

Government of India
Bhabha Atomic Research Centre
Accelerator Control Division

Ref: ACnD/EMAS/17/308

Date: 04/05/17

-----TO WHOM SO EVER IT MAY CONCERN-----

Sub: Fabrication, machining, and supply of S-Glass fibre tube conforming to technical specification ACnD/EMAS/SCM/17/15 dated 03.05.2017

Dear Sir/Madam,

1. Quotations are invited for Fabrication, machining, and supply of S-Glass fibre tube conforming to technical specification ACnD/EMAS/SCM/17/15 dated 03.05.2017
2. Bidder shall quote for purchase of raw materials, fabrication, assembly, integration, testing and supply of all glass fibre components as per the tender technical specification.
3. Taxes and Excise Duties shall be quoted separately. Form AF / H whichever is applicable shall be provided, if required.
4. The quotation must reach The Head, Accelerator Control Division by 19.05.2017 (12:00 PM) and must be sent in a sealed envelope super scribed with the reference number & the due date given above only through India Ordinary Post/Speed Post.
5. The address on the envelop should read: The Head,
Electromagnetic Applications Section
Accelerator Control Division,
RCnD Bldg., North Site
BARC, Trombay,
Mumbai - 400 085.
(Kind Attn: S.Sundar Rajan, SO/F)
6. The bidder shall complete the job within 3 months from the date of firm work order issued to the bidder. The finished components shall be delivered by the bidder at Accelerator Control Division, BARC, Trombay, Mumbai - 400 085.
7. Head, Accelerator Control Division reserves the rights to accept / reject any or all quotations without assigning any reason.
8. Delivery charges if any must be clearly mentioned in the offer. Quotation must also indicate the validity of offer. Quotation must also indicate the VAT no and PAN no of the party.
9. Drawings / Sketches must be returned along with the offer.
10. The quotation has to be signed by authorized person with company seal.
11. Payment will be made by cheque only after satisfactory completion of work on production of bill, delivery challan and advance stamped receipt. It may be noted that IT @ 2%.
12. In case of any technical clarifications , the supplier may kindly contact Shri S.Sundar Rajan (sundara@barc.gov.in) , Telephone no : 022-25591851

Encl.: Technical Specification Sheet no: ACnD/EMAS/SCM/17/15 dated 03.05.2017

S.Sundar Rajan
(S.Sundar Rajan)
SO/F & Indenting Officer
EMAS, ACnD

Tender enquiry No : ACnD/EMAS/17/308 dated 04.05.2017

Specification no.	Revision no.	Date of Issue	No of pages
ACnD/EMAS/SCM/17/15	0	03.05.2017	5+1

Fabrication, machining, and supply of S-Glass fibre tube

1.0 SCOPE

This tender document specifies the requirements fabrication, machining, and supply of S-Glass fibre tube. The development shall be strictly carried out as per the specifications and standards details in this document. In this document, BARC shall be referred as purchaser and fabricator/company who will be executing job is mentioned as the supplier.

Supplier shall arrange required raw material/ facilities as per the requirement for development fiber glass tube. The supplier shall be qualified as per the Para 11.0. The brief description of contents of this tender specification document is as described below.

Para 2.0 gives the deliverables

Para 3.0 gives the general description

Para 4.0 gives the detailed job description

Para 5.0 gives the general requirements

Para 6.0 gives the requirements for raw material procurement.

Para 7.0 gives the requirements of manufacturing and workmanship

Para 8.0 gives the requirements of inspection and testing

Para 9.0 gives the requirements of documentation requirements

Para 10.0 gives the requirements of quality assurance

Para 11.0 gives the requirements of supplier qualifications

Para 12.0 gives the requirements of packaging and safe delivery

Para 13.0 gives the price and delivery schedule

Para 14.0 gives the confidentiality clause

2.0 DELIVERABLES

<u>S.No</u>	<u>Description</u>	<u>Qty</u>
1	Fabrication, machining, and supply of S-Glass fibre tube	02 Nos
Documentation including fabrication drawings, test reports and inspection reports.		

3.0 GENERAL DESCRIPTION

3.1 The design drawing of the S glass fiber tube is enclosed in Annexure-B.

3.2 The tube shall be made up of triaxial S glass fiber braids of 4 layer minimum with extension for the flanges at both the ends.

3.3 The flanges shall consist of minimum 4 layers of tri-axial S-glass fiber braids and 6 layers of bi-axial braids on the top of the flange and 01 nos of biaxial braids on the bottom of the flange.

3.4 Mould shall be developed to carry out the vacuum impregnation of the braids with the epoxy resin.

4.0 DETAILED JOB DESCRIPTION

4.1 The S- Glass fibre tube consists of fibre glass composite tube shall be fabricated by laying S-Glass fibre inside a mould. The complete mould shall be subjected to vacuum before pouring and during curing of epoxy resin.

4.2 To qualify the vacuum mould process and the fibre glass for the required mechanical properties, a sample rectangular size of fibre glass composite shall be developed and tested for its mechanical properties at room temperature and at 77K (liquid nitrogen). The expected mechanical property from the fibre glass composite is listed in Annexure-A.

4.3 Dimensional measurement of the assembly shall be carried out and inspection report shall be submitted for approval from purchaser.

5.0 GENERAL REQUIREMENTS

5.1 The supplier shall workout a detailed design to meet fabrication requirements and work description, quantity and main fabrication material. He shall submit along with the offer dimensional drawing giving all the salient features, material details of individual items and assembly view of the fixtures.

5.2 The Supplier shall indicate in detail the standards adopted for the materials and processes and the quality control procedures followed by them.

5.3 Supplier can suggest the color, aesthetics, and other details as suitable. Supplier must offer best quality/IS certified material only.

5.4 Supplier should have similar work experience and along with the offer, shall submit the details of past experience with documentary proof.

5.5 Materials, tools, manpower etc required for the above work will not be supplied by the user. Supplier has to arrange the above on his own (No free issue material).

5.6 The supplier shall incorporate minor changes in the design as required at the time of execution of work at no extra cost.

6.0 RAW MATERIAL PROCUREMENT

6.1 The specification of the glass fibre strands shall be S-Glass and shall conform to ASTM standard D578-98 or equivalent.

6.2 The glass fibre sleeves shall be purchased from well-known international supplier and the source of supplier shall be clearly indicated.

7.0 REQUIREMENTS OF MANUFACTURING AND WORKMANSHIP

7.1 The fibre glass layout and vacuum moulding shall be carried out strictly in a clean room and shall be void of any porosity.

7.2 The manufacturing process and workmanship shall be consistent with high grade industrial practice and shall be adequate to achieve the accuracies for intended requirements. Manufacturing process shall ensure the interchangeability of parts.

7.3 If supplier wants to use any jigs and fixtures for the manufacture, same shall be approved by the purchaser. Before commencement of production, supplier shall prepare quality control sheets for various stage of manufacturing and same shall be approved by the purchaser and will be used by third party/ BARC QS.

8.0 INSPECTION AND TESTING

8.1 A sample piece of fibre glass rod shall be subjected to mechanical testing at room temperature and at liquid nitrogen temperature to qualify the epoxy resin and the fibre glass layout pattern.

8.2 The dimensional testing of the composite tube after assembly.

9.0 DOCUMENTATION REQUIREMENTS

9.1 Upon the receipt of work order the supplier shall prepare the fabrication drawing of the composite tube showing the fibre layout pattern , epoxy resin combination etc shall be submitted for the approval.

9.2 The drawings of the mould , toolings required for machining of composite tube and for supporting thermal shield posts shall be provided.

9.3 The mechanical (Structural) test report of the fibre glass composite rod developed through the approved process shall be submitted for approval.

9.4 The final dimensional measurement of the cold mass support post shall be submitted for approval prior to dispatch.

10.0 REQUIREMENT OF QUALITY ASSURANCES

Quality surveillance and expediting, relating to all the aspects of the contract will be carried out by the purchaser or his authorized representative for which purpose the supplier and his subcontractor shall

10.1 Allow access at all reasonable times during manufacture, assembly and testing to the premises in which the work is being carried out.

10.2 Furnish the latest drawings and/or tooling, gauges, instruments, testing equipment etc. required for inspecting the jobs. Prints of all the latest required drawings and approved procedures shall be made available for inspection and retention, if so desired.

10.3 Produce an inspection plan to the purchaser's satisfaction and notify when checkpoints on the plan are imminent so that the purchaser's representative may be present, if it is so desired.

10.4 Obtain acceptance of the components in the form of a shipping release from the purchaser's representative before the shipment.

10.4.1 The address of the purchaser's authorized quality surveillance representative will be intimated by the purchaser after award of contract.

10.4.2 The supplier shall be responsible for the inspection of the components that is subcontracted by him.

10.4.3 Waiving of quality surveillance by the purchaser's or acceptance of the items by the purchaser or his authorized agent, shall not relieve the supplier from the responsibility for supplying the items in accordance with specification requirements of this document and purchase order.

11.0 REQUIREMENT OF PACKAGING AND SAFE DELIVERY

11.1 Protective covers: Supplier shall make necessary arrangements for all components using a suitable PVC cover or moulded thermocol. Proper care should be taken while handling the component during fabrication, inspection, testing and packing.

11.2 Packaging: After completion of all testing and identifying the components, the components shall be packed suitably for shipment, so that no damage occurs in transit. The purchaser shall subject the packing procedure to prior approval. At least one copy of packing list shall be kept in the package for quick and easy verification.

12.0 REQUIREMENTS OF SUPPLIER QUALIFICATIONS

12.1 Human resources: The supplier must give the details of human resources including Engineers, Draftsman, Electrical, Welder, assembly mechanic, quality control inspector, machinist etc.

12.2 Infrastructure: The supplier must give the details of infrastructure suitable for this job such as Manufacturing Machines, Welding machining, electrical testing equipment, winding machine, Assembly room and other tools & tackles, Inspection facilities etc.

12.3 Past experience: The supplier must give their past three year turnover and job executed by them with reference, volume of work and completion schedule, present commitments and anticipated commitments inside and outside India.

12.4 Sub contract: Supplier should list the jobs, which they want to sub-contract. They should also produce the list of sub-contractors and their infrastructures and facilities.

12.5 Supplier shall have experience of development and composite structures for the past 5 years. The supplier shall have supplied composite structures to renowned government Organization like HAL , NAL etc and proof of the same shall be supplied along with the offer.

12.6 To technically qualify the drawing of the mold , fibre glass braids technical details , epoxy resin details along with the resin impregnation procedure has to be supplied , if requested.

13.0 REQUIREMENTS OF PRICE AND DELIVERY SCHEDULE

13.1 The supplier shall give a lump-sum price with delivery schedule.

13.2 The complete job is expected to be completed in a duration of 03 Months.

14.0 CONFIDENTIALITY CLAUSE

14.1 No party shall disclose any information to any third party concerning the matters under this Contract generally. In particular, any information identified as "Proprietary" in nature by disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the prior written consent of the original disclosing party. This clause shall apply to sub-contractors, consultants, advisors or the employees engaged by a party with equal force.

14.2 "Restricted information" categories under section 18 of the Atomic Energy Act, 1962 and "Official secrets" under section 5 of the Official Secrets Act, 1923: Any contravention of the above mentioned provisions by any contractor / sub-contractor, consultant, advisor or the employees of the contractor will invite penal consequences under the aforesaid legislation.

14.3 Prohibition against the use of BARC's name without permission for publicity purpose. The contractor or sub-contractors, consultants, advisors or the employees engaged by a party shall not use BARC's name for publicity purpose through any public media like: press, radio, TV or Internet without any prior approval of BARC (wide circular ref.: 2/Misc-9/Lgl/2001/92 date 30/04/2001)

Annexure-A

Expected Mechanical properties of the glass Fibre tube

The developed tube shall have minimum the following properties

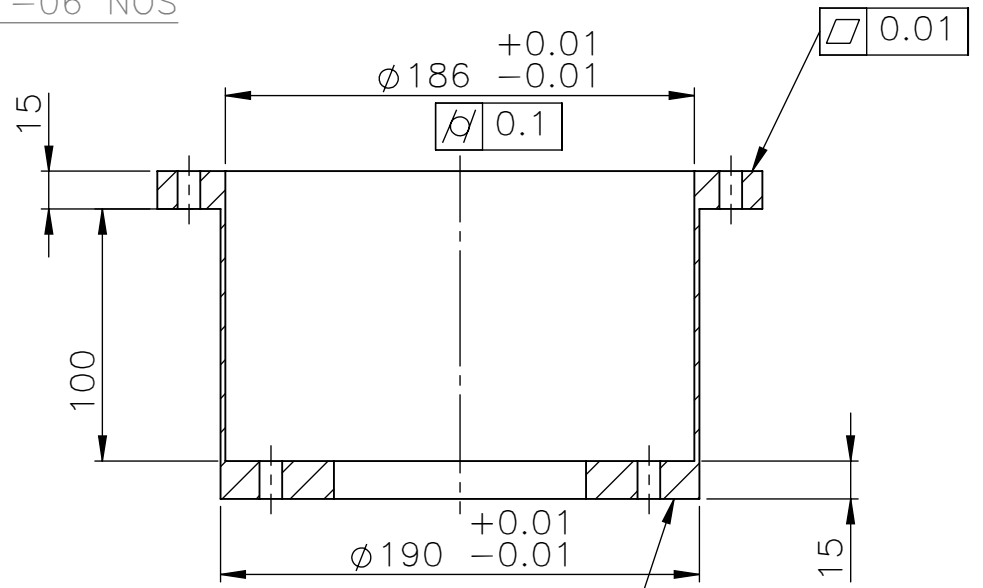
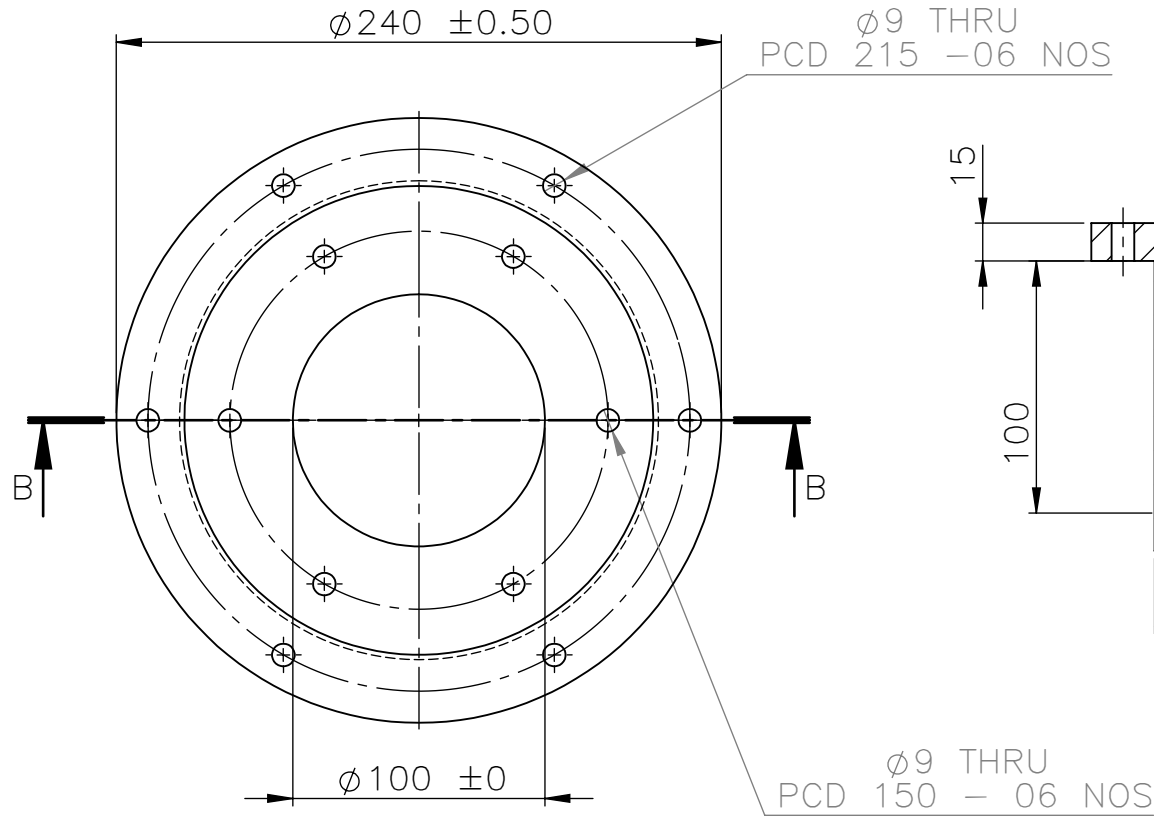
a) Fibre volume fraction : > 45% Glass-

b) Young's Modulus > 27.6 GPa

c) Ultimate tensile strength > 276 MPa

d) Ultimate shear strength > 100 MPa

All the above testing as shall be carried out at accredited lab as per ASTM standards only



QTY : 02 Nos

MATL : S-GLASS
 Weight : 1.90 Kg

FOR ENQUIRY ONLY

- UNLESS OTHERWISE SPECIFIED
- 1) DO NOT SCALE THE DRG
 - 2) SURFACE FINISH GRADE N6 AS PER ISO 1302
 - 3) TOLERANCE: ISO 2768-mK
 - 4) PARTS TO BE BURR FREE
 - 5) REMOVE ALL EXTERNAL SHARP CORNERS BY CHAMFER
 - 6) ROUND ALL INTERNAL SHARP CORNERS

TITLE		SUPPORT TUBE		THIRD ANGLE PROJECTION	SCALE:NTS
DR'N		PROJECT		ALL DIMENSIONS ARE IN mm	
DRG. CHK'D				REV. A DATE 5/3/2017	
STD.					
DES'D		GOVERNMENT OF INDIA BHABHA ATOMIC RESEARCH CENTRE ACCELERATOR CONTROL DIVISION		DRG. NO. A4-P-01	
DES'D CHK'D				SH. 1 OF 1	