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भारतीय ताराभौतिकी संस्थान  
INDIAN INSTITUTE OF ASTROPHYSICS  
कोरमंगला / KORAMANGALA  
बेंगलूर / BANGALORE - 560 034.

No: PUR/IMP/SN/UVIT-ISO/105/07-08.

March 25, 2008

M/s.

Dear Sirs,

The Director, Indian Institute of Astrophysics, Bangalore invites Sealed Tenders **(both commercial Bid and Technical Bid)** for the Import of "INVAR 36 material as per the list" detailed in the Tender Form hereto annexed. The terms and conditions are also enclosed may be noted and if you are in a position to quote for the supply in accordance with the requirement, please submit your quotation in the attached Tender Form. The Tender documents are available on IIA web site [www.iiap.res.in/tenders.htm](http://www.iiap.res.in/tenders.htm)

**The Tender bids should be in foreign currency only.** Your completed Tender bids **(both Commercial Bid and Technical Bid)** must reach this office in sealed separate envelopes duly superscribed with the name of the supply and due date on or before **15.30 Hrs. latest by 26.04.2008.** Incomplete Technical Bids are liable for rejection. Commercial/Price bids will be considered only for the qualified Technical Bidders.

Thanking you,

Yours faithfully,

Encl.: as above.

Administrative Officer  
For Director



**PUBLIC TENDER DOCUMENT NO: PUR/IMP/SN/UVIT-ISO/105/07-08.**  
**DT: 25.03.2008**

**TENDER FORM**

FROM:

TO

THE DIRECTOR,  
Indian Institute of Astrophysics.,  
Bangalore-560 034.

Sir,

I/We hereby offer to supply the Items/Equipment indicated below at the price hereunder quoted and agree to hold this office open till \_\_\_\_\_. I/We shall be bound to supply the Items/Equipment hereby offered upon the issue of the Purchase Order communicating to the acceptance thereof on or before the expiry of the last mentioned date. You are at liberty to accept any one or more of the items of such Items/Equipment. I/We not withstanding that the offer in this tender has not been accepted in whole, shall be bound to supply such items and such portion or portions of one or more of the items as may be specified in the said Purchase Order communicating the acceptance.

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Sl.No.	Description of the item(s)	Qty.	Unit	Rate	Dely. Period
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1. INVAR 36 material as per the Annexure-I and Technical specification Annexure -II

**(Tender bids (both Commercial Bid and Technical Bids) should be in Foreign currency only)**

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Place at which the Delivery is required : Indian Institute of Astrophysics  
Bangalore-560034

Date by which the supplies are required : 4 weeks from the date of order

2. I/We have understood the items of the tender annexed to the invitation to the Tender and have thoroughly examined the specifications/drawing and /or pattern quoted or referred to herein and/are fully aware of the nature of the items/Equipment required and my/our offer is to supply the items/Equipment strictly in accordance with the requirements subject to the terms and conditions contained in the Purchase Order communicating the acceptance of this tender either in whole or in part.

Date:

Signature and Seal of Supplier

## Annexure-I

### ITEM DESCRIPTION AND QUANTITY FOR INVAR 36 MATERIAL.

#### **Introduction:**

Indian Institute of Astrophysics (IIA) is developing an Ultraviolet Imaging Telescope (UVIT) system. In this connection we need INVAR 36 alloy materials meeting the following specifications. The materials will go through further manufacturing processes at our end before they are used in the UVIT telescopes. Since these materials are used for making aerospace structural components with an end use for a space telescope, it is important that the product finally finish machined at our end, complies fully with the CTE values, mechanical properties and other specifications given below.

#### **Deliverables:**

INVAR 36 rods, plates and bars as per the sizes and quantities listed in the following Table. All the items to be annealed, pre-machined and tested, conforming to the technical specifications mentioned below along with all the relevant test certificates and documentation

SL No.	Description	Quantity In Numbers
1	Blank diameter 430mm x 060mm thick	04
2	Blank diameter 430mm x 050mm thick	04
3	Blank diameter 180mm x 095mm thick	04
4	Blank diameter 165mm x 012mm thick	14
5	Blank diameter 400mm x 025mm thick	04
6	Bar diameter 160mm x 340mm long	03
7	Bar diameter 130mm x 250mm long	03
8	Bar diameter 125mm x 230mm long	05
9	Bar diameter 070mm x 230mm long	04
10	Bar diameter 070mm x 210mm long	04
11	Plate 495mm x 435mm x 018mm thick	04
12	Plate 440mm x 440mm x 018mm thick	04
13	Plate 430mm x 430mm x 018mm thick	04
14	Blank 025mm x 050mm x 100mm long	10
15	Bar diameter 150mm x 150 mm	03

## **Annexure-II**

### **Technical Specifications:**

Material: INVAR 36 Alloy annealed and proof machined. Material shall be in a stress free condition and shall generally comply with ASTM-F1684-99 standard with respect to mechanical, chemical compositions and co-efficient of thermal expansion.

### **Composition:**

Component	Wt. %
Carbon	0.03 max.
Manganese	0.30 max.
Silicon	0.20 max
Nickel	36.0+/- 0.5
Iron	Balance

### **Mechanical Properties: (Minimum Values)**

Tensile strength, Ultimate	450 MPa.
Tensile strength, Yield	275 MPa.
Modulus of Elasticity	145 GPa
Poisson's ratio	0.3
Hardness	70 - 90 Rockwell 'B'

Coefficient of Thermal Expansion (CTE): 1.6 x 10e-06 in the  
temperature range 20 to 100 deg. C.  
OR  
As per ASTM F1684-99 as a base line

### **Testing / Inspection / Documentation:**

1. All items shall be 100 per cent scanned/screened using X-ray test to ensure that they are free from any defects. The vendors shall quote separately for this testing, if it involves additional cost.
2. Material test certificates shall be submitted to IIA prior to the shipment of the material. The materials should strictly comply with the CTE specification of 1.6 x 10e-06 per deg. C in the temperature range 20 to 100 deg. C or as per ASTM F1684-99.  
If the value is higher than this the material shall not be accepted and the vendor shall not ship such materials.
3. After receiving shipping clearance from IIA, the vendor shall send the materials along with an additional set of complete documentation pertaining to all the test results.

**General:**

1. The INVAR materials will undergo additional machining operations at our end. Since CTE is the most important property for our end use, the supplier shall specify preferred heat treatments at various stages of manufacturing / machining for ensuring a stable CTE value for the final product.
2. The items shall be packed suitably to prevent any damage .All the materials shall be oil dipped and carefully packed to ensure rust / corrosion prevention.



## **Annexure - I**

### **INSTRUCTIONS TO SUPPLIERS**

1. Tenders should be sent in sealed and superscribed envelopes with mention of Tender No. date and date of opening. Only one Tender should be sent in each envelope.
2. Late and Delayed Tender will not considered at all.
3. Duties, Taxes where legally leviable and intended to be claimed should be distinctly shown separately in the Tender.
4. a) Your quotation should be valid for 90-120 days from the date. of opening of Tender  
b) Prices are required to be quoted accordingly to the units indicated in the annexed tender form. When quotations are given in terms of units other than those specified in the tender form, relationship between the two sets of units must be furnished.
5. Preference will be given to those tenders offering supplies from ready stocks and on the basis of delivery at Site.
6. a) All available Technical Literature(s), Catalogue(s) and other data in support of the specifications and details of the item(s) should be furnished along with the offer.  
b) Approximate net and gross weight of the items offered shall be indicated in your offer. If dimensional details are available the same should indicated in your offer.  
c) Air freight/sea freight charges up to Bangalore Airport may be sent along with the offer.



**d) SPECIFICATIONS:**

Items/Equipment offered should strictly conform to our specifications. Deviation, if any should be clearly indicated by the Supplier in their quotation. The Supplier should also indicate the Make/type No. of the stores offered and provide catalogue(s), Technical literature(s) and sample(s), wherever necessary along with the quotations. Test certificates wherever necessary should be forwarded along with the supplies. Whenever options are called for in our specifications, the Supplier should address all such options. Wherever specifically mentioned by us the Supplier could suggest changes to specifications with appropriate response for the same.

1. Corrections, if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail.
2. The Supplier should supply along with the tender, the Banking information for payment or any other purpose
3. A complete set of instruction and operation manual should be supplied at the time of installation.
4. Final performance should be guaranteed at the site.





## **TERMS AND CONDITIONS OF CONTRACT**

### **1. DEFINITIONS:**

- a). The terms 'Purchaser' shall mean the Director, Indian Institute of Astrophysics, Bangalore-560 034.
- b). The term 'Supplier' shall mean, the person, firm or company with whom or with which the order for the supply of Items/Equipment is placed.
- c). The terms 'Purchase Order' shall mean the communication signed on behalf of the Purchaser by an officer duly authorized intimating the acceptance on behalf the Purchaser on the terms and conditions mentioned or referred to in the said communications accepting the tender or offer of the supplier for supply of Items/Equipment.

### **2. PRICES:**

The price may please be indicated on unit basis only.

#### **Duty Exemption:**

Please note that we may issue "Customs duty Exemption Certificate", if acceptable under the Govt. of India notification No. 51/96 valid till 2011.

### **3. GUARANTEE AND REPLACEMENT:**

- a) The Supplier shall guarantee that the Items/Equipment supplied shall comply fully with the specifications laid down, for material workmanship and performance. The Guarantee should be for a period of one year minimum from the date of supply.



4. **PACKING, FORWARDING AND INSURANCE:**

The Contractor will be held responsible for the stores being sufficiently and properly packed for transport by sea or air, to withstand transit hazards and ensure safe arrival at the destination. The packing and marking of packing shall be done by and at the expenses of the contractor. The Purchaser will not pay separately for transit insurance, all risks in transit being exclusively of the Supplier and the Purchaser shall pay only for such Items/Equipment as are actually received in good condition, in accordance with contract.

5. **TEST CERTIFICATE:**

Wherever required Test Certificate should be sent along with the relevant dispatch documents

6. **ACCEPTANCE OF ITEMS/EQUIPMENT:**

a) The Items/Equipment shall be tendered by the supplier for inspection at such places as may be specified by the purchaser at the suppliers own risk, expenses and cost.

b) It is expressly agreed that the acceptance of Items/Equipment, for is subject to final approval by the Purchaser, whose decision shall be final.

7. **DELIVERY PERIOD:**

Delivery is the essence of the contract. The supplier should adhered to delivery schedule as indicated in the Purchase order.

8. **EXTENTION OF DELIVERY TIME:**

As soon as it is apparent that Supplier dates cannot be adhered to, an application shall be sent by the Supplier to the Purchaser. If failure, on the part of the Supplier to deliver the Items/Equipment in proper time shall have arisen from any cause which the Purchaser may admit as reasonable ground for an extension of the time (and his decision shall be final he may allow such additional time as he considers it to be justified by the circumstances of the case) . In case of Letter of Credit the banking charges for the LOC amendment will be on suppliers account.



**9. PAYMENT:**

Preference will be given to the supplier whose payment terms is on Site Draft.

**10. SECURITY FOR PAYMENT:**

Successful Supplier will have to furnish in the form of a Bank Guarantee or any other form as called for by the Purchaser towards any payments before supply of Items/Equipment. In case of payment through Letter of Credit the banking charges out side India and Inside India will be on suppliers account.