

Government of India  
Bhabha Atomic Research Centre  
Mechanical Metallurgy Division

Ref: BARC/MMD/SMS/FAB/19/186477

Date: 03.10.2019

**Due Date: 25.10.2019****Time: 04.00 PM**

Dear Sir,

Please submit your quotations on rate per unit weight basis for the following job:-

S. No.	Description of job	Total Qty.
1.	Melting and fabrication of Ni-Superalloys as per specification attached in Annexure 1)	80 Kg

**Notes & Terms :**

1. The rates shall include charges for delivery of the materials to our stores.
2. Taxes if extra etc. to be quoted.

i) Since the goods to be supplied are meant for the purpose of R & D use under the Department of Atomic Energy, Concessional Rate of GST @5% against exemption certificate will be applicable.

ii) Central Excise Duty: Since the goods to be supplied are meant for the purpose of Research Institution under the Department of Atomic Energy, no excise duty is payable for the goods covered here. The excise duty exemption certificate will be issued to you, if necessary, well before the delivery date. It will, however, be your responsibility to ensure that the goods are dispatched after getting the excise duty exemption certificate from us.

(iii) Income Tax: Income tax at the rate of 2 % on the bill amount and TDS GST @2% will be deducted from your bill.

3. Delivery Terms: You shall make necessary arrangement for delivery of the materials at no extra cost to us.
4. Payment Terms: 100 % Payment after the work is completed and on submission of advance stamped receipt, invoice bill and satisfactory completion certificate from user.
5. The quotation should be enclosed in an envelope and sealed. The **reference number** and **'The quotation not to be opened'** should be written clearly on the top of the sealed envelope. The quotation should be sent to the address given below through **EMS SPEED-POST** only. Quotation received after the due date and time will not be considered.

6. The **PAN no** and the **GST registration no** of the company should be clearly mentioned in your offer. The name of the **authorized signatory** person should be clearly mentioned below his signature.

Thanking you,

Yours sincerely,

(Dr. J. B. Singh)  
*Indenting Officer*  
*For and on behalf of president of India*

Mechanical Metallurgy Division  
Bhabha Atomic Research Centre  
Mod. Labs., Trombay  
MUMBAI – 400085  
INDIA

**ANNEXURE-1****Specifications for the Melting and fabrication of Ni superalloys**

Melting and fabrication of Ni-superalloys of following compositions:

Alloy	Chemical Composition (in wt%)							Density (g/cm <sup>3</sup> )	Quantity* (kg)
	Ni	Cr	Mo	Fe	Ti	W	Others		
BH1	Bal.	23	16	3	-	-	1.6 Cu	8.69	10
BH2	Bal.	22	9	18	-	0.5		8.51	10
BH3	Bal.	7	15	2	-	-	-	8.97	10
BH4	Bal	29	-	2	0.6	-	3 Al; 1 Nb	8.05	20
BH5	Bal.	17	13	-	1.5	6	-	9.07	30

\* Quantity refers to the weight of the final finished product.

- Alloys should be melted using elemental charge made of commercially pure metals employing a double melting route involving vacuum induction melting (VIM) followed by vacuum arc re-melting (VAR) and the composition must be controlled within very close limits.
- Solidified ingots should be forged to break the cast structure
- Forged billets should be converted into cylindrical billets of about 60 mm diameter.
- Half of the forged billets (of BH4 and BH5 alloys) should be hot rolled to produce plates of about 10 mm thickness.
- The finished alloys should have compositions as per the above table.
- Impurity levels must be maintained as: C (~ 0.03), N (< 80 ppm) and S, P (< 0.015). Any other impurity should not exceed the ppm level.
- The finished product should be supplied along with following test certificates and reports:
  - i. Chemical Analysis of finished products
  - ii. Hardness and Tensile test data and their reports
  - iii. Radiography tests to ascertain that final products are free from cracks, seams, laps, shrinkage and other deleterious discontinuities
  - iv. Detailed reports of the raw material used, melting cycle, ingot forging details, soaking treatment and intermediate heat-treatment details during forging as rolling, post processing heat treatment and methods of cooling.