



GOVERNMENT OF INDIA
BHABHA ATOMIC RESEARCH CENTRE

ATOMIC FUELS DIVISION

Prashant kumar
Scientific Officer
SFD section, AFD
BARC, Mumbai-400 085
E-mail: pkumar@barc.gov.in
Telephone: (022)25594965
Fax: (022)25505186

Ref: AFD/SFDS/2017/OPA - 140632

August 10th, 2017

Sub: Enquiry for Fabrication and Supply of 250 kg of Boron Carbide (B₄C) Powder as per Specifications

Dear Sir/Madam,

Sealed quotations are hereby invited for fabrication and supply of 250 kg of Boron Carbide (B₄C) Powder as per specification and term & condition enclosed.

The completion time shall be 2 months from the date of placement of order.

You are therefore requested to send your offer for the same so as to reach the undersigned **ON or BEFORE August 30, 2017**. Sealed envelope containing the quotation shall be super scribed with the tender no. and due date and sent by **REGISTERED / SPEED POST** only to:

**PRASHANT KUMAR
SCIENTIFIC OFFICER,
ATOMIC FUELS DIVISION,
BHABHA ATOMIC RESEARCH CENTRE,
MUMBAI – 400 085.**

Thanking you
Yours faithfully

(PRASHANT KUMAR)
Scientific Officer (G)
AFD, BARC.

Specification for Boron Carbide (B₄C) PowderA. Technical

Specification for B ₄ C powder																																										
Sr. No.	Species	Wt%																																								
1.	Boron (B)	77 to 79																																								
2.	B¹⁰ in B (Isotopic composition)	19.8 ± 0.3 at%																																								
3.	Carbon	20.5 to 22.5																																								
4.	Fe	≤ 0.8																																								
5.	Al	≤ 0.02																																								
6.	O	≤ 0.35																																								
7.	Si	≤ 0.01																																								
8.	N	≤ 0.3																																								
9.	Na	≤ 0.1																																								
10.	H	≤ 0.005																																								
11.	F & Cl	≤ 0.01																																								
12.	Co	≤ 0.01																																								
13.	Cu	≤ 0.01																																								
14.	Mn	≤ 0.01																																								
15.	Ti	≤ 0.1																																								
16.	Boron anhydride (B ₂ O ₃)	≤ 0.1																																								
17.	Moisture content	≤ 500 ppm																																								
Physical property:																																										
18.	Pycnometric Density (g/cc)	≥ 2.4																																								
19.	Tap Density (g/cc)	1.7 to 1.75																																								
20.	Particle size distribution:																																									
	<table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Mesh Size</th> <th>Size in micron</th> <th>Wt%</th> <th>Total qty for 250 kg</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>50/60</td> <td>-300+250 μ</td> <td>19</td> <td>47.5</td> </tr> <tr> <td>2.</td> <td>70/80</td> <td>-210+180 μ</td> <td>14</td> <td>35</td> </tr> <tr> <td>3.</td> <td>80/100</td> <td>-180+150 μ</td> <td>14</td> <td>35</td> </tr> <tr> <td>4.</td> <td>120/140</td> <td>-125+106 μ</td> <td>6</td> <td>15</td> </tr> <tr> <td>5.</td> <td>140/170</td> <td>-106+90 μ</td> <td>6</td> <td>15</td> </tr> <tr> <td>6.</td> <td>200/325</td> <td>-75+45 μ</td> <td>13</td> <td>32.5</td> </tr> <tr> <td>7.</td> <td>-325</td> <td>-45 μ (D50 : 14 to 18 μ)</td> <td>28</td> <td>70</td> </tr> </tbody> </table>	Sl. No.	Mesh Size	Size in micron	Wt%	Total qty for 250 kg	1.	50/60	-300+250 μ	19	47.5	2.	70/80	-210+180 μ	14	35	3.	80/100	-180+150 μ	14	35	4.	120/140	-125+106 μ	6	15	5.	140/170	-106+90 μ	6	15	6.	200/325	-75+45 μ	13	32.5	7.	-325	-45 μ (D50 : 14 to 18 μ)	28	70	
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21.	D50 of -45 μ powder must lie between 14 to 18 μ																																									

B. General

1. Scope of work will include fabrication, testing, packaging and supply of 50 kg of Boron Carbide (B₄C) Powder as per specifications.
2. Prior to supply of material vendor shall furnish certificates of tests for all specified species and parameters from laboratory accredited by National Accreditation Board for Testing and Calibration Laboratories (*NABL*) showing the Results of Testing & Inspection performed on each lot of powder. Prior to supply of material vendor shall also furnish certificates of particle size analysis test of -45 μ powder. Sampling will be witnessed by purchaser's representative.
3. **All seven fractions shall be packed in separate sealed containers** for the shipment. Each separate sealed container will not have more than 2 kg of Boron carbide (B₄C) powder. In case, supply includes more than one lot of B₄C powder, size distribution of each lot shall match to the required granulometry.
4. Containers & packing will be suitable to ensure cleanliness, minimize moisture pick-up and to provide adequate protection against damage during transportation & storage. For ease of handling and storage individual package will be kept at
5. At the time of supply, "Material", "Lot number", "Size Fraction", "Net weight" and "Gross weight" must be indicated on each container of powder and on a packing list.
6. The lot will be accepted only after acceptance tests at our place.
7. Powder lots that fail to confirm the above requirements will be rejected.

C. TERMS & CONDITIONS OF WORK:

1. There is no Free Issue Material (FIM).
2. Only lump sum price should be quoted.
3. Quotation must be printed on letter head and it must mention Sales Tax Registration Number registered with local ST authority / CST authority, PAN Number of the firm, Service Tax Registration Number, etc.
4. The quotation must clearly mention the name of the signatory and should bear company seal.
5. **Quotation MUST include Certificate of analysis (COA), pycnometric density, particle size analysis of -45 μ powder and tap density of offered material. In case any vendor is quoting for more than ONE option, the quotation MUST clearly mention the certificate of analysis, pycnometric density and tap density for each option. COA must include "B10 in B" and all the species indicated in our specifications. In absence of such information (so as to establish that offered item is meeting our specifications), offer will not be considered for evaluation.**
6. Declaration to be submitted along with the offer:

The prospective supplier shall declare as to whether he has any relation working in BARC or himself is an ex-employee of BARC, or has an ex-employee of DAE on his pay rolls.
7. Any delay in completion of order, which is attributed to supplier, will be liable for penalty @ 0.5% per week (max. 5%) to be imposed on supplier.
8. Income Tax @2% and surcharge & 3% education cess on tax as applicable shall be deducted from your bill.
9. Payment shall be made after the receipt, acceptance of the Items and on receipt of the following documents:
 - a. Delivery challan in duplicate.
 - b. Bill in triplicate.
 - c. Advanced stamped receipt in favour of Accounts Officer, BARC, Trombay, Mumbai.
 - d. Electronic Clearing Service (ECS).
 - e. Original set of test certificates for each lot of material supplied.

10. CONFIDENTIALITY CONDITION:

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 the disclosing party shall be kept strictly confidential by the receiving party and shall not be disclosed to any third party without the written consent of the original disclosing party. This clause shall apply to the sub-contractors, consultants, advisers or the employees engaged by the party with equal force.

Any contravention of the above mentioned provisions by contractor, sub-contractors, consultants, advisers or the employees engaged by the contractor will invite penal consequences under the legislation of restricted information categories under section 18 of the Atomic Energy Act 1962 and official secrets act 1923.

The contractor or sub- contractor, consultant, adviser or the employees engaged by the contractor shall not use BARC'S name for any publicity through any public media like press, radio, TV or internet without prior written approval of BARC.


10/08/2017

(Prashant Kumar)
Scientific Officer (G)
AFD, BARC