo-Mn thickness	10 μ m-38 μ m
5.	Nickel Thickness	2 μ m -10 μ m
6.	Chamfering	≤ 0.5 mm
7.	Dimensional tolerances	± 0.10 mm
8.	Outer diameter	$\varnothing 100.98$ mm
9.	Inner diameter	$\varnothing 25.4$ mm
10.	Thickness	6 mm
11.	Surface finish	better than 0.8 micron
12.	Dielectric Loss Ac-kv/mm (3.18mm)	1.0×10^{-4}

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13.	Dielectric Constant (25°C@1MHz)	8.7
14.	Volume resistivity @25°C	>10 ¹⁴ Ohm-cm
15.	Elastic modulus	350Gpa
16.	Poisson's	0.22
17.	Flexural strength	≥340 MPa
18.	Fracture toughness	≥4-5 Mpa.m ^{0.5}
19.	Vickers Hardness	81(14.3) R45N (Gpa,1000g)
20.	Thermal Conductivity	≥30 W/m-k
21.	Coefficient of thermal expansion @ 25-1000°C	8.2 x10 ⁻⁶ /°C
22.	Specific heat	880 J/Kg-k
23.	Max. use temperature At No load condition	1750°C
24.	Thermal Shock Tc	200°C
25.	Outgassing rate (after baking)	10 ⁻⁸ mbar L/sec/cm ²
26.	Vacuum compatibility	UHV

Test Results:

- Test result as mentioned in (a) and (b) should be submitted to BARC for evaluation before dispatching the material.
 - (a) Dimension measurement before metallization and after metallization
 - (b) Test certificate (showing conformance and compliance to above specifications) which includes:
 - Test report for Hardness, Alumina content
 - Certificate stating that the material is conforming to the specification.

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Additional requirements:

- The alumina disc should meet the desired dimensional accuracy, surface finish and material purity. Vendor should provide the required test reports of the purity of the material.
- The alumina ceramic manufacturer should have more than 5 years of experience in technical ceramic which also involves metallization of Mo-Mn.
- The indented alumina disc shall be delivered only after getting all the test reports approved by the indenter.
- Components should be thoroughly cleaned before testing and packing.

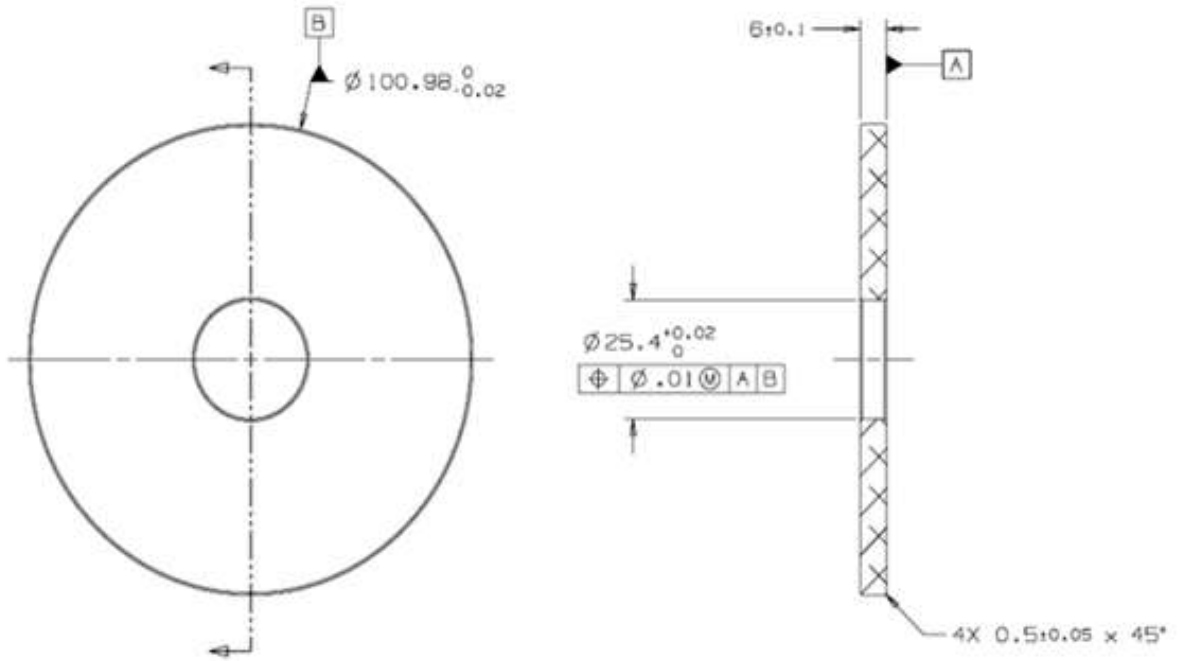
Packing

- The vendor should supply the part sufficiently packaged to protect the finish and integrity during shipment and storage.
- The use of self-adhesive is forbidden.
- The indented component is to be delivered as packed in the factory.

Imp Note:

Post supply inspection in respect of supplies made is not permitted. Any offer containing the condition of post supply inspection will be rejected out-right. It is therefore, mandatory for the bidders, while quoting, to indicate in clear terms the requirement of post supply inspection by any outside agency.

II. Drawing details



- All units are in mm