



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

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429-002/A

PHONE :2577419
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: cmuthuvel@bheltry.co.in
Web:

Enquiry No	Enquiry Date	Due Date for Quotation
1901500274 - 54	04.11.2015	20.11.2015
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order. Bid should be submitted in two parts. 1.Techno-commercial bid (Part-I) and 2.Price bid(Part-II) in a separate sealed cover and both covers must be placed in a third cover and sealed. Our Enquiry No., Enq. date & Enq. Due date must be written on all three covers.		

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	220300300000 NON ASBESTOS COMPRESSED FIBRE JOINTINGS-2MM TP-23292/REV 01 DT.31.12.2014 NON ASBESTOS COMPRESSED FIBRE JOINTINGS-2MM TP-23292/REV 01 DT.31.12.2014	KG	100.000	100.00	31.12.15
20	220300600000 CARBON/SILICON FIBRE MILL BOARD-5MM TP-23296/REV 01 DT.30.12.2014 CARBON/SILICON FIBRE MILL BOARD-5MM TP-23296/REV 01 DT.30.12.2014	KG	400.000	400.00	31.12.15
30	220300500000 CARBON FIBRE/CERAMIC FIBRE CLOTH-3MM TP-23297/Rev 01 CARBON FIBRE/CERAMIC FIBRE CLOTH-3MM TP-23297/Rev 01	KG	2000.000	2,000.00	31.12.15

General Note:

SPECIAL INSTRUCTIONS

1.,,BEFORE BULK SUPPLY, SAMPLE OF EACH ITEM WILL BE IDENTIFIED BY BHEL/TPI FROM THE SUPPLY LOT AT VENDOR WORKS. FOR THAT SAMPLE, VENDOR HAS TO SUBMIT THE TEST CERTIFICATE FROM ANY ONE OF THE NABL APPROVED LAB. BASED ON THE TEST CERTIFICATE, CLEARANCE WILL BE GIVEN FOR EFFECTING THE BULK SUPPLY. COST OF TESTING IS UNDER THE ACCOUNT OF SUPPLIER. SUPPLIER HAS TO PLAN IN ADVANCE FOR TESTING SO THAT SUPPLY WILL BE COMPLETED BEFORE THE DELIVERY DATE.

2.,,ONLY MANUFACTURERS ARE REQUESTED TO QUOTE FOR THIS TENDER.

3.,,MANUFACTURERS ARE REQUESTED TO SUBMIT THE SUPPORTING DOCUMENTS FOR HAVING MANUFACTURING FACILITY FOR THE ENQUIRED ITEMS. OFFERS WITH OUT THESE SUPPORTING DOCUMENTS WILL BE SUMMARILY REJECTED.

4.,,OFFERS FROM ANY AGENCY/TRADER OTHER THAN MANUFACTURERS WILL NOT BE CONSIDERED.

5. ENCLOSED DOCUMENTS

The offers should reach us 30 minutes before the time of opening of tenders. The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening.Late and delayed offers are liable to be rejected.

VIGILANCE AWARENESS WEEK

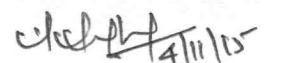
26 th OCT to 31st OCT 2015

FOR VIGILANCE RELATED COMPLAINTS,

CONTACT DGM/VIGILANCE & SM/VIGILANCE

PHONE:0431-2577552,2577636

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**


MANAGER / PURCHASE
(FOSSIL BOILERS)
S.Y.S.
Yours faithfully,

Materials Management / PSS
BHEL TIRUCHY 620 014.



BHARAT HEAVY ELECTRICALS LIMITED

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1901500274 / 04.11.2015

23505

- A. ANNEXURE A (TERMS AND CONDITIONS)
- B. ANNEXURE B (COMMERCIAL TERMS)
- C. ANNEXURE C (PRICE BID FORMAT)
- D. ANNEXURE D (NEW VENDOR FORMAT)
- E. ANNEXURE S (FOR SPECIAL CONDITIONS)

All the tenders may be addressed to the following address:

**The Tender Opening Cell / MM
Room No: 26, Building 24, Ground Floor
Bharat Heavy Electricals Limited
TIRUCHIRAPALLI 620014**

In case personal delivery of the offer, it shall be dropped into the respective box kept in Room No: 26, after duly entering the data in the system.

Offers will be accepted only up to 14.00 Hrs on the due date. Therefore, vendors shall ensure to submit the offers well before this time. All due date extension requirements should be addressed to the respective Purchase mail IDs. All the due date extension requests from vendors will be considered only up to 48 hours before the due date and time.

Vendors are requested to avoid submission of offers through e mail / fax. In case of any unavoidable situation, offers shall be sent through e mail to the following mail ID only tender_cell@bheltry.co.in.

As tenders are being opened by Common Tender Opening Cell, offer covers should be sealed with tenderer's distinctive seal and super scribed with correct Tender No. item of supply and due date of opening.

The offers will be opened at 14.30 hrs on the due date of the tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

The bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.

Enclosures:

"LD clause has to be confirmed without fail."

The offers should reach us 30 minutes before the time of opening of tenders. The offers will be opened at 14.30 hrs on the due date of tender in the presence of tenderers who have submitted their offer and who may like to be present for the tender opening. Late and delayed offers are liable to be rejected.

VIGILANCE AWARENESS WEEK


26 th OCT to 31st OCT 2015

FOR VIGILANCE RELATED COMPLAINTS.

CONTACT DGM/VIGILANCE & SM/VIGILANCE

PHONE:0431-2577552,2577636

Yours faithfully,
For **BHARAT HEAVY ELECTRICALS LIMITED**


MANAGER / PURCHASE
(FOSSIL BOILERS)
A. Yours faithfully

Sr Engineer
Materials Management / PSS
BHEL, TIRUCHY - 620 014.

**BHARAT HEAVEY ELECTRICALS LIMITED
TIRUCHIRAPPALLI - 620 014**

ANNEXURE - A

TERMS AND CONDITIONS OF THE ENQUIRY (TWO PART BID)

1. The enquiry will be operated on two part bid basis i.e.
 - (I) **Techno - Commercial Bid &**
 - (II) **Price Bid.**
2. The Part - I (Techno - Commercial Bid) and Part - II (Price Bid) are to be submitted in a single envelope with the super scribed as **"Techno - Commercial Bid and Price Bid for Enquiry No: Dt.: Due Dt.:"**

2.1 Techno-Commercial Bid:

- a. Duly signed **Enquiry Document**
- b. Duly signed **Annexure - A**
- c. Duly filled and signed **Annexure - B**
- d. Duly signed **un-filled Annexure - C**
- e. Duly filled and signed **Annexure - D (Applicable only for new vendors. Also enclose the copies of supporting documents wherever necessary)**
- f. Sample should be submitted along with Techno-Commercial Bid where sample is insisted in the Enquiry, if sample is not received for the Enquiry where BHEL is insisted, that offer will be summarily rejected. If sample is insisted in the enquiry, then the sample should be super scribed with the enquiry sl. no for identification and evaluation. Samples without the identification will not be considered and offer will be rejected.
- g. Duly signed **Annexure - S**

You are requested to put the above documents inside a separate sealed envelope and this envelope shall be super scribed as **"Part I - Techno - Commercial bid for Enquiry No: Dt.: Due Dt.:"**

2.2 Price Bid:

- a. Duly signed and filled in Price bid (Annexure - C) with price details.

You are requested to put the price bid inside a separate sealed envelope and this envelope shall be super scribed as **"Part II - Price bid for Enquiry No: Dt.:"**

- 2.3 Each envelope should be sealed with bidder's distinctive seal.
- 2.4 Two or more enquiry quotations should not be sent in single envelop.
- 2.5 Quotation against each enquiry should be sent in a separate envelope to avoid confusion.
- 2.6 Offer should not be addressed to any individual's name.

3. Your offer should be addressed to:
**Tender Opening Cell/MM,
Room No 26,
24 Building (Ground Floor),
Bharat Heavy Electricals Limited,
Tiruchirappalli - 620 014**

Any clarifications related to the enquiry should be addressed to arulvijay@bheltry.co.in

4. Please submit point wise compliance to our specifications, terms and conditions. Otherwise it will be presumed that you are accepting BHEL's terms and conditions.
5. The offer along with the sample if insisted in the Enquiry should reach our office on or before the due date as mentioned in the enquiry by 14.00 Hrs. Offers received after 14.00 Hrs will not be considered for evaluation and it will be summarily rejected. Offers through E-Mail/Fax will not be accepted. Any techno commercial

clarifications/request for tender due date extensions with valid acceptable reasons to be addressed to BHEL prior to 48 hours of tender due date. BHEL reserves the rights to extend the due date as per their discretion.

6. Tender will be opened on the due date as mentioned in the enquiry. If the due date falls on holiday, the tender document will be opened immediately on the next working day.
7. Quoted price/rate should be valid for minimum of 90 days from the date of technical bid opening. The quoted/Finalized rates shall be Firm till the completion of the supplies.
8. The rates are to be quoted on F.O.R. destination basis only. It should be inclusive of Packing & Forwarding and Freight & Insurance. Other delivery conditions like Ex-works / Ex-Godown will be summarily rejected.
9. Offers should be **free from CORRECTION and ERASURES**.
 - a. Corrections if any must be attested;
 - b. All amounts shall be indicated both in words as well as in figures.
 - c. If there is difference between amount quoted in words and figures, amount quoted in words shall only be considered.
 - d. If, in the price structure quoted for the required goods/services/works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price with the quantity), the unit price shall prevail and the total price will be corrected accordingly, unless in the opinion of the purchaser that there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price will be corrected accordingly.
 - e. If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected accordingly.
 - f. If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject of (d) and (e) above.
10. No revision of prices will be entertained after enquiry is opened.

11. Payment Terms (Indigenous):

Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials. Any deviation in the above payment term will attract loading as mentioned below.

“Base rate of SBI (as applicable on the date of bid opening. Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.

12. Liquidated Damages / Penalty:

(Any deviations in the LD shall attract loading to the extent of relaxation sought to which it is not agreed by the bidder at offered value).

Single delivery schedule:

If the Supplier fails to deliver the P.O quantity within the period specified in the contract, then the Purchaser shall deduct liquidated damages, 0.5% of the total order value per week of delay or part thereof subject to a maximum of 10% of the total order value.

13. RISK PURCHASE:

Alternatively the purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the supplier has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitutes therefore. The supplier shall be liable for any loss, which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rate mentioned in our LD clause.

14. SALES TAX:

If any sales tax is payable as extra to the quoted price it should be specifically stated in quotations along with CST & VAT Number failing which the purchaser will not be liable for payment of sales tax. Our TIN 33243560005 dt.01.01.2007 & CST no 239383 DT, 11.06.1991.

15. CENVAT CREDIT:

If any Excise Duty is payable, the Chapter Head / Sub -head reference and the rate of the duty should be quoted. If the bidder is availing CENVAT credit for this input material, the effect of Proforma credit should be passed on to the purchaser. Bidder under "CENVAT" shall be preferred.

16. On the due date of enquiry opening, only the Techno - Commercial bids will be opened. Techno - Commercial bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points. The price bids of techno-commercially suitable bidders will be opened on a later date with prior intimation to respective bidders.
17. Ranking L-1, L-2 etc. shall be done for individual items for the techno-commercially acceptable offers based on the landed cost to BHEL, Trichy and BHEL reserves the right to place order for individual items with different vendors.
18. In the event of more than one vendor becoming L1 for any of the item / items, the enquiry quantity for those item / items will be shared equally among all the L1 vendors.
19. Lowest price received against BHEL enquiry need not be the technically acceptable one and in that case BHEL reserves the rights to not to consider the same. The purchaser shall be under no obligation to accept the lowest or any other offer and shall be entitled to accept or reject any offer in part or full without assigning any reason whatsoever.
20. BHEL reserves the right to negotiate or re-float the enquiry opened if L1 price is not the lowest acceptable price to them inter-alia other reasons.
21. Any other conditions which might have been quoted by the seller and are in contravention to the terms and prescribed in the enquiry and which have not been specifically accepted by purchaser will not be applicable to the contract.
22. Any corrigendum related to the enquiry will be hosted in the BHEL website only, Bidders should visit the website(s) to keep themselves updated.
23. The correspondence between the bidder and BHEL through email is considered as valid document legally though it is not signed. It is treated as valid confirmations made on behalf of the respective company and comes under the legal ambit of the business transaction and hence binding on both the parties.
24. Bidders participating in the enquiry should declare in their technical bid whether they have been black-listed / kept on hold / given Business holiday for a specified period by any Public Sector Undertaking or Government Departments. The reasons for such action with complete details and the current status of such hold shall be clearly furnished to BHEL. If no such details are mentioned in the offer, it will be construed that the bidder is not under any such hold.
However, at a later date if it comes to the notice of BHEL about any such hold under enforcement, BHEL reserves the right to reject the offer at any point of time and also at any stage of the finalization of the enquiry. Such bidders will not be permitted to participate in the further enquiry proceedings and will be communicated suitably.
25. Bidders not confirming to the enquiry specifications will be disqualified.
26. Conditional offers will be rejected.
27. **PACKING AND MARKING:**
The supplier shall arrange for securely protecting and packing the materials to avoid loss or damages during transit.
28. In case of any quality rejection of materials, the supplier has to collect the materials at his own cost within the 10 days of rejection of advice. Otherwise the materials will be scrapped.
29. Unloading at BHEL has to be done by the suppliers and BHEL will not be in a position to provide any handling / unloading facilities.

**BHARAT HEAVEY ELECTRICALS LIMITED
TIRUCHIRAPPALLI - 620 014**

**ANNEXURE -B
COMMERCIAL TERMS**

S. NO	DESCRIPTION	BHEL REQUIREMENTS	SUPPLIER CONFIRMATION / DEVIATION (STRIKEOUT WHICHEVER IS NOT APPLICALE)
1	VALIDITY	90 DAYS FROM DATE OF TENDER OPENING	ACCEPTED / NOT ACCEPTED
2	PRICE QUOTED	FOR-DESTINATION BHEL STORES / TRICHY (INCLUSIVE OF PACKING & FORWARDING AND FREIGHT & INSURANCE)	ACCEPTED / NOT ACCEPTED
3	EXCISE DUTY	SUPPLIER OPTION	INCLUSIVE / EXTRA (IF EXTRA, PLEASE QUOTE % BELOW) _____ %
4	VAT	SUPPLIER OPTION	INCLUSIVE / EXTRA (IF EXTRA, PLEASE QUOTE % BELOW) _____ %
5	CST WITH FORM 'C'	SUPPLIER OPTION	INCLUSIVE / EXTRA (IF EXTRA, PLEASE QUOTE % BELOW) _____ %
6	CST WITHOUT FORM 'C'	SUPPLIER OPTION	INCLUSIVE / EXTRA (IF EXTRA, PLEASE QUOTE % BELOW) _____ %
7	DELIVERY SCHEDULE	WITH IN 1 MONTH FROM THE PO DATE	ACCEPTED / NOT ACCEPTED
8	PAYMENT TERMS	100% DIRECT PAYMENT AFTER 45 DAYS FROM THE DATE OF RECEIPT AND ACCEPTANCE OF MATERIALS	ACCEPTED / NOT ACCEPTED
9	LD CLAUSE	0.5% OF THE TOTAL ORDER VALUE PER WEEK OF DELAY OR PART THEREOF SUBJECT TO MAXIMUM OF 10% OF THE TOTAL ORDER VALUE	ACCEPTED / NOT ACCEPTED
10	RISK PURCHASE CLAUSE	ALTERNATIVELY THE PURCHASER AT HIS OPTION WILL BE ENTITLED TO TERMINATE THE CONTRACT AND TO PURCHASE ELSEWHERE AT THE RISK AND COST OF THE SELLER EITHER THE WHOLE OF THE GOODS OR ANY PART WHICH THE SUPPLIER HAS FAILED TO DELIVER OR DISPATCH WITHIN THE TIME STIPULATED AS AFORESAID OR IF THE SAME WERE NOT AVAILABLE, THE BEST AND THE NEAREST AVAILABLE SUBSTITUTES THEREFORE. THE SUPPLIER SHALL BE LIABLE FOR ANY LOSS, WHICH THE PURCHASER MAY SUSTAIN BY REASON OF SUCH RISK PURCHASES IN ADDITION TO PENALTY AT THE RATE MENTIONED IN OUR LD CLAUSE.	ACCEPTED / NOT ACCEPTED
11	FIRM PRICE	THE QUOTED/FINALIZED RATES SHALL BE FIRM TILL THE COMPLETION OF THE SUPPLIES	ACCEPTED / NOT ACCEPTED
11	CONTACT PERSON DETAILS	NAME: MOBILE NO: EMAIL :	
12	BEFORE BULK SUPPLY, SAMPLE OF EACH ITEM WILL BE IDENTIFIED BY BHEL/TPI FROM THE SUPPLY LOT AT VENDOR WORKS. FOR THAT SAMPLE, VENDOR HAS TO SUBMIT THE TEST CERTIFICATE FROM ANY ONE OF THE NABL APPROVED LAB. BASED ON THE TEST CERTIFICATE, CLEARANCE WILL BE GIVEN FOR EFFECTING THE BULK SUPPLY. COST OF TESTING IS UNDER THE ACCOUNT OF SUPPLIER. SUPPLIER HAS TO PLAN IN ADVANCE FOR TESTING SO THAT SUPPLY WILL BE COMPLETED BEFORE THE DELIVERY DATE.		ACCEPTED / NOT ACCEPTED
13	SUPPORTING DOCUMENTS ARE SUBMITTED FOR HAVING MANUFACTURING FACILITY FOR EACH OF THE ENQUIRED ITEMS		YES / NO
14	BIDDERS HAVE TO CONFIRM THAT WHETHER THEY HAVE BEEN BLACK-LISTED / KEPT ON HOLD / GIVEN BUSINESS HOLIDAY FOR A SPECIFIED PERIOD BY ANY PUBLIC SECTOR UNDERTAKING OR GOVERNMENT DEPARTMENTS/ANY OTHER UNITS OF BHEL. (WITH REFERENCE TO TERMS AND CONDITIONS OF ANNEXURE - A)		YES / NO
(BIDDERS SHOULD SUBMIT THEIR OFFER IN THE BHEL FORMAT ONLY, OTHER FORMATS WILL NOT BE CONSIDERED)			
SIGN AND SEAL OF AUTHORIZED PERSON			

**BHARAT HEAVEY ELECTRICALS LIMITED
TIRUCHIRAPPALLI - 620 014**

**ANNEXURE - D
(FOR NEW VENDORS ONLY)**

Sl No	Details	Document Submission
1	Nature of ownership & relevant documents	
	<u>Proprietorship</u>	
	Professional Tax Regn	YES / NO
	Municipal Regn	YES / NO
	<u>Partnership firm</u>	
	Partnership Deed	YES / NO
	<u>Co-operative society</u>	
Society rules & bye laws	YES / NO	
<u>Private/Limited Company</u>		
Memorandum & Articles of Association	YES / NO	
<u>State Govt. / Govt. Of India Undertaking</u>		
Memorandum & Articles of Association	YES / NO	
2	Nature of Business (Manufacturing Unit) (Indian Subsidiary - attach authorization certificate of principal)	YES / NO
2	Manufacturing range & facilities: (If applicable) • List down the product range & specification details. • List of Manufacturing facilities/equipment's (including material handling facility)	YES / NO
3	Licence details of the factory	YES / NO
4	• Permanent Account No	YES / NO
	• Central Sales Tax registration number	YES / NO
	• State Sales Tax / TIN number	YES / NO
	• Excise Duty Registration number	YES / NO
	• Excise Control Code number	YES / NO
	• Service tax registration number	YES / NO
• Regn number of category as per MSMED Act (If applicable)	YES / NO	
5	If registered with any other BHEL unit • Letter of registration with BHEL unit (If applicable)	YES / NO
6	Accreditation certificate for ISO:9001 / TOC of Quality System manual / ISO:14000 / OHSAS ISO 18000 (If applicable)	YES / NO

SIGN AND SEAL OF AUTHORIZED PERSON

**BHARAT HEAVEY ELECTRICALS LIMITED
TIRUCHIRAPPALLI - 620 014**

ANNEXURE -S

SPECIAL CONDITIONS

1. BEFORE BULK SUPPLY, SAMPLE OF EACH ITEM WILL BE IDENTIFIED BY BHEL/TPI FROM THE SUPPLY LOT AT VENDOR WORKS. FOR THAT SAMPLE, VENDOR HAS TO SUBMIT THE TEST CERTIFICATE FROM ANY ONE OF THE NABL APPROVED LAB. BASED ON THE TEST CERTIFICATE, CLEARANCE WILL BE GIVEN FOR EFFECTING THE BULK SUPPLY. COST OF TESTING IS UNDER THE ACCOUNT OF SUPPLIER. SUPPLIER HAS TO PLAN IN ADVANCE FOR TESTING SO THAT SUPPLY WILL BE COMPLETED BEFORE THE DELIVERY DATE.
2. ONLY MANUFACTURERS ARE REQUESTED TO QUOTE FOR THIS TENDER.
3. MANUFACTURERS ARE REQUESTED TO SUBMIT THE SUPPORTING DOCUMENTS FOR HAVING MANUFACTURING FACILITY FOR THE ENQUIRED ITEMS. OFFERS WITH OUT THESE SUPPORTING DOCUMENTS WILL BE SUMMARILY REJECTED.
4. OFFERS FROM ANY AGENCY/TRADER OTHER THAN MANUFACTURERS WILL NOT BE CONSIDERED.



**PLANT PURCHASING
SPECIFICATION
HPBP-TIRUCHIRAPPALLI**

TP 23292
Rev. No. **01**
PAGE 1 OF 4

**NON ASBESTOS COMPRESSED FIBRE JOINTING SHEETS
(HIGH PRESSURE STEAM & WATER)**

1. SCOPE

This specification governs the quality of non-asbestos compressed fibre jointing sheets for high pressure steam and water.

2. APPLICATION:

The supplied material shall be suitable for use in steam turbines, boilers, thermal insulation, packing & sealing purposes at maximum operating pressures of 14.0 N/mm² and temperature of 625°C.

3. DIMENSIONS AND TOLERANCES:

3.1. Dimensions: the material should be supplied to the dimensions specified on the order.

3.2. Thickness: the thickness of the sheets shall preferably be selected from the following, 0.40, 0.50, 0.75, 1.00, 1.50, 2.00, 3.00, 5.00 mm

3.3. Tolerance: Maximum permissible deviation on the nominal thickness of the sheets shall be as

Nominal thickness (mm)		Permissible deviation from nominal thickness ± mm	Max. Deviation between points not more than 250 mm apart, ± mm
Above	Up to & including		
-	0.50	0.05	0.05
0.50	1.00	0.10	0.10
1.00	2.00	0.15	0.10
2.00	3.00	0.20	0.15
3.00	5.00	0.20	0.15

4. MATERIAL

The material used for manufacturing this Non Asbestos Compressed Fibre Jointing Sheets is glass, ceramic or carbon fibre based silicon or aramid fibre with suitable high temperature binder material.

Revisions 1. Requirement of withstanding Flue gas with 6% sulphur deleted			Approved: STANDARDS SECTION ITS&S HPBP. TIRUCHIRAPPALLI		
Rev. No. 01	Amd. No.	Reaffirmed	Prepared:	Issued:	Dt. of 1 st issue
Dt. 31.12.2014	Dt.	Dt.	STANDARDS	STANDARDS	21.02.2014



**PLANT PURCHASING
SPECIFICATION
HPBP-TIRUCHIRAPPALLI**

TP 23292

Rev. No. 01

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5. FREEDOM FROM DEFECTS

- The sheets shall have uniform texture, smooth on both sides and free from irregularities such as blisters tears and lumps.
- The sheets shall have square and evenly cut edges and they shall be smooth flat, free from cracks, as well as foreign mechanical inclusions.
- The carbon fibre / silicon fibre jointing sheets shall be of uniform thickness and suitable for easy shearing. The variations in thickness in one sheet should not exceed 10%.

6. TEST SAMPLE

Supplier shall supply a test sample to BHEL for acceptance before regular supplies.

7. PROPERTIES:

For Properties and Conditions refer TABLE-1 attached herewith.

Thickness(mm)	Material Code	**Weight/unit area(kg/m ²)
0.4	220300280000	-
0.5	220300290000	-
0.75	220300440000	-
1	220300310000	-
1.5	220300700000	2.85
2	220300300000	3.8
3	220300150000	5.7
5	220300020000	5.75

***weight indicated is approximate only. Vendor to provide actual weight per square meter.*

8. TYPE APPROVAL

Samples for the type approval shall be accepted only from those manufacturers whose manufacturing and testing facilities are considered satisfactory, to ensure continuous supply of good products.



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9. TEST CERTIFICATES.

Unless otherwise stated, three copies of the test certificate shall be supplied along with each consignment, giving the following information.

TP 23292-Rev No 01: Non-Asbestos Compressed Fibre Jointing Sheets for high pressure steam and water applications

BHEL Order No.
Manufacturer's /Supplier's Name
Trade mark , if any
Batch/ Lot No.
Date of manufacture
Quantity supplied
Test results of clause 3 and TABLE -1

10. PACKING AND MARKING

Unless otherwise stated, the material shall be supplied either flat or in rolls suitably packed to prevent damages during transit.

Manufacturer's name and grade shall be clearly marked on a piece of 300 x 300 mm cut from any position of the sheet.

Each package shall be legibly marked with following information,

TP 23292-Rev No 01: Non Asbestos Compressed Fibre Jointing Sheets for high pressure steam and water applications

BHEL Order No.
Manufacturer's /Supplier's Name
Trade mark , if any
Batch/ Lot No.
Date of manufacture
Quantity supplied



PLANT PURCHASING
SPECIFICATION
HPBP-TIRUCHIRAPPALLI

TP 23292

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TABLE - 1

SI No	Characteristic	Requirement	Method of Test
1	Material (preferable. Better material meeting physical properties may be used. But must be certified in TC)	Glass, ceramic or Carbon fibre based silicon or aramid fibre with suitable high temp. Binder.	* FT-IR Analysis
2	Density/CC	1.57 to 2.20	ASTM D 792
3	Tensile Strength a) 0.4 to 1.0 mm thick b) Above 1 mm thick	18 N/mm ² minimum 24 N/mm ² minimum	ASTM F 152
4	Compressibility % (IS 2712 Appendix D)	6-14	ASTM F36
5	% Recovery (IS 2712 Appendix D)	40 minimum	ASTM F36
6	Water Absorption - % increase in mass	10 max.	ASTM F 146
7	Loss of ignition at 580 °C ±25 °C.	30 % max	**Standard Method
8	Flexibility Test (after accelerated ageing)	No sign of cracking	**Standard Method
9	Stress relaxation – residual Stress	23 N/mm ² minimum	----

- *The FT-IR report shall contain the following.
a) Spectral Range b) Resolution c)Finger print
- ** Standard Methods along with applicable test and acceptance standard applied at test centres shall be declared in TC.
- The compressibility, tensile strength of the fibre shall not be sacrificed due to use of non-asbestos material. Vendor may guarantee the above and these properties shall be certified by Vendor on Test Certificate.



**PLANT PURCHASING
SPECIFICATION
HPBP - TIRUCHIRAPPALLI**

TP 23296

Rev. No. 01

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**CARBON FIBRE / CERAMIC FIBRE MILL BOARD
(Thickness 5, 10 & 25 mm asbestos free)**

1. SCOPE

This standard covers asbestos free carbon fibre / ceramic fibre mill board used as fire proof thermal insulating material.

2. MATERIAL

The material used for manufacturing this mill board is carbon fibre or ceramic fibre base with suitable high temperature binder.

The mill board shall have uniform texture, smooth on both sides and free from irregularities such as blisters tears and lumps.

The mill board shall have square and evenly cut edges and they shall be smooth flat, free from cracks, as well as foreign mechanical inclusions.

The mill board should withstand the required temperature of steam or the flue gases of coal fired boilers containing 6% sulphur.

3. APPLICATION

Asbestos free carbon fibre / ceramic fibre mill board used as fire proof thermal insulating material.

4. TECHNICAL REQUIREMENTS

Properties and conditions refer table 1.

The carbon fibre / ceramic fibre mill board shall be of uniform thickness and suitable for easy shearing. The variations in thickness in one sheet should not exceed 10%.

Tolerance on the size and thickness shall be as

On size : ± 10 mm

On thickness

Upto and including 2 mm : ± 0.2 mm

Above 2 mm : ± 0.3 mm

Revisions

Description changed from silicon fibre to ceramic fibre.

Approved:

STANDARDS SECTION
ITS&S
HPBP, TIRUCHIRAPPALLI

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Thickness of mill board	Material code	**Weight kg/sq.m
5	220300600000	4.875
10	220300060000	9.750
25	220300070000	24.375

***weight indicated is approximate only. Vendor to provide actual weight per meter length.*

5. DESIGNATION

Asbestos free carbon fibre / ceramicfibre mill board thickness 10 mm, according to this specification shall be designated on drawings as:

- i. Material specification column : 220300060000
- ii. Description column : Asbestos free carbon fibre / ceramicfibre
Mill-board 10 mm.
- iii. drawing number column : **TP 23296**

6. ORDERING DESCRIPTION

For placing indents, issuing enquiries and on purchase order, for 1 meter length and width, the ordering description given below shall be followed:

ASBESTOS FREE MILL BOARD 10 mm THICK, 1 m X 1 m,
As per BHEL STANDARD **TP 23296**

7. ADDITIONAL INFORMATION

- i. Copies of this standard shall be enclosed along with purchase order.

8. FINISH

The millboards shall have uniform texture, smooth on both sides and free from irregularities such as blisters, tears and lumps.

* The FT-IR report shall contain the following.

- A) Spectral Range
- B) Resolution
- C) Finger print

** Standard methods along with applicable tests and acceptance standard applied at test canters shall be declared in TC.



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TABLE 1

1	Material (preferable. Better material meeting physical properties may be used. But must be certified in TC)	Carbon fibre or ceramic fibre base with suitable high temp. Binder	* FT-IR Analysis
2	Density (g/cc)	0.75 to 1.2	ASTM D 792
3	Moisture at 105°C ± 5 °C	2 max	ASTM D 792
4	Loss on ignition at 580°C ±25°C after exposure for 30 minutes	20% max	**Standard Method
5	Continuous service temperature	1050 °C	-----
6	Maximum service temperature	1260 °C	-----
7	pH of water extract	7 to 8.5	**Standard Method
8	Chloride content of water extract ppm	200max	**Standard Method
9	Sulphur content of water extract ppm	50max	**Standard Method
10	Longitudinal tensile strength N/mm ²	10 (max)	ASTM F152
	Transverse tensile strength N/mm ²	9 (max)	ASTM F152
11	Shore hardness(A)	55 to 65	**Standard Method
12	Thermal conductivity (W/m °C)	0.17	**Standard Method
13	Linear shrinkage % (max)	3	**Standard Method
14	Dimensional tolerance	As per the Engg drawing	-----



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**CARBON FIBRE/CERAMIC FIBRE CLOTH
(Thickness 3 mm asbestos free)**

1. SCOPE

This standard covers asbestos free Carbon fibre/Ceramic fibre cloth.

2. MATERIAL

The material used for cloth is a Carbon fibre/Ceramic fibre free from asbestos. The cloth shall have uniform texture, smooth on both sides and free from irregularities such as blisters tears and lumps.

3. TECHNICAL REQUIREMENTS

Refer Table-2 for technical requirements.

The cloth shall be fire resistant, vermin-proof and capable of withstanding required temperature.

Recommended thickness of cloth for BHEL's use shall be 2, 3 or 5 mm.

The cloth shall be supplied in rolls of nominal width 1 m and length 25 to 40 m.

4. DESIGNATION

Asbestos free carbon fibre/ceramic fibre cloth, thickness 3 mm, according to this standard shall be designated on drawings as:

- i. Material specification column : 220300500000
- ii. Description column : Asbestos free Carbon fibre/Ceramic fibre cloth 3 mm.
- iii. Drawing number column : TP 23297

Revisions:
- Plain Woven added in ordering description in addition to twill woven.

Approved:
STANDARDS SECTION
ITS&S
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5. ORDERING DESCRIPTION

For placing indents, issuing enquiries and on purchase order, the ordering description given below shall be followed:

ASBESTOS FREE, CARBON FIBRE / CERAMIC FIBRE CLOTH TWILL/**PLAIN** WOVEN 2 MM THICK, 1m X 25m, AS PER BHEL STANDARD **TP 23297**

6. Thickness and weight

Recommended thickness	Density dry condition (gm/cm ³)	Material code	**Weight (kg/m ²)
3 mm	0.7-1.2	220300500000	2.85

***weight indicated is approximate only. Vendor to provide actual weight per meter length.*

7. ADDITIONAL INFORMATION

- i. For procurement purpose, this standard shall be enclosed along with purchase order.



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TABLE-2

1	Material of cloth	Carbon fibre / Ceramic fibre	*FT-IR Analysis
2	Density gm/cm ³ (dry condition)	2mm thick	ASTM D 792
		3 mm thick	ASTM D 792
		5 mm thick	ASTM D 792
3	Chloride content max	50 ppm	** Standard method
4	Sulphur content max	50 ppm	** Standard method
5	Temperature resistance	1000 °C max	** Standard method
6	Loss on ignition at 580 °C ± 25 °C after exposure for 30 minutes.	25% max	** Standard method
7	Moisture content at 105 °C ± 5 °C	2.5% max	** Standard method
8	Thermal conductivity at 800°C (W/m°C)	0.17	** Standard method
9	Dimensional tolerance	As per Engg. drawing	-----

The supplier shall ensure that the tensile strength of the fibre and cloth shall not be sacrificed due to use of non-asbestos material. Vendor to guarantee the above and the strength properties shall be certified on Test Certificate.

* The FT-IR report shall contain the following.

- A) Spectral Range
- B) Resolution
- C) Finger print

** Standard methods along with applicable tests and acceptance standard applied at test centres shall be declared in TC.