

Government Of India
Bhabha Atomic Research Centre
ATOMIC FUELS DIVISION

Ref: AFD / FAS / 2019/ 60100

April 1, 2019

Sub: Procurement, Extrusion, Drawing, Testing, Packing and Supply of Aluminium tubes AA 5052 grade (57 S Aluminium).

Dear Sir,

Quotation is hereby invited for and on behalf of the President of India for work as mentioned below:


Terms and Conditions:

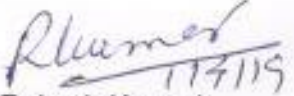
1. Scope of Work: Procurement, Extrusion, Drawing, Testing, Packing and Supply of Aluminium tubes AA 5052 grade (57 S Aluminium)
2. Final Requirement:
 - a) Size: ID $\text{Ø}52.30+0.1/-0.00$ mm $\times 0.9+0.2/-0.0$ mm thick $\times 3300\pm 5$ mm length.
 - b) Material : AA 5052 grade (57 S Aluminium)
 - c) Mechanical Properties:
 - 1) UTS: 17.5 Kg/mm² (min).
 - 2) % Elongation in 25 mm gauge length : 18% min.
 - d) Surface Condition: Free from Scratch, dents and clean. Scratch having depth more than 0.05mm will not be accepted. The outer and inner surface of the tubes shall be properly cleaned and there should not be any oil, grease or any foreign material on the surface. Surface finish should be 1.6 microns or better.
 - e) Straightness: 1mm/meter or better.
 - f) Quantity : 800 nos.
3. Vendor shall submit the requisite test certificates for raw material from NABL Certified /Accredited laboratory as mentioned in Material specification sheet. In case the vendor is not an Aluminium extruder, the raw material for these pieces shall be procured by the vendor from reputed Indian Aluminium Extruders only. Copy of the order placed with extruder shall be submitted to our representative.
4. Vendor shall make Nylon/ Hylum plug gauge (Go and No-Go) for inspecting the ID of tubes. The same gauge shall be submitted to our representative for inspection of finished tubes. The dimensions of the Go and No-Go plug gauge shall be as follows:
Go Plug Gauge : $\text{Ø}52.29+0.01/-0.00$ mm $\times 25\pm 0.5$ mm long
No-Go Plug gauge : $\text{Ø}52.41+0.01/-0.00$ mm $\times 25\pm 0.5$ mm long.
5. Drawn tubes will be inspected dimensionally & visually at your place by our representatives.
6. Finished and accepted tubes shall be wrapped in bubble packing for safe delivery. The tubes thus wrapped shall be stored in wooden boxes. Each box shall not contain more than 50 tubes.

7. Tubes shall be drawn in batches of 50 nos. Each drawn tube should have batch number and tube number marked on it. After final drawing and annealing, two tubes from each batch shall be subjected to Mechanical testing in presence of our representative. The batch number shall be FT-1, FT-2 etc. The tube numbers should be from 1 to 800. Tubes from 1 to 50 will correspond to batch no –FT-1 and 51 to 100 to FT-2 and so on.
8. Vendor shall submit the first batch of tubes (50nos.) to our representative for inspection and clearance. Remaining tubes (750 nos.) shall be taken up only after clearance of first batch of 50 tubes. Intimation for inspection shall be sent at least two weeks in advance.
9. Mechanical testing of sample of each batch will be witnessed by our representative. Report shall be generated and submitted for each batch. Mechanical testing of samples of each batch shall be carried out in NABL certified lab only.
10. Vendor shall make dimension report of the finished tubes and submit it for inspection to our representative.
11. The Vendor shall clearly indicate following in the quotation.
 - Cost per piece
 - Delivery charges if any, should be indicated separately.
 - GST as applicable.
 - PAN No. / GST No.
12. Quotation must be typed on the printed letter head.
13. Completion period: Five months from the order date.
14. Declaration stating whether you are ex-employee of BARC/DAE and whether you have any employee on your roll, who is an ex-employee of BARC/DAE.
15. Payment will be made only after completion of work and for finished and accepted tubes. You should submit following documents.
 - i. Delivery challan in duplicate.
 - ii. Bill/invoice in triplicate..
 - iii. Taxes as applicable will be deducted from your bill.

You are requested to submit your offer for same in sealed envelopes super-scribed "Quotation for Procurement, Extrusion, Drawing, Testing, Packing and Supply of Aluminium Tubes due on 30/04/2019" along with reference no., **by Speed Post/ Registered Post** only. The quotation shall reach us on or before 30/4/2019 and shall be sent on following address:

R K Srivastava
Atomic Fuels Division
Bhabha Atomic Research Centre
Trombay, Mumbai-400085


(R.K.Srivastava)
FAS/AFD


(Rakesh Kumar)
Head, FAS, AFD

Encl: 1. Annexure of confidentiality clause
2. Material Specification sheet

Material Specification for Al Component

1.0 Scope

This specification defines the requirements of Material for Aluminum component. The Component shall be fabricated using Aluminum alloy, Grade AA 5052 (S7S) conforming to the requirements specified in ASTM- B- 221, temper condition - O/M/F.

2.0 Manufacturing

The tube shall be manufactured by Hot Extrusion Route and shall be homogenized. Manufacturing Lot is defined as tubes made from same heat of material, fabricated through same working schedules and heat treated in one batch.

3.0 Technical Requirements

3.1 Chemical Composition

The chemical composition limits in lot sample are as specified below:

Element	Limit ¹
Boron	20 ppm (max)*
Chromium	0.15 – 0.35 %
Copper	0.10
Iron	0.40
Manganese	0.10
Silicon	0.25
Zinc	0.10
Magnesium	1.7% - 2.2%
Aluminium	Balance

¹ Limits are in max weight % unless shown as a range, or stated otherwise.

Other elements shall be individually 0.05% max and in total 0.15% max.

*10 ppm will be preferred

3.2 Mechanical Properties

Two samples (one from top portion and other from bottom portion) from each extrusion / heat treatment lot shall be tested at room temperature in accordance to ASTM-E-8 (with 25 mm gauge length). The tubes shall have the following tensile properties in the longitudinal direction:

U.T.S.	:	170 MPa (min.)
Y.S.	:	70 MPa (min.)
% Elongation	:	18% (min.)
