

BHARAT HEAVY ELECTRICALS LIMITEDPage
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429-002/A

(A Government of India Undertaking)
HIGH PRESSURE BOILER PLANT
PURCHASE DEPARTMENT - FOSSIL BOILERS
THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)PHONE :2577419
GRAMS : BHARATELEC
FAX NO: 2520719
E-mail: cmuthuvel@bheltry.co.in
Web:

	Enquiry No	Enquiry Date	Due Date for Quotation
	1901500120 - 70	24.04.2015	19.05.2015
Please quote Enquiry No, Date and due date in all correspondences. This is only a request for quotation and not an order			

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	220300010000 NON ASBESTOS COMPRESSED FIBRE JNTNG 1.5 TP-23294/REV 01 DT.31.12.2014	KG	100.000	100.00	31.08.15
20	220300020000 GASKET-5MM TP-23292/REV 01 DT.31.12.2014	KG	100.000	100.00	31.08.15
30	220300030000 PACKING ROPE SQ.10MM - TP 23299/REV 01 DT.31.12.2014	KG	4000.000	4,000.00	31.08.15
40	220300040000 PACKING ROPE SQ.20MM - TP 23299/REV 01 DT.31.12.2014	KG	100.000	100.00	31.08.15
50	220300050000 PACKING ROPE SQ.12MM - TP 23299/REV 01 DT.31.12.2014	KG	100.000	100.00	31.08.15
60	220300060000 MILL BOARD 10 MM - TP 23296/REV 01 DT.30.12.2014	KG	2000.000	2,000.00	31.08.15
70	220300070000 MILL BOARD 25 MM - TP 23296/REV 01 DT.30.12.2014	KG	10000.000	10,000.00	31.08.15
80	220300080000 PACKING ROPE SQ.15MM - TP23299/REV 01 DT.31.12.2014	KG	500.000	500.00	31.08.15
90	220300150000 GASKET-3MM TP 23292/REV 01 DT.31.12.2014	KG	800.000	800.00	31.08.15
100	220300160000 CARBON FIBRE/CERMC FIBRE GLAND PACKING-SQ 6mm TP-23299/REV 01 DT.31.12.2014	KG	300.000	300.00	31.08.15

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.

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

[Signature]
MANAGER / PURCHASE
(FOSSIL BOILERS)
Purchase / SS
Yours faithfully,

Mats. Mgmt. / Raw Materials
BHEL, TRICHY 620 014



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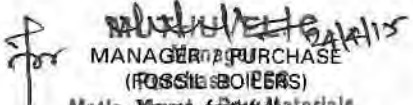
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1901500120 / 24.04.2015

110	220300170000	KG	500.000	500.00	31.08.15
	CARBON/CERAMIC FIBRE GLAND PACKING-SQ 8mm TP 23299/REV 01 DT.31.12.2014				
120	220300180000	KG	200.000	200.00	31.08.15
	COMPRESSED FIBRE JOINTING SHEETS-1.5MM TP-23295				
130	220300190000	KG	700.000	700.00	31.08.15
	COMPRESSED FIBRE JOINTING SHEETS-3MM TP-23295				
140	220300200000	KG	1100.000	1,100.00	31.08.15
	NONASBESTOS COMPRESSED FIBREJOINTING-2MM TP 23294/REV 01 DT.31.12.2014				
150	220300250000	KG	1000.000	1,000.00	31.08.15
	COMPRESSED FIBRE JOINTING-2MM TP 23295				
160	220300300000	KG	100.000	100.00	31.08.15
	NON ASBESTOS COMPRESSED FIBRE JOINTINGS-2MM TP-23292/REV 01 DT.31.12.2014				
170	220300310000	KG	100.000	100.00	31.08.15
	COMPRESSED FIBRE JOINTING SHEET-1.0MM TP 23292/REV 01 DT.31.12.2014				
180	220300360000	KG	100.000	100.00	31.08.15
	COMPRESSED FIBRE JOINTING SHEET-1.50MM TP 23293/REV 01 DT.31.12.2014				
190	220300370000	KG	200.000	200.00	31.08.15
	COMPRESSED FIBRE JOINTING SHEET-2.00MM TP 23293/REV 01 DT.31.12.2014				
200	220300400000	KG	3500.000	3,500.00	31.08.15
	PACKING ROPE DIA-10MM TP-23299/REV 01 DT.31.12.2014				
210	220300450000	KG	100.000	100.00	31.08.15
	COMPRESSED FIBRE JOINTING SHEET-3.00MM TP: 23293/REV 01 DT.31.12.2014				
220	220300500000	KG	2000.000	2,000.00	31.08.15
	CARBON FIBRE/CERAMIC FIBRE CLOTH-3MM TP-23297				
230	220300600000	KG	400.000	400.00	31.08.15

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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.

Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED


MANAGER, PURCHASE
(FOSSIL BOILERS)
M/s. Vignesh Enterprises
BHEL, TRICHY - 620 014



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240	CARBON/SILICON FIBRE MILL BOARD-5MM TP-23296/REV 01 DT.30.12.2014 220300700000	KG	200.000	200.00	31.08.15
250	NON ASBESTOS COMPRESSED FIBRE-1.5MM TP-23292/REV 01 DT.31.12.2014 220300800000	KG	100.000	100.00	31.08.15
260	LUBRICATED AND GRAPHITED GLAND-SQ-8MM TP-23298 220300900000	KG	900.000	900.00	31.08.15
	NONASBESTOS COMPRESSED FIBREJOINTING 3MM TP 23294/REV 01 DT.31.12.2014				

General Note:

1. SAMPLES ARE REQUESTED FOR THE EACH LINE ITEM AND THE SAME SHOULD BE SUBMITTED ALONG WITH TECHNO COMMERCIAL BID. SUBMISSION OF SAMPLES AFTER TENDER OPENING DATE IS NOT PERMITTED AND THE OFFERS WITHOUT THE SAMPLES WILL BE SUMMARILY REJECTED.

2. 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.

3. ONLY MANUFACTURERS ARE REQUESTED TO QUOTE FOR THIS TENDER.

4. 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.

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

TWO PART BID ENQUIRY

VENDORS ARE REQUESTED TO QUOTE AS PER THE TERMS AND CONDITIONS INDICATED IN ANNEXURE A

ALL THE DOCUMENTS OF ENQUIRY SHOULD BE SIGNED AND SUBMITTED ALONG WITH THE OFFER

ENCLOSURES:

ANNEXURE A

ANNEXURE B

ANNEXURE C

The offers should reach us 30 minutes before the time of opening of tenders.

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

MUTHUVEL. C
MANAGER, PURCHASE
FOSSIL BOILERS
BHEL, THIRUCHIRAPALLI, 620014



BHARAT HEAVY ELECTRICALS LIMITED

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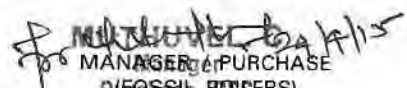
ANNEXURE D
ANNEXURE I
ANNEXURE S

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.

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


MANAGER, PURCHASE
(FOSSIL BOILERS)
Mails Mg Yours faithfully
BHEL, TRICHY - 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 (If mentioned in the enquiry)**

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:

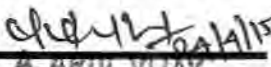
- a. Duly signed and filled in Price bid (Annexure – C) with price details.

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.: Due 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: **The Manager,
Purchase Department / PSS,
Materials Management / Raw Materials,
24 Building (4th Floor),
Bharat Heavy Electricals Limited,
Tiruchirappalli - 620 014.**
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

Sign and Seal of Bidder


A. ARUL VIJAY
Engineer
Materials Management / PSS
BHEL, TIRUCHY - 620 014

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 price 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.

A. Ariil Vijay
21/11/15

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 and not mentioned in the point no 19 & 20 below.

19. SPECIAL PROVISIONS FOR MICRO AND SMALL ENTERPRISES (MSE) BIDDERS:

- i. 20% of the tendered quantity is earmarked for MSE suppliers in this tender.
- ii. Out of the 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC / ST entrepreneurs. In event of failure of such Micro and Small enterprises to participate in the tender process or meet the tender requirements and the L1 price, the 4% sub-target for procurement ear-marked MSE owned by SC / ST entrepreneurs shall be met with other MSE enterprise/s.
- iii. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the portion of the requirement subject to acceptance of L1 price by MSE vendor. In case of more than one such MSE, the supply shall be shared proportionately.
- iv. MSE suppliers can avail the intended benefits only if they submit along with the offer, attested copies of either EM II certificate having deemed validity (five years from the date of issue in acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with attested copy of a CA certificate (Format enclosed as per **Annexure I** where deemed validity of EM II certificate of five years have expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of bid opening (Part 1 in case of two part bid). Non submission of such documents will lead to consideration of their bids at par with other bidders. No benefits shall be applicable for the enquiry if any deficiency in the above required documents is not submitted before the price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted officer. This provision for MSE will apply subject to the condition that the participating MSE meets the tender requirements.
- v. In case of any change in the MSE status of the bidder, it shall be the responsibility of the bidder to notify the change as a part of the bid document. If at a later date it comes to the knowledge of BHEL, that the change in the status has not been intimated by the bidder and the order is obtained under the premise of an MSE then BHEL would cancel the pending order against this tender and take necessary steps for suspension of the business dealing with the bidder as per the procurement policy of BHEL.
- vi. In case after the bid opening it is seen that no MSE has become L1, then depending on the nature of the item, if it is not possible to split the tendered items / quantities on account of reasons like customer contract requirements of supplying one make for a given project or technical reasons like tendered items being a system, tendered quantity being low etc., then BHEL would not counter offer the L1 prices even though there may be MSE bidders within the +15% band of L1.

20.

- a. 20% of the tendered quantity is earmarked for MSE suppliers in this tender. The earmarked 20% quantity will be counter offered to the MSE vendors whose rate is within L1+15% band & up to H1 of MSE. In

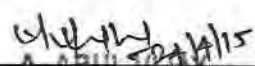
Sign and Seal of Bidder


A. ARUL PRAGASAM
Engineer
Materials Management / PSS

case of non-acceptance of the counter offering of 20% reservation to MSE vendors, the total tender quantity will be ordered as mentioned in 20 (c). For the balance 80% of the tendered quantity, BHEL reserves the right to order the tender quantity 100% on L1 vendor. Counter offering of L1 rate will not be made with any H1 vendor of Non-MSE

- b. If L1 is from a Micro / Small enterprise, the 20% earmarking provision is not applicable and order will be split in the ratio of 70:30 (between L1 , L2 / L3 at matched L1 F.O.R rate in the order of commercial ranking). Counter offering of L1 rate will not be made with any H1 vendor of Non-MSE.
 - c. If there is no response form MSE vendors the above split up of 20 (a) & 20 (b) will not be applicable and the total tender quantity will be split and ordered in the ratio of 70:30 (between L1 , L2 / L3 at matched L1 F.O.R rate in the order of commercial ranking .
 - d. In case of counter offering rate does not accepted by the L2 as well as L3 vendor, such counter offer quantity also will be ordered on L1 vendor.
21. For the enquired items, where the quantity is 200 Kg and less than 200 Kg will not be split as mentioned in the SI No 19 and 20. Such items will be ordered on L1 vendor alone.
 22. 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.
 23. 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.
 24. 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.
 25. Any corrigendum related to the enquiry will be hosted in the BHEL website only, Bidders should visit the website(s) to keep themselves updated.
 26. 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.
 27. 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.
 28. Bidders not confirming to the enquiry specifications will be disqualified.
 29. Conditional offers will be rejected.
 - 30. PACKING AND MARKING:**
The supplier shall arrange for securely protecting and packing the materials to avoid loss or damages during transit.
 31. 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.
 32. Unloading at BHEL has to be done by the suppliers and BHEL will not be in a position to provide any handling / unloading facilities.

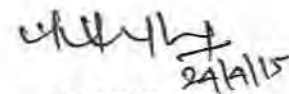
Sign and Seal of Bidder


A. ABUL KALAM
Engineer
Materials Management / PSS
BHEL, TIRUCHY - 620 011

**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	NON DEVIATABLE
2	PRICE QUOTED	FOR-DESTINATION BHEL STORES / TRICHY	NON DEVIATABLE
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	AS PER BHEL DELIVERY SCHEDULE IN THE ENQUIRY	NON DEVIATABLE
8	PAYMENT TERMS	AS PER TERMS AND CONDITIONS MENTIONED IN THE ANNEXURE - A	ACCEPTED / NOT ACCEPTED
9	LD CLAUSE	AS PER TERMS AND CONDITIONS MENTIONED IN THE ANNEXURE - A	ACCEPTED / NOT ACCEPTED
10	RISK PURCHASE CLAUSE	AS PER TERMS AND CONDITIONS MENTIONED IN THE ANNEXURE - A	NON DEVIATABLE
11	CONTACT PERSON DETAILS	NAME: MOBILE NO: EMAIL :	
12	SAMPLES ARE SUBMITTED FOR THE EACH LINE ITEM ALONG WITH TECHNO COMMERCIAL BID		YES / NO
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			


A. ARUL VIJAY
 Engineer
 Materials Management / PSS
 BHEL, TIRUCHY - 620 014

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

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

SI 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


A. ARUL VIJAY
 Engineer
 Materials Management / PSS
 BHEL, TIRUCHY - 620 014

ANNEXURE -I

Certificate by Chartered accountant on Chartered Accountant's letter head

This is to certify that M/s....., (hereinafter referred to as 'company') having its registered office atis registered under MSMED Act 2006, (Entrepreneur Memorandum No (Part-II) dated: Category: (Micro/Small) (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O 1722 (E) dated October 5, 2006:
Rs..... Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSM ED Act, 2006:
Rs..... Lacs

(Strike off whichever is not applicable)

The above investment of Rs..... Lacs is within permissible limit of Rs..... Lacs for..... Micro/Small (Strike off which is not applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is..... (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O.No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.


Date:

(Signature)

Name:

Membership number:

Seal of Chartered Accountant:

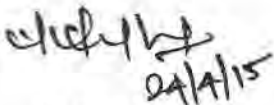

A. ARUL VIJAY
Engineer
Materials Management / PSS
BHEL, TIRUCHY - 620 014

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

ANNEXURE –S

SPECIAL CONDITIONS

1. SAMPLES ARE REQUESTED FOR THE EACH LINE ITEM AND THE SAME SHOULD BE SUBMITTED ALONG WITH TECHNO COMMERCIAL BID. SUBMISSION OF SAMPLES AFTER TENDER OPENING DATE IS NOT PERMITTED AND THE OFFERS WITHOUT THE SAMPLES WILL BE SUMMARILY REJECTED.
2. 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.
3. ONLY MANUFACTURERS ARE REQUESTED TO QUOTE FOR THIS TENDER.
4. 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.
5. OFFERS FROM ANY AGENCY/TRADER OTHER THAN MANUFACTURERS WILL NOT BE CONSIDERED.


29/11/15
A. ARUL VIJAY
Engineer
Materials Management / PSS
BHEL, TIRUCHY - 620 014.



**PLANT PURCHASING
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**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



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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



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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.



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**NON ASBESTOS COMPRESSED FIBRE JOINTING SHEETS
(MEDIUM PRESSURE STEAM,WATER& OIL)**

1. SCOPE

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

2. APPLICATION:

The supplied material shall be suitable for use with steam, water and oil in steam turbines and boiler applications at maximum operating pressures of 7.0 N/mm² and temperature of 425°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 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

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
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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 Non-Asbestos Compressed Fibre Jointing Sheets shall be of uniform thickness and suitable for easy shearing. The variations in thickness in one sheet should not exceed 10%.

5. TEST SAMPLE

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

6. PROPERTIES:

Properties and conditions refer TABLE-1 attached herewith.

Thickness(mm)	Material Code	**Weight/unit area(kg/m ²)
0.4	220300320000	-
0.5	220300330000	-
0.75	220300340000	-
1	220300350000	-
1.5	220300360000	-
2	220300370000	-
3	220300450000	-

***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 23293-Rev No 01: Non-asbestos Compressed Fibre Jointing Sheets for medium pressure steam, water and oil 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 23293-Rev No 01: Non-Asbestos Compressed Fibre Jointing Sheets for medium pressure steam, water and oil applications

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



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TABLE 1

Sl 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	9 N/mm ² minimum 12.8 N/mm ² minimum	ASTM F 152
4	Compressibility %	6-14	ASTM F36
5	Recovery %	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 crack	**Standard Method
9	Stress relaxation – residual Stress	17.5 N/mm ² minimum	----
10	Oil Ingress in thickness /mass for 5 hours at 150 ±2 °C	50% maximum	
11	Petrol Soaking a) Increase in thickness for 5 hours at 20 °C to 30°C b) Increase in mass for 5 hours at 20 °C to 30°C	50 % maximum 30 % maximum	

- *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



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**NON ASBESTOS COMPRESSED FIBRE JOINTING SHEETS
(LOW PRESSURE STEAM AND WATER)**

1. SCOPE:

This specification covers the quality of Non asbestos compressed fibre jointing sheets for low pressure steam and water applications.

2. APPLICATION:

Suitable for use in boiler applications for thermal insulation, packing and sealing purposes up to a maximum operating pressure of 2.0 N/mm² and temperature of 350°C.

3. DIMENSIONS AND TOLERANCES:

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

3.2 Thickness: The thickness of sheets shall preferably be selected from the following:

0.40, 0.50, 0.75, 1.00, 1.50, 2.00, 3.00 mm.

3.3 Tolerances: Maximum permissible deviation on nominal thickness of sheets shall be as follows:

Sl.No	Nominal Thickness (mm)		Permissible deviation from nominal thickness (±)mm	Max. deviation on thickness between points not more than 300mm apart (±) mm
	Above	Upto & Including		
1.	-	0.5	0.05	0.05
2.	0.5	1.0	0.10	0.10
3.	1.0	2.0	0.15	0.10
4.	2.0	3.0	0.20	0.15

4. MATERIAL:

The material used for manufacturing this Non Asbestos Compressed Fibre Jointing Sheets shall be glass, ceramic or carbon fibre based silicon or aramid fibre with suitable binder material meeting the temperature requirement as specified under application.

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 1st issue

Dt. 31.12.2014

Dt.

Dt.

STANDARDS

STANDARDS

21.02.2014



**PLANT PURCHASING
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5. FREEDOM FROM DEFECTS:

The supplied sheets shall be of uniform texture, smooth on both sides without any crack and free from irregularities.

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 Non-Asbestos Compressed 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

Thickness(mm)	Material Code	**Weight/unit area(kg/m ²)
0.4	220300380000	-
0.5	220300390000	-
0.75	220300410000	-
1	220300420000	-
1.5	220300010000	2.9
2	220300200000	4.2
3	220300900000	6.3

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

8. TYPE APPROVAL:

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



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9. TEST CERTIFICATES:

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

TP 23294-Rev.No.:01 Non asbestos compressed fibre jointing sheets for low pressure steam and water applications.

BHEL Order No.

Manufacturer's/Supplier's Name.

Trade Mark, if any.

Batch/Lot No.

Quantity supplied.

Test results of Clauses 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 one corner of each sheet.

Each package shall be legibly marked with the following information:

TP 23294-Rev. No.01: Non asbestos compressed fibre jointing sheets for Low 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



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TABLE -1

SI No	Characteristic	Requirement	Method of Test
1	Material of the fibre jointing	Glass, ceramic or carbon fibre based silicone or aramid fibre	*FT-IR Analysis
2	Density gm/CC	1.57 to 2.20	ASTM D 792
3	Tensile strength N/mm ²	6.7 min	ASTM F152
4	Compressibility %	6 to14	ASTM F 36
5	Recovery %	40 min	ASTM F 36
6	Loss on ignition at 580 °C ± 25 °C	30% max	**Standard Method
7	Flexibility Test (after accelerated ageing)	No sign of crack	**Standard Method
8	Dimensional tolerance	As per the Engg drawing	----

- *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.



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COMPRESSED NON ASBESTOS FIBRE JOINTING SHEETS (GASKETS)

1. Scope :

The specification governs the quality of oil resistant compressed non-asbestos fibre sheet manufactured from glass, ceramic or carbon fibre based silicone or aramid fibre of the highest grade, suitably bonded with heat resisting compound. The material is suitable for use with oil.

2. Application:

Used in the manufacturing of pole washers, slot liners, other parts of electrical machines, control gear and flange joints etc.

3. Preferred thicknesses (mm) : 0.25, 0.4, 0.5, 0.8, 1, 1.5, 2, 2.5 and 3.

4. Tolerance on thickness :

Thickness x Width x Length of the sheet shall be stated on the order.

The maximum permissible variation from nominal thickness and the maximum deviation on thickness between points not more than 300 mm apart shall be as given below:

Sl. No.	Thickness (mm)		Max. permissible variation from nominal thickness (\pm)mm	Max. deviation on thickness between points not more than 300mm apart (\pm) mm
	Over	Up to & Including		
1.	-	0.5	0.05	0.025
2.	0.5	1.0	0.08	0.05
3.	1.0	1.5	0.13	0.08
4.	1.5	-	0.18	0.10

5. Test Methods :

Unless otherwise specified, the test shall be conducted in accordance with the relevant methods as adopted for asbestos. (Refer IS: 2712)

6. Test samples :

Three sheets of ordered thickness and size 300 X 300 mm shall be supplied for testing and approval purposes.

Revisions			Approved: STANDARDS SECTION ITS&S HPBP, TIRUCHIRAPPALLI		
Rev. No.	Amd. No.	Reaffirmed	Prepared:	Issued:	Dt. of 1 st issue
Dt.	Dt.	Dt.	STANDARDS	STANDARDS	21.02.2014

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7. Finish :

The surface of the sheet shall be of uniform texture smooth on both sides, free from visible defects like blisters, loose fibres, wrinkles and dents. The sheets shall be free from foreign inclusions, which is detriment during use.

8. Physical properties:

For Properties refer TABLE – 1 attached

Thickness(mm)	Material Code	**Weight/unit area(kg/m ²)
0.25	220300430000	-
0.4	220300220000	-
0.5	220300230000	-
0.8	220300240000	-
1	220300270000	-
1.5	220300180000	2.85
2	220300250000	-
2.5	220300260000	-
3	220300190000	5.7

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

9. Chemical properties :

Sulphur content (Extractable): The total amount of sulphur content shall not exceed 50 ppm.

10. Mechanical properties :

- Tensile strength:

The average value of eight test results of fibre joining shall be not less than the maximum values as given below:

Sl. No.	Nominal Thickness(mm)		Tensile Strength Min	
	Over	Up to & including	Longitudinal N/mm ²	Transverse N/mm ²
1.	-	0.5	35	14
2.	0.5	1.2	45	16
3.	1.2	-	60	18

- Cutting and punching :

Shall be capable of being cut or punched without cracking or flaking.



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11. Test certificate:

Three numbers of original test certificates shall be supplied with each consignment, giving the following information:

TP 23295 Rev-00: Compressed Non Asbestos Fibre jointing Sheet.

BHEL Order No :

Batch/Lot No :

Test values obtained/ certificates for compliance for clause 8 and 10.

12. Packing and Marking :

The sheets shall be packed in wooden boxes suitably wrapped in water proof paper / canvas so as to protect them from moisture and mechanical damage.

Each package shall be marked with the following information.

TP 23295 Rev-00: Compressed Non Asbestos Fibre jointing Sheet.

BHEL Order No :

Manufacturers or supplier's name & grade Batch/Lot No:

Thickness, width and Length.

Net volume.



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TABLE -1

SI No	Characteristic	Requirement	Method of Test
1	Material of the fibre jointing	Glass, ceramic or carbon fibre based silicone or aramid fibre	*FT-IR Analysis
2	Density gm/CC	1.5 to 2.0	ASTM D 792
3	Tensile strength N/mm ²	10 min	ASTM F152
4	Compressibility %	6 to 15	ASTM F 36
5	% Recovery	50 min	ASTM F 36
6	Swelling Test in ASTM Oil No 3		
	1) % Thickness increase	25 max	ASTM F 146
	2) % Weight increase	20 max	ASTM F 146
7	Loss on ignition at 580 °C ± 25 °C	30% max	**Standard Method
8	Flexibility Test	No sign of crack	**Standard Method
9	Dimensional tolerance	As per the Engg drawing	----

- *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.



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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.

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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

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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 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.



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**LUBRICATED AND GRAPHITED GLAND
(Packing ropes/rings)**

1. SCOPE

This standard covers lubricated and graphited gland packing ropes/rings used for high pressure conditions.

2. APPLICATION

For leakage prevention and as lubricant in dampers, bowl mills and as to resist heat flow in boiler mountings, stop valves, steam expansion glands and soot blowers.

3. MATERIAL

The packing rope shall be made of asbestos free glass ply or carbon fibre ply or silicon or made of ceramic fibre.

The packing rope shall be plaited throughout from yarns reasonably uniform in appearance and thickness.

The surface of the packing rope/ring shall be smooth and it shall not have torn out threads. The packing rope/ring shall be flexible enough to take up any shape.

4. TECHNICAL REQUIREMENTS

As per table 1.

5. DIMENSIONS

The preferred sizes of ropes/rings for our factory use are as follows:

SECTION	SIZE	MATL. CODE	**WEIGHT (Kg/m)
SQUARE	8 mm	220300800000	0.080

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Permissible deviations

For sizes up to and including 10 mm: ± 0.5 mm
For sizes above 10 mm: ± 1 mm
For permissible deviation on length of rope shall be ± 0.5 %

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

6. DESIGNATION

Lubricated and graphited packing ropes/rings of size 8 mm, square shall be designated on drawings as:

- i. Material specification column : 220300800000
- ii. Description column : PACKING ROPE SQ., 10 mm.
- iii. Drawing number column : **TP 23298**

7. ORDERING DESCRIPTION

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

LUBRICATED AND GRAPHITED PACKING ROPES/RING AS PER BOILER PLANT STANDARD TP 23298

8. ADDITIONAL INFORMATION

- i. These ropes shall be procured in coils of length 25 or 50 or 100 meters.
- ii. For procurement purpose, this standard shall be enclosed along with purchase order.



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9. FINISH

The packing rope/ring shall be smooth and it shall not have torn-out threads. The compressibility, tensile strength of fibre shall not be sacrificed due to use of non asbestos material. Vendor to guarantee the above and these properties shall be certified by vendor 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 centers shall be declared in TC.

TABLE 1

1	Material of the Rope/Ring	Glass ply or carbon fibres ply silicon or made of ceramic fibre.	*FT-IR Analysis
2	Density (gm/cc)	1.0 to 1.5	ASTM D 792
3	Chloride content max	50ppm	**Standard Method
4	Sulphur content max	50ppm	**Standard Method
5	Temperature resistance	600 °C min	**Standard Method
6	Continuous service temperature	540 °C	-----
7	Loss on ignition at 580 °C ±25 °C after exposure for 30 min by mass%	20 max	**Standard Method
8	Moisture content at 105°C ± 5°C % BY mass	2 max	**Standard Method
9	The lubricant shall be	Graphite powder	-----
10	The lubricant percentage (graphite >99%pure)	3% mass(max)	**Standard Method
11	The wire dia of the reinforcement	0.15 to 0.2	-----
12	Dimensional tolerance	As per the Engg drawing	-----
13	Corrosion Inhibitors, Zn/Mg based	3% Min	**Standard Method
14	Reinforcement wire	Inconel /SS	-----



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CARBON FIBRE/CERAMIC FIBRE GLAND PACKINGS
(Excluding those for Corrosive Acid Services)

1. SCOPE

1.1 This specification covers free carbon fibre /ceramic fibre gland packing.

2. APPLICATION

2.1 Suitable for flanged joints of ducts and fans for leakage prevention, valves , expansions provisions for refractory, thermal insulation, furnace joints, air heaters and doors in boiler

3. DIMENSIONS & SIZES :

Dimensions and sizes shall be as per table-1 of this standard.For technical parameters, refer to Table-2.

4. DESIGNATION :

Carbon Fibre / Ceramic Fibre gland packing of sizes 10 mm, square shape shall be designated as :

ON DRAWING :

1. Description column : Packing Rope SQ 10 mm
2. Drawing number column : **TP 23299**
3. Material code column : 220300400000

4.1 Ordering description

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

Gland Packing carbon fibre/ceramic fibre, 6 mm round.

5. SAMPLING AND ACCEPTANCE

5.1 The density of packing rope shall be 0.96 to 1.2 gm/cc and shall be determined in dry condition.

6. ADDITIONAL INFORMATION.

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

Revisions 1. Lubrication requirements specified in table-2 (Sl. No.9 & 10) deleted & Sl. No. re-numbered.			Approved: STANDARDS SECTION ITS&S HPBP,TIRUCHIRAPPALLI		
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TABLE-1

SHAPE	SIZE	MATERIAL CODE	**WEIGHT (KG) PER METRE LENGTH
Round	10	220300400000	0.08
Square	6	220300160000	0.03
	8	220300170000	0.06
	10	220300030000	0.09
	12	220300050000	0.14
	15	220300080000	0.22
	20	220300040000	0.38

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



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Table-2 (Technical parameters)

1	Material of the Gland Packings	Glass ply or Carbon fibre ply Silicon or made of Ceramic fibre	*FT-IR Analysis
2	Density gm/cc (in Dry condition)	0.96 to 1.2	ASTM D 792
3	Chloride content max	50 ppm	**Standard Method
4	Sulphur content max	50 ppm	**Standard Method
5	Temperature resistance	600 °C Min	----
6	Continuous service temperature	540 °C	----
7	Loss on ignition at 580 °C ± 25 °C for 30 minutes by mass %	To be specified by the supplier	**Standard Method
8	Moisture content at 105 °C ± 5 °C % by mass	2 max	**Standard Method
9	The wire Dia of the reinforcement	0.15 to 0.2 mm	----
10	Dimensional tolerance	As per the Engg drawing	----
11	Corrosion Inhibitors,Zn/Mg based	3% min.	**Standard Method
12	Reinforcement wire	Inconel/SS	----

A.Finish: The Gland packing shall be smooth and it shall not have torn-out threads.

B .The compressibility, tensile strength of fiber shall not be sacrificed due to use of non-asbestos material. Vendor to guarantee the above and these properties shall be certified by Vendor 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 centers shall be declared in TC.

Note: This specification is subject to revision based upon the actual tests performed on samples received from vendors.