

# **BOKARO POWER SUPPLY CO. (P) LTD.**

**HALL NO:- M-01, OLD ADMINISTRATIVE BUILDING,  
ISPAT BHAVAN, BOKARO STEEL CITY – 827001**

**Reg. Office : Ispat Bhawan, Lodhi Road, New Delhi – 110 003  
CIN:U40300DL2001PTC112074**

**TENDER NOTICE NO. BPSCL/MM/21-22/PUR-042/NIT-1020/1821  
Dated 28.06.2021**



## **TENDER DOCUMENT**

**SUBJECT: Procurement of High Chrome Grinding Media Balls (Casted)**

# INDEX

<b>Sl. No.</b>	<b>Subject</b>	<b>Page No.</b>
<b>1</b>	<b>Cover Page</b>	<b>1</b>
<b>2</b>	<b>Index</b>	<b>2</b>
<b>3</b>	<b>Notice Inviting Tender</b>	<b>3-4</b>
<b>4</b>	<b>Section – I Conditions &amp; Rules to be observed in submitting Tenders</b>	<b>5 - 7</b>
<b>5</b>	<b>Section – II General Terms and Conditions</b>	<b>8 - 9</b>
<b>6</b>	<b>Section – III Techno-Commercial Terms &amp; Conditions</b>	<b>10-11</b>
<b>7</b>	<b>Section – IV Price BID / RA Format</b>	<b>12</b>
<b>8</b>	<b>Annexure - I Technical Specification</b>	<b>13-16</b>
<b>9</b>	<b>Annexure – II QAP</b>	<b>17-19</b>
<b>10</b>	<b>Annexure – III Format for Bid Securing Declaration (In lieu of EMD)</b>	<b>20</b>
<b>11</b>	<b>Annexure – IV Self Declaration</b>	<b>21</b>
<b>12</b>	<b>Annexure - V Format for RA Acceptance</b>	<b>22</b>
<b>13</b>	<b>Annexure - VI Format for submitting Last Quoted Price</b>	<b>23</b>

# Bokaro Power Supply Co. (P) Ltd.

(A Joint Venture of SAIL & DVC)

Hall No: - M-01, Old Administrative Building,

Ispat Bhawan, Bokaro Steel City – 827001

Reg. Office : Ispat Bhawan, Lodhi Road, New Delhi – 110 003

CIN:U40300DL2001PTC112074

## NOTICE INVITING TENDER

NIT No.: BPSCL/MM/21-22/PUR-042/NIT-1020/1821

Date: 28.06.2021

For and on behalf of BOKARO POWER SUPPLY COMPANY (P) LTD, sealed tenders in two parts, **Part - A** : EMD and **Part- B** : Technical & Commercial Offer with copy of system generated acknowledgement-slip for online submission of sealed price are invited from the bidders meeting the qualification criteria stipulated in the bidding documents for supply of following items:

Item	High Chrome Grinding Media Balls (Casted)
Earnest Money (in Indian Rs.)	Nil In lieu of EMD, the bidder shall submit either <b>Bid Securing Declaration</b> as per clause 1 (a) of General Terms & conditions. OR <b>Document for Exemption</b> as per clause 1 (b) of General Terms & conditions.
Last date & time for submission of tender	<b>30.07.2021 up to 12: 00 Hours</b>
Bid Opening date & time	<b>30.07.2021 at 12:15 PM</b>

### **Qualifying Requirements: -**

- The bidder should have minimum average annual turnover (MAT) of **Rs. 35.85 Lakh** only.
  - Average annual turnover shall be determined taking into consideration turnover of preceding three (03) consecutive financial years. Other income shall not be considered for arriving at annual turnover.
  - Audited annual account along with auditor's report of the bidder should be furnished in support of the same. Where audited account is not mandatory as per the law, the bidder has to submit annual financial turnover during the consecutive last three (03) years ending 31<sup>st</sup> March of the previous financial year duly certified by CA.
- The bidder shall have valid ISO:9001 certification for manufacturing of **High Chrome Grinding Media** as on the date of bid opening.
- The bidder shall have requisite experience of manufacturing and supplying "**High Chrome Grinding Media Ball**", **at least 100 ton by weight in a single purchase order**, in India to any PSU / Government / Semi Government Organization or Joint Venture thereof / Company registered under Companies Act.
- The bidder should have infrastructure facilities for carrying out at least one of the core activity like casting, forging and heat treatment required for manufacturing of the item.
- The bidder is required to submit self-attested photocopies of documents (Purchase Orders, GRN / Delivery Challan / Completion certificate etc.) in support of their eligibility and experience. In addition, bidder shall submit a self declaration in enclosed format at **Annexure – IV**.
- The bidder shall furnish latest **IT return** and **GSTIN**. The bidder shall also submit acceptance to Terms & Conditions of Reverse Auction in the format attached at **Annexure – V**.

### **General Terms & Conditions:**

#### i) Earnest Money:

- In lieu of EMD, Bidders shall have the option of submitting a Bid Securing Declaration accepting that if they withdraw / modify their Bids during the period of validity without assigning any valid reason for the same or refuse to submit Performance Security / Performance Guarantee as per the relevant Clause of this tender enquiry or refuse to accept the price quoted by them in Online Price Bid / Reversed Auction within the period of validity of the same or refuse to sign the Contract Agreement upon emerging as the successful bidder, they will be suspended for a period of one year from being eligible to submit bids against tender enquiries of BPSCL. A Format of Bid Securing Declaration is provided at **Annexure - III**.
- Micro & Small Enterprises (MSEs) / PSU /Govt. Undertakings and Co-operative societies will be exempted from submission of Earnest Money as per government policy. For MSEs, the exemption from submitting Earnest Money will be granted only on submission of valid copy of Udyam Registration Certificate. SSI/NSIC certificate holders should also submit Udyam Registration Certificate. Further, unit claiming exemption is required to submit copy of Udyam registration certificate clearly indicating the item category for which they are registered.

**Note:** Offers not accompanied with Bid Security Declaration (*as per clause a*) or documents for exemption (*as per clause b*) will be treated as INVALID.

- ii) Consortium bids will not be considered unless the provision for consortium is specifically mentioned in Tender Document.
  - iii) If you withdraw your bid after opening of bids without giving any satisfactory and acceptable explanation thereof, you shall be debarred from participating in any tender of BPSCL for a minimum period of 01 (one) year.
  - iv) You should quote your firm rates and no negotiations will be held except with the lowest bidder, if required.
  - v) **RATE FINALIZATION:** BPSCL reserves the right to finalize the rate through either of the following modes:
    - a. Opening of Online Price (*submitted on [www.buyjunction.in](http://www.buyjunction.in)*) submitted at the time of techno-commercial bid.
    - b. Through Reverse Auction to be conducted by our service provider **M/s. mjunction.**
- Note:** BPSCL may ask techno-commercially accepted bidders to submit decrement in percentage (%) on their online price submitted at the time of techno-commercial bid. On line price bid alongwith % decrement shall be considered together in case online price bid is opened.
- vi) **BPSCL reserves the right to :**
    - a) Re-tender / extend the due date of submission of offer.
    - b) Accept or reject any offer / all offers in full or part at any time at any stage without assigning any reasons—and without any compensation thereof to the bidders.
    - c) Modify the tender documents at any stage before the due date of tender.

**Note:**

1. Tender documents are to be downloaded from **Website: [www.bpscl.com](http://www.bpscl.com)** only.
2. Bidders are requested to visit above website regularly for any addendum / corrigendum / extension till opening of the NIT. **Any such changes shall not be published through Press advt.**

For and on behalf of  
Bokaro Power Supply Company (P) Limited

(A.K. Das)  
General Manager I/c (MM)  
Tel: 8986874119  
Email: [purchase.bpscl@gmail.com](mailto:purchase.bpscl@gmail.com)

**CONDITIONS & RULES TO BE OBSERVED IN SUBMITTING TENDERS**

**1.01 Manner of Submission of the Tender**

The tender shall be divided into 02 parts as follows:-

- a) **Part A:** This part shall comprise of Bid securing Declaration/ Exemption document.
- b) **Part B:** This part shall comprise of Technical and Commercial details, consent on terms & conditions of NIT/ signed Tender Document along with copy of **SYSTEM GENERATED ACKNOWLEDGEMENT-SLIP FOR ONLINE SUBMISSION OF SEALED PRICE\*** bid etc.

Sealed Tender *through Regd. Post/Speed Post/In-person/Courier Service* only, in an envelope containing 02 (Two) separate sealed envelopes (*as mentioned above*) with NIT No. & date of opening along with Sender's Name & Address printed on it, is to be sent to the below mentioned address:

General Manager I/c (MM)  
Bokaro Power Supply Co. (P) Ltd.  
Hall No.M-01, Old ADM Building  
Ispat Bhawan, Bokaro Steel City – 827001  
Ph: 06452 240380, Mob: 8986874119

**\* PROCESS FOR ONLINE SUBMISSION OF SEALED PRICE:**

1. Online sealed Price Bid (**Landed Cost per unit Excluding GST**), through URL: **<http://www.buyjunction.in>**.

**The process of submission of Online Price bid is as detailed hereunder-**

Step 1: Type **<http://www.buyjunction.in>** in the internet explorer.

Step 2: Click on Login (present on Top right side of the Page)

Step 3: Click on **View Live Auctions and Tenders**.

Step 4: In the right side open/ global tenders link will be displayed.

Step 5: Click on the link for the above mentioned tender link present under Open tenders

Step 6: Click on new user if you are not registered in buyjunction earlier. Click on Existing user in-case you have already registered in buyjunction earlier. Existing users can login with their user id and password.

**Please note** foreign bidders are required to select their bidding currency from the drop down menu available before proceeding further (where ever applicable).

**New Users:**

Steps to get your **User ID** and **Password**

1. Click on the required tender link under “**Open Tenders**”
2. Choose your Auction currency in-case any option is coming to select currency. Click on “**New User**”
3. Fill up the “**Registration Form**” and click on “**Submit**”. All fields marked with (\*) are mandatory fields.
4. On submitting the filled-up registration form, an auto generated email will be sent to the email address you have mentioned in the registration form containing your User ID and Password.
5. Changing of password on first login is compulsory.
6. On receipt of the User ID and Password you become an **Existing User**. Now follow the steps of existing user to login to the auction site.

**Existing Users**

1. Click on the required tender link under “**Open Tender**”
2. Click on “**Existing User**”.
3. Log in with your existing user id and password for placing your bid.
4. Read through the “**Bidding Procedure**” to proceed further for bidding.

## **Bidding Procedure**

After logging in with your user id and password you have to accept the “**Auction Terms**”.

### **Steps to accept the “Auction terms”:**

1. Click on “**Auction Terms**”.
2. Then click on “**View term without DSC**”
3. Click on the relevant auction terms appearing under “**Term**” column.
4. Select the check box on the left-side of the relevant auction terms.
5. Click on the button besides “**Accept**”.
6. Then click on “**Submit**”.
7. A message will be displayed to you mentioning your acceptance to terms for auction.
8. It is mandatory to accept the terms of online bidding in order to proceed for submission of bid.

### **Steps to Submit Price Bid**

1. Click on “**Bids.**”
2. Then click on “**Live Auction.**”
3. Put your login password as transaction password
4. Select the auction id and click on add to watch list.
5. Now the bidding screen is visible.

### **6a. For Template Bidding**

1. Click on **Icon “T”** on left column of bidding screen (Which will appear separately **for each lot**).
2. A template form will open where you need to fill up the price & click on evaluate at the bottom
3. If you want to quote the evaluated price then click on “**confirm**”.
4. After clicking on the confirm button of the template window, your price will appear in the “**New Bid**” box.

### **6b. For Non-Template Bidding**

1. Fill your Price in the “**New Bid Box**” visible on the bidding screen.
2. Select the check box at the extreme left of the bidding screen
3. Click on “**Submit**” button placed at the bottom left of the screen.
4. Bid once placed will have to be honoured.
5. You will see “**Bid Accepted**” in the “**Result**” column. This indicates that your bid is accepted and registered in the system.

### **Steps to take a print-out of the receipt**

1. Once you have placed your bid, to download Bid Receipt, kindly click on “**Download**”.
2. Then click on “**Bid Receipt for Open Tender**”.
3. Select the auction to generate receipt.
4. Take print out of the same market-wise (Term List) / item-wise (Auction list).

**Note:** For any clarification on the bidding process please contact

Mr. Anjan Buda - 9163348263 - anjan.buda1@mjunction.in

Ms. Debalina Maity - 8336991451 - maity.debalina@mjunction.in

Ms. Bingyasini Pradhan - 9163348173 – pradhan.bingyasini@mjunction.in

Ms. Priyanka Mazumdar - mazumdar.priyanka@mjunction.in

**Mr. Mukesh Kumar Singh- 8873002741 – mukesh.singh@mjunction.in - for Bokaro Office**

**A copy of System generated acknowledgement-slip for Online submission of sealed price bid is to be submitted along with Techno-commercial Bid.**

## **1.02 Tender Validity Period**

Validity of the offer shall be **Four (04) months** from the bid opening date. In case of extension of "Bid submission & Opening Date", the validity will be counted from the extended bid opening date.

## **1.03 General Instructions:**

- i) You shall clearly indicate that your prices shall remain firm in all respects till execution of the order.
- ii) Specification, quantity, unit rate, freight, insurance, packaging, forwarding, taxes etc. should be mentioned separately and clearly.
- iii) Any conditional offer or offer having deviations is liable to be rejected.
- iv) Where agent commission is involved the same is to be indicated in percentage.

- v) You have to submit Tender Document bearing your signature and seal on all the pages along with Techno-commercial offer / Consent on NIT's Terms & Conditions. Otherwise, it will be presumed that you do not accept our terms and conditions and this may lead to rejection of offer forfeiting your claims if any.
- You are advised to mention page no. on each page of documents submitted by you. BPSCL shall not bear any responsibility in case of any loss of documents submitted by you during tender opening or thereafter.
- vi) If you are a Firm or Company, then you shall, in the forwarding letter, mention the number and names of all the partners & shall sign before submitting the same, unless the Power of Attorney holder has specifically been authorized in this respect.
- vii) The tender rates shall be written in English, both in words and figures. In case of any discrepancy between the words & figures of the rates quoted, the rates expressed in words shall be taken as correct. In case of discrepancy in the Unit Rate and Amount, Unit Rate will govern.
- viii) Price or any indication of price shall **NOT** be mentioned in the Techno-Commercial Bid.
- ix) The sealed tenders received will be opened on scheduled opening date and time in the office of Material Management, in presence of such bidders who might choose to witness the same
- x) In case the date of tender opening happens to be holiday, the tender will be opened on the next working day at the same time.
- xi) Communication regarding date of opening of Price-Bid to the techno-commercially eligible bidders will be sent only to their e-mail address given in tender documents.
- xii) Offers from two or more bidders shall summarily be rejected if they have any of the following parameters common:
- a) Same PAN
  - b) Same GST Number
  - c) Same Postal address
  - d) Same E-mail ID
  - e) Same Mobile number
  - f) Same person signing in more than one offer/representing more than one bidder.
- xiii) BPSCL reserves the right either to reject any/all the tenders without assigning any reason thereof.

**2.00 GENERAL TERMS AND CONDITIONS**

- 2.01 BPSCL reserves the right to ask for original documents for verification at any time during tendering, evaluation and / or the execution of the contract. In case any documents / information submitted by you is / are found to be false or containing any misrepresentation or having any fraudulent declaration in it, then, in such eventuality, legal action (including cancellation of contract, banning of business dealing, criminal proceedings etc.) as deemed fit may be initiated by BPSCL against you.
- 2.02 **Packing :**
- a) **Responsibility for proper packing** – You shall be responsible for the materials being sufficiently and properly packed, for transport by rail / road / sea / air / any combination of above, so as to ensure their being free from loss or damage on arrival at the destination.
  - b) **Marking of Packages, Packing, etc.** - Each package delivered under the contract shall bear the following:-
    - Name of the Supplier
    - Contract/Order Number
    - Consignee's name and address
    - Description and quantity of contents
    - Gross weight, net weight,
    - Distinctive number or mark which is also to be shown, for the purpose of identification, on the Supplier's packing list.
    - Catalogue Number
- 2.03 **Delivery:** Timely delivery is the essence of the contract & must be completed as per the dates specified therein.
- 2.04 **Liquidated Damages:** In the event of supply not being effected within the contractual delivery schedule given in the order, excluding the time taken by BPSCL in approval of the drawings submitted by you, liquidated damages @ ½ % of the value of delayed materials for each week of delay and part thereof, subject to a maximum of 05% of the total order value shall be recovered from you. The deduction of such damages shall not relieve you from the contractual obligations to complete the supply as stipulated in the Contract.
- 2.05 **Risk Purchase:** If you fail to deliver the material either in full or in part, within the prescribed delivery period, BPSCL shall be entitled at its option to take alternate procurement action, at your risk & cost for the unsupplied portion of the goods / items for which delivery period has expired.
- 2.06 You must mention applicable GST rate in your offer with compliance of following GST clauses:
- a) You shall have to quote GST as extra. If not mentioned, same will be considered as EXTRA.
  - b) You shall have to pass on the tax benefit/savings, if any, on account of output taxes to BPSCL.
  - c) You shall agree to do all things not limited to providing GST invoices or other documentation as per GST Law relating to the above Services, payment of taxes, timely filing of valid statutory returns for the tax period on the Goods and Service Tax Portal etc. that may be necessary to match the invoice on GSTN common portal and enable BPSCL to claim input tax credit in relation to any GST payable under this agreement or in respect of any part under this agreement.
  - d) In case the Input Tax Credit of GST is denied or demand is recovered from BPSCL on account of any non-compliance by you, including non-payment of GST charged and recovered, you shall indemnify BPSCL in respect of all claims of tax, penalty and/or interest, loss, damage, costs, expenses and liability that may arise due to such non-compliance. Further, in case of any differential tax liability on account of any wrong classification/valuation etc. by you, BPSCL will not be liable to reimburse any part of such differential tax, interest, penalty etc. It will be your sole responsibility to discharge appropriate taxes, as applicable.
  - e) You shall have to maintain high GST compliance rating track record at any given point of time.
- 2.07 **Bank Details:** Bank details mentioning Account number, Bank name, City, Branch name and Branch code should be mentioned in the offer for NEFT / RTGS payment.
- 2.08 **Paying authority – In-charge (F&A), BPSCL.** Bill in triplicate duly receipted on the revenue stamp with a copy of TC & Packing list etc. are to be submitted to In-Charge (F&A), Bokaro Power Supply Company (P) Limited for processing of the same.



- 2.09 **Inspection:** Acceptance of material is subject to inspection. Final Inspection will be done at BPSCL Stores after receipt of material.
- 2.10 **FORCE MAJEURE:** You shall not be considered in default if delay occurs due to reason beyond your control such as acts of God, natural calamities, civil wars, fire, strike, frost, floods, riot and acts of unsurpassed power. Only those causes which have duration of more than seven days shall be considered in force majeure clause. In the event of delay due to such clause the delivery period will be extended for a length of time equal to the period of force majeure at the option of BPSCL. Order may be cancelled without any liability what so ever on the part of BPSCL.
- 2.11 **Banning of Business Dealings:** On arising of any situation or occurrence of any event as mentioned in Clause 6 of the Guidelines on Banning of Business Dealings, you shall be liable for action under and in accordance with the aforementioned Guidelines. The “Guidelines on Banning of Business Dealings” shall form part of the Tender/Contract and can be viewed on our website [www.bpscl.com](http://www.bpscl.com).
- 2.12 **Security Deposit:** In case Purchase order is placed upon you, you shall have to deposit Security Deposit at the rates mentioned below for satisfactory execution of the order:

Sl. No.	Purchase order value (Excluding GST)	Amount of Security Deposit
i.	Up to Rs. 100 Lakh	03% of Purchase order value.
ii.	Over Rs. 100 Lakhs to Rs. 500 Lakhs	02% of P.O. value, subject to minimum of Rs. 3,00,000.00.

The Security Deposit shall be in the form of **Bank draft / Bankers Cheque / Bank Guarantee** (as per BPSCL format available at [bpscl.com](http://bpscl.com)) having validity up to guarantee period of the item to be supplied plus three (03) months of claim period. **Bank Draft / Bankers Cheque** shall be in favor of Bokaro Power Supply Company (P) Ltd. payable at Bokaro Steel City.

The expression “satisfactory execution of the order,” shall mean fulfillment of all obligations arising out of and in connection with the purchase order. In case of default in satisfactory execution of the order the security deposit shall be forfeited. Amount of penalty and/or Liquidated Damages imposed (if any) will be recovered from Bill / Security Deposit. If the amount of Bill / Security Deposit is not sufficient, you shall be required to pay the balance amount to BPSCL. If you do not pay the balance amount, the same shall be deducted from any sum or sums which may be due or may become due to you from BPSCL on any account whatsoever.

*In case of forfeiture of Security Deposit, you shall be required to reimburse the applicable GST to BPSCL.*

**3.0 TECHNO-COMMERCIAL TERMS & CONDITION:**

**3.1 Description of Material:**

Sl. No.	ITEM DESCRIPTION	QUANTITY
1.	Cat No.: 09000129002 Hi-Chrome Cast Grinding Media Balls Nominal Size: Φ 50mm Material Specification: As per Technical Specification given in Annexure - I.	100 MT
2.	Cat No.: 09000129011 Hi-Chrome Cast Grinding Media Balls Nominal Size: Φ 40mm Material Specification: As per Technical Specification given in Annexure - I.	30 MT
3.	Cat No.: 09000129012 Hi-Chrome Cast Grinding Media Balls Nominal Size: Φ 30mm Material Specification: As per Technical Specification given in Annexure - I.	30 MT

**3.2 Special Terms and Conditions:**

1. Material Test certificate, Manufacturer's Guarantee certificate to be submitted along with the material.

**3.3 The Commercial Bid should confirm / indicate the following:**

1.	Price	To confirm 'Firm price for the duration of the Contract'.																				
2.	Delivery Term	FOR BPSCL Stores, B. S. City.																				
3.	Packing & Forwarding Charges	Extra/Inclusive <i>(Applicable amount to be mentioned in percentage or amount)</i>																				
4.	Freight Charges	Extra/Inclusive <i>(Applicable amount to be mentioned in percentage or amount)</i>																				
5.	Transit Insurance	To be arranged and borne by Supplier																				
6.	GST Registration	To indicate GST Registration Number																				
7.	GST	Extra- <i>Applicable rate to be mentioned</i> HSN/ SAC- <i>to be mentioned</i>																				
8.	Payment Term	100% against GRN.																				
9.	Delivery Period	<p><b>Delivery:</b></p> <p>1. a) 1st lot: within two (02) months from issue of P.O.</p> <table border="1"> <thead> <tr> <th>Item Sl. No.</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>30 MT</td> </tr> <tr> <td>2</td> <td>9 MT</td> </tr> <tr> <td>3</td> <td>9 MT</td> </tr> </tbody> </table> <p>b) 2nd lot: within two (02) to four (04) months from issue of P.O.</p> <table border="1"> <thead> <tr> <th>Item Sl. No.</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>30 MT</td> </tr> <tr> <td>2</td> <td>21 MT</td> </tr> <tr> <td>3</td> <td>21 MT</td> </tr> </tbody> </table> <p>c) 3rd lot: within four (04) to six (06) months from issue of P.O.</p> <table border="1"> <thead> <tr> <th>Item Sl. No.</th> <th>Quantity</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>40 MT</td> </tr> </tbody> </table>	Item Sl. No.	Quantity	1	30 MT	2	9 MT	3	9 MT	Item Sl. No.	Quantity	1	30 MT	2	21 MT	3	21 MT	Item Sl. No.	Quantity	1	40 MT
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3	21 MT																					
Item Sl. No.	Quantity																					
1	40 MT																					

10.	Guarantee Clause	<p>i) A guarantee for a period of twelve (12) months from the date of commissioning / use or eighteen (18) months from date of supply, whichever is earlier. In case of any manufacturing defects discovered within the guarantee period of normal operation, the same are to be rectified or replaced by the bidder at no extra cost.</p> <p>ii) Breakage Guarantee: If more than 0.5% of the total weight of the balls charged in the mill break during first 100 Hrs. of operation, then the supplier shall supply 10 times the number of broken balls at no extra cost at site.</p>
11.	Inspection	<p>a) Stage-wise inspection shall be arranged by bidder at their works to be carried out by <b>M/s. Lloyds Register Asia / M/s. TUV India Pvt. Ltd. / M/s. Bureau Veritas Industrial Services India Pvt. Ltd.</b> as per attached QAP. Cost of inspection shall be borne by the bidder.</p> <p>b) Final Inspection will be done at BPSCL stores after receipt of material. Material may be tested by XRF machine and hardness tester at site.</p>
12.	Security Deposit	To confirm as per relevant Clause of NIT
13.	LD Clause	To confirm as per relevant Clause of NIT
14.	Risk Purchase Clause	To confirm as per relevant Clause of NIT
15.	Validity Period	To confirm as per relevant Clause of NIT

**4.0 PRICE BID / RA FORMAT:**

**Special Instruction –**

1. *In the event of the L1 Bidder backing out prior to placement of order, L1 bidder shall be suspended for a period of one (01) year from the date of issue of suspension order*
2. *Breakup of quoted LC (**Landed Cost**) shall be submitted by the L1 bidder. In case of refusal of L1 bidder to submit price break up, L1 bidder shall be suspended for a period of one (01) year from the date of issue of suspension order.*
3. **Price Basis – Rs. per MT on Landed Cost (LC) basis excluding GST [for each item separately].**

<b>Price Break Up</b>		
<b>Sl. No.</b>		<b>Amount per MT (Rs.)</b>
1.	Basic Price	
2.	Packing & Forwarding	
3.	Freight	
4.	Transit Insurance	
5.	Any other tax or charges	
<b>LANDED COST (1+2+3+4+5)</b>		

**Note: GST Extra**

**TECHNICAL SPECIFICATION**

**HI- Chrome Cast Grinding Media Balls for Coal Mills [ BBD 3448 ]**

**COMPOSITION & METALLURGICAL PROPERTIES**

**Hi- Chrome Cast Grinding Media Balls**

**Application:** Used as Grinding Media for pulverising coal in Ball & Tube Mills.

**Standard:** Specification in general must comply with BS 4844 Gr 3 F & IS 1586 with the following additional requirements:

**1. Chemical Composition:**

a) **The heat analysis shall conform to the following composition:-**

<u>Element</u>	<u>Min (%)</u>	<u>Max (%)</u>
<b>Carbon</b>	<b>2.0</b>	<b>3.5</b>
<b>Manganese</b>	<b>0.5</b>	<b>1.5</b>
<b>Silicon</b>	-	<b>1.0</b>
<b>Nickel</b>	-	<b>2.0</b>
<b>Molybdenum</b>	<b>1.0</b>	<b>2.5</b>
<b>Chromium</b>	<b>11.0</b>	<b>13.0</b>
<b>Copper</b>	-	<b>2.0</b>
<b>Sulphur</b>	-	<b>0.10</b>
<b>Phosphorus</b>	-	<b>0.10</b>

- b) The carbon content shall be aimed at lower range so as to get better toughness and impact resistance.
- c) Chromium/ Carbon (Cr/C) ratio shall be maintained at 5.0 minimum adhering to range specified for both the elements.
2. **Hardness:** Minimum 57 RC. The hardness measurements shall be carried out on the surface at the depth of minimum 3 mm below the original surface of the balls.
3. **Retained Austenite:** Maximum 15 %.
4. **Micro Structure:** Wholly tempered martensitic with trigonal (Fe-Cr)<sub>7</sub>C<sub>3</sub> type finely dispersed complex carbides.

**5. DIMENSIONS AND TOLERANCES:**

**Tolerance:** The tolerances on nominal diameter of the balls shall be as follows:-

<u>Nominal Size (mm)</u>	<u>Acceptable Range (mm)</u>
<b>Ø 50</b>	<b>Ø 48.0 to Ø 54.3</b>
<b>Ø 40</b>	<b>Ø 39.0 to Ø 43.3</b>
<b>Ø 30</b>	<b>Ø 29.0 to Ø 32.3</b>

6. **Manufacture:** The material shall be melted in induction furnace.
7. **Heat Treatment:** Suggested heat Treatment Cycle are:
- a) **Hardening:** Heating slowly upto a temperature of 850-950 °C hold for 1-2 hours, followed by air cooling or quenching in oil.
- b) **Tempering:** Heating slowly up to a temp of 200-350 °C hold for a suitable time to the section size and cool in still air of furnace.

- c) However, the actual heat treatment cycle is to be established by means of process qualification to meet requirement of hardness & microstructure specified herein above.
8. **Finish:** All castings shall be properly fettled, tumbled & dressed. All surfaces shall be thoroughly cleaned
9. **Freedom from defects:** The casting shall be free from defects such as blow holes, sand inclusions, shrinkage cavities, cold shuts, cracks etc. which may adversely affect the utility of castings.
10. **Visual inspection:** Visual inspection of the grinding media (GM) shall be carried out after fettling operation.

Following defects are unacceptable-

**I. Sand & slag Inclusions**

- a) Depth of defects more than 2.0 mm.
- b) Maximum dimension of the defects is more than 3.0 mm for 30 mm Grinding media and 4.0 mm both for 40 mm & 50 mm grinding media.
- c) In the case of scattered defects, the sum of the maximum defects lengths of all the defects in a ball put together when more than the limits of individual defects given above.

**II. Mismatch**

- a) Mismatch per face is more than 1.0 mm.
- b) Extra ingate or depression at ingate location is more than  $\pm 1.0$  mm over the dimensional tolerances specified for the respective sizes.
- c) Ovality more than 10 % for 30 mm Grinding media, 7.5 % for 40 mm grinding media and 7% for 50 mm grinding media.
- d) Ovality is defined as 
$$\frac{\text{Maximum Diameter} - \text{Minimum Diameter}}{\text{Effective diameter}} \times 100$$

Ovality also includes de- shaping due to parting line flashes

**11. Mechanical Properties:**

**Micro Examination:** The micro structure of the balls after the heat treatment shall reveal carbides and tempered martensite. The retained austenite content shall not exceed 15 % (to be aimed as low as possible).

**12. Test Samples for in Process Inspection:**

- a) Each melts shall be analysed for chemical composition.
- b) The hardness shall be measured on 5 balls selected at random from each treatment batch.
- c) One ball shall be selected randomly from each heat treatment batch for micro examination.
- d) Dimensional check shall be carried out by means of templates (Go and No Go Types). The templates shall be designed and manufactured by the supplier.

### 13. Test Samples for final Inspection:

- a) **Visual Inspection:** Double sampling plan for normal inspection as per Table 3A of IS 2500 Part I 2000 with inspection level of 1 and 2.5% AQL shall be followed. The number of samples taken shall be as per following table.

Size of Ball	Sample size	Acceptance	Rejection
50 mm	1 <sup>st</sup> Sample 32 balls per batch of 8 drums randomly	1- Failure	3- Failure
	2 <sup>nd</sup> Sample 32 balls per batch of 8 drums randomly	4- Failure	5- Failure
40 & 30 mm	1 <sup>st</sup> Sample 50 balls per batch of 8 drums randomly	2- Failure	5- Failure
	2 <sup>nd</sup> Sample 50 balls per batch of 8 drums randomly	6- Failure	7- Failure

- b) **Chemical Analysis:** 5 Balls Selected from a batch of 8 drums for Chemical composition and shall conform to requirement given at Chemical composition clause. If any of these balls fail to meet the chemical composition clause then the entire batch of 8 drums will be rejected.
- c) **Hardness Test :** The sampling method for hardness test shall be as follows:-  
A batch consisting of 8 drums of balls shall be selected and 10 balls from these drum be tested for hardness requirement. If any of these 10 balls fail to meet the hardness requirement, 10 more balls shall be tested. If any of these balls fails to comply with the hardness requirement, then the entire batch of 8 drums will be rejected.
- d) **Micro Examination:** 5 Balls Selected from a batch of 8 drums shall be examined for micro structure requirement as stipulated at clause for micro examination as under mechanical properties. If any of these balls fail to meet the micro examination clause then the entire batch of 8 drums will be rejected.
- e) **Retained Austenite:** One ball out of 5 balls selected for micro examination shall be tested for retained austenite. Acceptance norms shall be as per clause for micro examination as under mechanical properties. If any of these balls fail to meet the micro examination clause then the entire batch of 8 drums will be rejected.

### 14. QUALITY ASSURANCE PLAN (QAP):

- a) **Quality Documents Approval:** (a) The PO will obligate the successful bidder to follow the detailed Manufacturing QUALITY ASSURANCE PLAN (QAP) attached herein **Annexure - II** covering the various Tests proposed to be conducted as per the requirements of Technical Specification of item. The manufacturing of items shall be strictly in adherence to the attached quality plan.

**Test Certificates:** All necessary Tests/Checks shall be conducted on the materials, as per the attached QAP in **Annexure - II** for ensuring compliance with the requirements stipulated in the specification of this tender document. Other compliances as per the requirements mentioned in the tender also needs to be submitted.

- b) **Dispatch:** You shall furnish manufacturer's test and guarantee certificate along with each lots of dispatch. You shall be held responsible for the items not being properly packed for transport by Road to ensure them being free from loss or injury or damage at the destination.

**15. Test Certificates**

Three copies of test certificates shall be supplied giving the following information:-

- i. BPSCL's Purchase order No.
- ii. Supplier's Name.
- iii. Heat Nos.
- iv. Ball Size.
- v. Consignment/ Identification No.
- vi. Results of in process Inspection for Hardness, Chemical analysis & microstructure
- vii. Results for Final Inspection, Visual inspection, Hardness values, Chemical analysis, Micro Structural report, Retained austenite report.
- viii. Heat Treatment charts.

**16. Packing, Marking and Transportation:** Cast balls shall be suitably packed size wise in steel drum (oil Drum and not tar drum) of 200 Ltr. capacities. Two small holes shall be made at the bottom of the drum for drainage of water, if any.

Each drum shall be legibly marked with the following information

- BPSCL Purchase order No
- Consignment No
- Size of Ball
- Weight ( Net & Gross)
- Supplier's Name

**17. Referred Standard:**

- i. BS: 4844 – Gr. 3F
- ii. IS : 1586

**18. CONDITION OF DELIVERY:** In hardened and tempered condition.



**QAP for High Chrome Grinding media balls**

Sl. No	COMPONENT & OPERATION	CHARACTERISTICS (CLASS)	Type of check	QUANTUM OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY				REMARKS
							D	M	TPI	C	
1	RAW MATERIAL & INPROCESS INSPECTION										
1.1	Molten Metal	Chemical Properties (Critical)	Ladle analysis	1 sample per Cast heat	C.2.0-3.5%;Mn-0.5-1.5%;Cr-11-0-13.0%;Mo:1-2.5%;Ni-2.0% Max;Si-1.0%Max;Cu-2.0%Max;S-0.1% Max;P-0.1%Max	Test Certificate	✓	P	W	R	
1.2	High Chrome Ball Casting	Surface Exam.& Dimension (Major)	Visual & Dimension measurment	As per sampling plan given in QAP SI. No. 3.1	Surface Examination (Visual):- Following defects are unacceptable: <b>As per standard given in Technical specification of NIT/PO</b> a) Sand and Slag inclusions :- b) Mismatch :- c) Extra ingate or Depression at ingate d) Ovality:	IR	✓	P	W	R	Ovality is defined as: $\frac{(D_{max} - D_{min.})}{x 100}$ Nominal Dia
1.4	Do	Surface Hardness (Critical)	Measurement	5 ball per HT batch	57 HRC Minimum. The hardness measurements shall be carried out on the surface at the depth of minimum 3mm below the original surface of the balls.	Test Certificate	✓	P	R	R	
1.5	Do	Micro Exam & RA ( Critical)	Micro structure analysis	1 ball per H/T batch	As per NIT/Purchase order	Test Certificate	✓	P	R	R	Manufacturer to arrange reference photographs as per referred standard/ specification for comparison with the sample results.
1.6	Do	Heat Treatment	Observation	Each HT Batch	As per NIT /Manufacturing Standard	HT Chart	✓	P	W	R	Manufacturer to submit the HT Procedure before approval of QAP.

**Legends: M: Manufacturer/Supplier**  
**P: Perform**

**TPI: Third Party inspector**  
**W: Witness**

**C: Client/BPSCL**  
**R: Review**

**TC- Test certificate**  
**D: Document**

**IR- Inspection Report**

Client Review is applicable after receiving the material at BPSCL store during final inspection.

### QAP for High Chrome Grinding media balls

Sl. No	COMPONENT & OPERATION	CHARACTERISTICS (CLASS)	Type of check	QUANTUM OF CHECK	REFERENCE DOCUMENT/ ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY				REMARKS
							D	M	TPI	C	
2	Final Inspection at Manufacturer's end										
2.1	Do	Micro Exam, ( Critical)	Micro structure	5 Balls Selected from a batch of 8 drums if any of these balls fails to comply with the required microstructure then the entire batch of 8 drums shall be rejected.	As per NIT/PO	Test Certificate	✓	P	W	R	
2.2	Do	Hardness (Critical)	Hardness	10 balls selected from a batch of 8 drums if any of these balls fails to comply with the required hardness, 10 more balls shall be tested, if any of the ball fails to comply with the required hardness then the entire batch of 8 drums shall be rejected	57 HRC Minimum. The hardness measurements shall be carried out on the surface at the depth of minimum 3 mm below the original surface of the balls	Test Certificate	✓	P	W	R	
2.3	Do	Retained Austenite ( Critical)	RA measurement	One ball out of 5 balls selected for micro examination , if any of these balls fails to comply with the Retained Austenite requirement then the entire batch of 8 drums shall be rejected	Retained Austenite shall be 15 % maximum	Test Certificate	✓	P	W	R	
2.5	Do	Surface Exam for oil, scales, burrs, and sand ( Major)	Visual	Random	The surface of the balls should be free from oil/ grease etc, except for the trace of oil associated with the heat treatment & quenching process.	Test Certificate	✓	P	W	R	
2.6	Empty Drums	Internal Cleanliness ( Major)	Visual	Random	No foreign materials such as sand & sticky material are allowed inside the drum	Test Certificate	✓	P	R	R	
2.7	Drums	Sealing Physical	Physical	100%	Each drum should be sealed with inspector's mark	Test Certificate	✓	P	R	R	
2.8	Drums	Marking	Physical	100%	As per NIT	Compliance	✓	P	R	R	

**Legends: M: Manufacturer  
P: Perform**

**TPI: Third Party inspector  
W: Witness**

**C: Client/BPSCL  
R: Review.**

**TC- Test certificate  
D: Document**

**IR- Inspection Report**

Client Review is applicable after receiving the material at BPSCL store during final inspection

**QAP for High Chrome Grinding media balls**

3.1	Sampling Mechanism for Visual & Dimension test to be done at Manufacture works. Sampling to be done as below (which is as per IS: 2500 : 2000 part 1, table 3A. Double Sampling Plan for Normal Inspection, level- 1 with 2.5 % AQL)		
	Sample Size	Acceptance	Rejection
	For 50 mm ball: 1st Sample : 32 balls per batch of 8 Drums randomly	1- Failure	3- Failure
	For 50 mm ball : 2nd Sample: 32 balls per batch of 8 Drums randomly	4- Failure	5- Failure
	For 30 & 40 mm ball : 1st Sample: 50 balls per batch of 8 Drums randomly	2- Failure	5- Failure
	For 30 & 40 mm ball: 2nd Sample: 50 balls per batch of 8 Drums randomly	6- Failure	7- Failure
3.	Notes: 1) With final dispatch of material the Manufacturer will submit all the TCs including HT Chart, Microstructure etc. 2) Testing Acceptance & Rejection Procedure as per QAP. 3) Manufacturer Standard complying to relevant standard needs to be submitted.		

**Format for Bid Securing Declaration  
(In lieu of EMD)**

Date: \_\_\_\_\_

Tender Enquiry no.: \_\_\_\_\_

To  
The GM In-charge (Material Management)  
Bokaro Power Supply Company (P) Ltd.  
Hall No. – M 01  
Old Administrative Building  
ISPAT Bhawan, Bokaro Steel City

I/We\*, the undersigned, declare that:

I/We\* understand that, according to your conditions, bids must be supported by a Bid-Securing Declaration in lieu of Earnest Money Deposit.

I / We\* understand that if I/We\* withdraw or modify my / our\* Bids during the period of validity, or if I am / We are\* awarded the Contract and I / We\* fail to honour my /our\* offer by way of either withdrawing my / our\* bid within the bid validity period without assigning any valid reason for the same or refusing to submit Performance Security / Performance Guarantee as per relevant Clause of the tender enquiry or refusing to accept the price quoted by me / us\* in Online Price Bid or Reverse Auction within the period of validity of the same or refusing to sign the Contract Agreement, I / We\* will be suspended for a period of one year from being eligible to submit Bids for all future Contracts.

I / We\* understand that this Bid Securing Declaration shall cease to be valid if I am / We are\* not the successful Bidder and I am / We are\* not awarded the Order against the tender enquiry.

Signed \_\_\_\_\_ in the capacity of

\_\_\_\_\_

Name: \_\_\_\_\_

Duly authorized to sign the Bid for and on behalf of:

\_\_\_\_\_

Dated on \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

Corporate Seal (where applicable)

*[Note: In case of a Joint Venture, the Bid Securing Declaration must be in the name of all partners to the Joint Venture that submits the Bid.]*

**Self Declaration**

I.....son/daughter of Shri ..... Aged..... years  
resident of .....PS.....District.....State.....do hereby  
declare that:

1. I am the authorized representative and signatory of M/s.....  
(name of the firm/company).
2. All document(s) submitted/ information provided by M/s..... alongwith the  
Bid Document submitted against Tender No.....  
.....dated .....  
for.....  
..... (Name of work)  
has/have been submitted under my knowledge and are authentic , genuine and true. No part of the document(s) /  
information is false, forged or fabricated.
3. The above declaration in respect of genuineness of the documents/ information has been made having full  
knowledge of provisions of bidding conditions which entitle the Owner/BPSCL to initiate action in the event of  
such declaration turning out to be a false.
4. I undertake to produce all documents in original for verification as and when asked for the same by BPSCL.

(Name & Signature of Authorized person):.....

Designation:.....

(To be submitted on Supplier's Letter Head)

**Format for Acceptance of General Terms & Conditions, Commercial Terms and all other Terms of the Reverse Auction**

We \_\_\_\_\_ (Supplier Name)

with PAN \_\_\_\_\_ having registered office at \_\_\_\_\_

\_\_\_\_\_ (Address)

agree to all the Commercial, General & other Terms & Conditions listed in the

NIT No. \_\_\_\_\_

dated \_\_\_\_\_

for procurement of \_\_\_\_\_ (item) through Reverse Auction.

We confirm that we are in a position to supply material as per the specification given in NIT. We agree to participate in the Reverse Auction and abide by the rules.

We nominate an executive, whose details are given below, to put the bids on our behalf.

The details of the person authorized to bid on our behalf is as follows.

Name & Designation :

E-mail ID :

Contact phone nos. :

Address :

(Signature & Seal)

Place :

Date :

**ANNEXURE-VI**

**Format for submitting last quoted prices**

*(To be submitted on Company Letter Head of the Bidder)*

**(To be sent within 30 mins of conclusion of the Reverse Auction)**

To,  
mjunction services limited  
1<sup>st</sup> Floor, Tata Centre  
43, Jawaharlal Nehru Road  
Kolkata – 700 071

**Fax: 033 – 2288 3279**

**Ref: Reverse Auction for .....for Bokaro Power Supply Co. (P) Ltd. held on .....**

Reference above, we hereby confirm our Market wise last quoted prices in the Reverse Auction held on ..... for .....for Bokaro Power Supply Co. (P) Ltd., Bokaro Steel City.

<b>Market No.</b>	<b>Last Quoted Price</b>

We also confirm that we will submit item wise price break-up, within two working days from the date of Reverse Auction.

Signature :

Name :

Designation :

Date :