



TRICHY, BHEL, TRICHY, POSTAL CODE :620014, TIRUCHIRAPALLI, TAMIL NADU, INDIA

**RFQ/NIT HEADER DETAIL**

ORGANIZATION NAME TRICHY, BHEL RFQ FLOATED UNDER THE PURCHASE POLICY  
 POLICY  
 RFQ/NIT REFERENCE 1901600178 (OPEN TENDER) RFQ OWNER/NIT MR RAJA PRAKASH K (ENGR/PUR)  
 CODE/ENQUIRY NO OFFICER/ENQUIRY OWNER  
 NUMBER OF ITEMS ALREADY 14  
 ATTACHED  
 CURRENCY ANY  
 DESCRIPTION SUPPLY OF NON ASBESTOS MATERIALS.  
 DETAILED DESCRIPTION SUPPLY OF NON ASBESTOS MATERIALS AS PER STANDARD MENTIONED AGAINST EACH ITEM.  
 NUMBER OF BID PART(S) 2 PUBLISHED DATE 08/07/2016 06:06:47 PM

**ATTRIBUTE (S)**

ATTRIBUTE NAME	ATTRIBUTE VALUE
Delivery at	BHEL TRICHY
Inspection By	ENGINEER IN CHARGE, BHEL TRICHY
Validity of the Offer	PRICE SHOULD BE FIXED AND VALID FOR 3 MONTHS FROM THE DATE OF TECHNICAL BID OPENING
Inspection	AT BHEL TRICHY
Pre-Bid meeting date	--

**DATE-TIME DETAIL (S)**

BID START DATE Jul 8, 2016 BID DUE DATE Jul 25, 2016 02:00:00:PM  
 BID OPEN DATE Jul 25, 2016 02:30:00:PM  
 (SCHEDULED)

**PRE-BID DISCUSSION DETAILS**

PRE-BID DISCUSSION TYPE NOT REQUIRED

**ALTERNATE BID DECRYPTOR (S)**

USER DETAILS
MR B. SANJEEVI (DGM/PUR)
MR ABRAHAM VICTOR P G (SM/PUR)
MR NARAYANAN R (DGM/PUR)
MR RAJA PRAKASH K (ENGR/PUR)

**SELLER DETAIL (S)**

CODE	ORGANIZATION NAME
023505	TEST (Mr test ot test)

**TERM AND CONDITION DETAIL (S) - SPECIAL TERM (S)**

SL. NO.	CATEGORY	DESCRIPTION
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1	SPECIAL TERM(S)	<p>SPECIAL TERM(S)</p> <p><b>SPECIAL CONDITIONS:</b></p> <ol style="list-style-type: none"> <li>1. THE ENQUIRY IS A TWO PART E PROCUREMENT ENQUIRY. OFFER FROM ANY OTHER MODE WILL NOT BE ACCEPTED.</li> <li>2. QUANTITY TOLERANCE OF +-5% IS INCLUDED IN THIS ENQUIRY.</li> <li>3. DELIVERY TERM IS "FULL QUANTITY TO BE SUPPLIED WITHIN 6 WEEKS FROM THE DATE OF PO.</li> <li>4. SUPPLIERS SHOULD ATTACH SCANNED COPY OF ANNEXURE B_NON ASBESTOS DULY FILLED IN AND SIGNED ALONG WITH THE BID PART-I.</li> <li>5. NEW SUPPLIERS (NOT REGISTERED IN BHEL) SHOULD ATTACH THE SCANNED COPY OF ANNEXURE-N.</li> <li>6. MSE suppliers should attach 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).</li> </ol> <p><b>ATTACHMENT:</b></p> <ol style="list-style-type: none"> <li>1. ANNEXURE A EPS_Non asbestos</li> <li>2. ANNEXURE B_NON ASBESTOS</li> <li>3. ANNEXURE I - MSE FORMAT</li> <li>4. ANNEXURE N_NON ASBESTOS</li> <li>5. TP specifications</li> </ol> <p>The bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ serviceproviders shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website <a href="http://www.bhel.com">http://www.bhel.com</a> and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.</p>
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## RFQ/NIT ITEM DETAILS

SL. NO.	CODE	DESCRIPTION	QUANTITY	RFQ/NIT U.O.M	OFFER U.O.M
10	000000220300010000	NON ASBESTOS COMPRESSED FIBRE JNTNG 1.5 TP-23294/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	100.00	KILOGRAMM	KILOGRAMM





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ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
		MATERIAL CODE:	000000220300010000		
		MATERIAL GROUP:	NASBTS		
		KILOGRAM PER UNIT:	1.0		
		Cenvatable (Yes / No)	Yes		
		Delivery Location	TAMIL NADU		
		Vatable (Yes / No)	Yes		
		Delivery Date (i) :	10-OCT-2016		
		Delivery Qty (i) :	100		
20	000000220300020000	GASKET-5MM TP-23292/REV 01T. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	100.00	KILOGRAMM	KILOGRAMM
ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
		MATERIAL CODE:	000000220300020000		
		MATERIAL GROUP:	NASBTS		
		KILOGRAM PER UNIT:	1.0		
		Cenvatable (Yes / No)	Yes		
		Delivery Location	TAMIL NADU		
		Vatable (Yes / No)	Yes		
		Delivery Date (i) :	10-OCT-2016		
		Delivery Qty (i) :	100		
30	000000220300150000	GASKET-3MM TP-23292/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	800.00	KILOGRAMM	KILOGRAMM
ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
		MATERIAL CODE:	000000220300150000		
		MATERIAL GROUP:	NASBTS		
		KILOGRAM PER UNIT:	1.0		
		Cenvatable (Yes / No)	Yes		
		Delivery Location	TAMIL NADU		
		Vatable (Yes / No)	Yes		
		Delivery Date (i) :	10-OCT-2016		
		Delivery Qty (i) :	800		
40	000000220300180000	COMPRESSED FIBRE JOINTING SHEETS-1.5MM TP-23295/REV 00. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	200.00	KILOGRAMM	KILOGRAMM
ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
		MATERIAL CODE:	000000220300180000		
		MATERIAL GROUP:	NASBTS		
		KILOGRAM PER UNIT:	1.0		
		Cenvatable (Yes / No)	Yes		
		Delivery Location	TAMIL NADU		
		Vatable (Yes / No)	Yes		
		Delivery Date (i) :	10-OCT-2016		
		Delivery Qty (i) :	200		
50	000000220300190000	COMPRESSED FIBRE JOINTING SHEETS-3MM TP-23295/REV 00T. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	700.00	KILOGRAMM	KILOGRAMM
ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
		MATERIAL CODE:	000000220300190000		
		MATERIAL GROUP:	NASBTS		
		KILOGRAM PER UNIT:	1.0		
		Cenvatable (Yes / No)	Yes		
		Delivery Location	TAMIL NADU		
		Vatable (Yes / No)	Yes		
		Delivery Date (i) :	10-OCT-2016		
		Delivery Qty (i) :	700		





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60	000000220300200 000	NONASBESTOS COMPRESSED FIBREJOINTING-2MM TP 23294/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	1,100.00	KILOGRAMM	KILOGRAMM																		
	ATTRIBUTE DETAILS	<table border="1"> <thead> <tr> <th>ATTRIBUTE NAME</th> <th>ATTRIBUTE VALUE</th> </tr> </thead> <tbody> <tr> <td>MATERIAL CODE:</td> <td>000000220300200000</td> </tr> <tr> <td>MATERIAL GROUP:</td> <td>NASBTS</td> </tr> <tr> <td>KILOGRAM PER UNIT:</td> <td>1.0</td> </tr> <tr> <td>Cenvatable (Yes / No)</td> <td>Yes</td> </tr> <tr> <td>Delivery Location</td> <td>TAMIL NADU</td> </tr> <tr> <td>Vatable (Yes / No)</td> <td>Yes</td> </tr> <tr> <td>Delivery Date (i) :</td> <td>10-OCT-2016</td> </tr> <tr> <td>Delivery Qty (i) :</td> <td>1100</td> </tr> </tbody> </table>		ATTRIBUTE NAME	ATTRIBUTE VALUE	MATERIAL CODE:	000000220300200000	MATERIAL GROUP:	NASBTS	KILOGRAM PER UNIT:	1.0	Cenvatable (Yes / No)	Yes	Delivery Location	TAMIL NADU	Vatable (Yes / No)	Yes	Delivery Date (i) :	10-OCT-2016	Delivery Qty (i) :	1100		
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Vatable (Yes / No)	Yes																						
Delivery Date (i) :	10-OCT-2016																						
Delivery Qty (i) :	1100																						
70	000000220300250 000	COMPRESSED FIBRE JOINTING-2MM TP-23295/REV 00. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	1,000.00	KILOGRAMM	KILOGRAMM																		
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ATTRIBUTE NAME	ATTRIBUTE VALUE																						
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Cenvatable (Yes / No)	Yes																						
Delivery Location	TAMIL NADU																						
Vatable (Yes / No)	Yes																						
Delivery Date (i) :	10-OCT-2016																						
Delivery Qty (i) :	1000																						
80	000000220300310 000	COMPRESSED FIBRE JOINTING SHEET-1.0MM TP-23292/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	100.00	KILOGRAMM	KILOGRAMM																		
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MATERIAL CODE:	000000220300310000																						
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KILOGRAM PER UNIT:	1.0																						
Cenvatable (Yes / No)	Yes																						
Delivery Location	TAMIL NADU																						
Vatable (Yes / No)	Yes																						
Delivery Date (i) :	10-OCT-2016																						
Delivery Qty (i) :	100																						
90	000000220300360 000	COMPRESSED FIBRE JOINTING SHEET-1.50MM TP-23293/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	100.00	KILOGRAMM	KILOGRAMM																		
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KILOGRAM PER UNIT:	1.0																						
Cenvatable (Yes / No)	Yes																						
Delivery Location	TAMIL NADU																						
Vatable (Yes / No)	Yes																						
Delivery Date (i) :	10-OCT-2016																						
Delivery Qty (i) :	100																						
100	000000220300370 000	COMPRESSED FIBRE JOINTING SHEET-2.00MM TP-23293/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	200.00	KILOGRAMM	KILOGRAMM																		





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ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
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		Delivery Qty (i) :	200		
110	000000220300450000	COMPRESSED FIBRE JOINTING SHEET-3.00MM TP-23293/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	100.00	KILOGRAMM	KILOGRAMM
ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
		MATERIAL CODE:	000000220300450000		
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		Vatable (Yes / No)	Yes		
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		Delivery Qty (i) :	100		
120	000000220300700000	NON ASBESTOS COMPRESSED FIBRE-1.5MM TP-23292/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	200.00	KILOGRAMM	KILOGRAMM
ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
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		Vatable (Yes / No)	Yes		
		Delivery Date (i) :	10-OCT-2016		
		Delivery Qty (i) :	200		
130	000000220300800000	LUBRICATED AND GRAPHITED GLAND-SQ-8MM TP-23298/REV 00. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	100.00	KILOGRAMM	KILOGRAMM
ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
		MATERIAL CODE:	000000220300800000		
		MATERIAL GROUP:	NASBTS		
		KILOGRAM PER UNIT:	1.0		
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		Delivery Location	TAMIL NADU		
		Vatable (Yes / No)	Yes		
		Delivery Date (i) :	10-OCT-2016		
		Delivery Qty (i) :	100		
140	000000220300900000	NONASBESTOS COMPRESSED FIBREJOINTING 3MM TP-23294/REV 01. The final acceptance will be given on the basis of FTIR (Fourier Transform Infra red Spectroscopy) analysis test performed at BHEL trichy.	900.00	KILOGRAMM	KILOGRAMM
ATTRIBUTE DETAILS		ATTRIBUTE NAME	ATTRIBUTE VALUE		
		MATERIAL CODE:	000000220300900000		
		MATERIAL GROUP:	NASBTS		
		KILOGRAM PER UNIT:	1.0		
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		Vatable (Yes / No)	Yes		
		Delivery Date (i) :	10-OCT-2016		
		Delivery Qty (i) :	900		





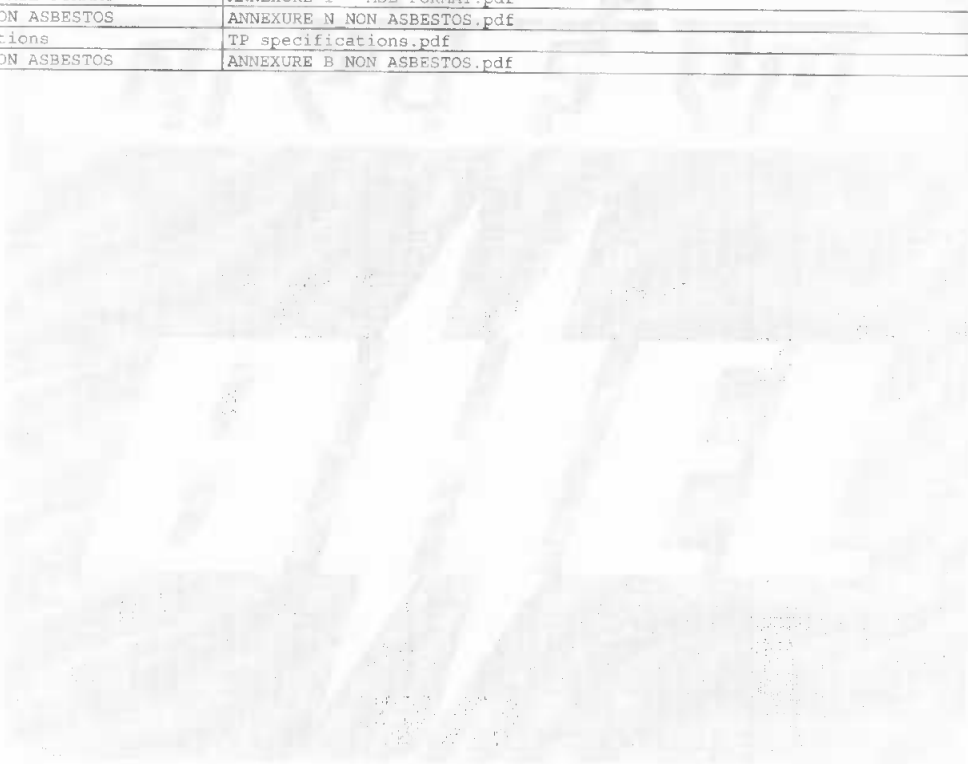
TRICHY, BHEL, TRICHY, POSTAL CODE :620014, TIRUCHIRAPALLI, TAMIL NADU, INDIA

**IMPORTANT NOTICE**

PLEASE READ THE FOLLOWING ATTACHMENT(S) [SEPARATELY DOWNLOADABLE] ALONG WITH THIS RFQ/NIT/ENQUIRY .

**RFQ/NIT/ENQUIRY - ATTACHMENTS**

<b>LABEL</b>	<b>FILE NAME</b>
ANNEXURE A EPS Non asbestos	ANNEXURE A EPS Non asbestos.pdf
ANNEXURE I - MSE FORMAT	ANNEXURE I - MSE FORMAT.pdf
ANNEXURE N NON ASBESTOS	ANNEXURE N NON ASBESTOS.pdf
TP specifications	TP specifications.pdf
ANNEXURE B NON ASBESTOS	ANNEXURE B NON ASBESTOS.pdf



## Annexure A

### QUOTATIONS:

1.

a. Interested bidders / Suppliers shall submit their offer through e-Procurement mode at <https://bheleps.buyjunction.in>. **Offers in any other mode will not be accepted.**

For Enterprise Procurement System (EPS) Bidders/Suppliers are requested to follow these steps.

### REQUIREMENTS

1. A PC with Internet connectivity.
2. DSC (Digital Signature Certificate)( Class 3- SHA2- 2048 BIT- SIGNING & ENCRYPTION)
3. The site is best viewed in Internet Explorer 9.0. If you are using Internet Explorer 10 or above then enable compatibility view available under Tools menu
4. Install Java 1.8 Update 67/72/79 (Both 32 & 64 Bit)

### MANDATORY REQUIREMENT:

Suppliers interested for registration for BHEL Open Tenders should have a valid DSC (Digital Signature Certificate) before Proceeding forward for Registration. Herein a Valid DSC refers to an Active and unexpired Signing and Encryption Certificate, with specification Class III SHA 2 2048 bit.

### UNREGISTERED SUPPLIER IN EPS:

Procedure for Online Registration in EPS for Open Tender Suppliers for BHEL

**Please follow the below steps for registration**

1. Click Register Button (Top of the Screen)
2. Please input your organization PAN No (in case of Indian supplier) or click "Foreign" in case you are an overseas Supplier.
3. Click on INTERESTED Button against the respective BHEL Unit
4. Key in your desired login id (Login Code should be 8 - 24 characters in length and can only use numeric values) If you have registered by keying in PAN No. then your desired login id will be prefixed by "OTI", In case of overseas suppliers it will be prefixed with "OTF"
5. Fill in the other details.
6. Fill in the Captcha code and click next
7. Register your Signing certificate and click next
8. Select atleast one procurement category you may be dealing in.

Once the above steps are completed, your profile will be activated by mjunction within 2 business hours. After registering follow the steps provided in "For Registered Supplier" to view RFQ.

In case of any assistance, please call the following nos for support:

**033-6601 1717 (From 9:30am to 5:30pm)**

NB:-

1 -- BHEL Administrator or user will have no role for approving Registration and Open Tenders and DSC for Any supplier who has registered himself from the front END which is in case of OT.

### FOR REGISTERED SUPPLIER IN EPS:

- a. Supplier visits EPS home page
- b. Supplier signs in with their user id and password
- c. Selects the RFQ Code and views it.
- d. Attaches themselves to the RFQ by clicking the interested button
- e. Supplier fills the bid template and makes necessary attachments
- f. Supplier submits their bid by clicking CONFIRM.

In case of any assistance, please call the following Nos for support:

**033-6601 1717 (From 9:30am to 5:30pm)**

- b. Bidders are requested to quote their offer price on F.O.R Destination (BHEL/Stores) basis only (The basic price of the material quoted in the bid should be inclusive of Packing, Forwarding, freight and transit insurance, etc.). Ex-works offers will be summarily rejected without further clarification.
- c. No charges shall be indicated as "Lumpsum" or "Approximate" in absolute value. All charges like taxes and duties should be clearly specified as "percentage" of the quoted rates.
- d. If any sales tax is payable as extra to the quoted price should be specifically stated in quotations along with CST & TIN no failing which the purchaser will not be liable for payment of sales tax. Our TIN No. 33243560005 Dated. 01.01.2007, CST No.239383 Dtd.11.06.1991.
- e. Manufacturer's name, trademark or patent no. if any should be specified. Illustrative leaflets giving technical particulars are required along with quotation wherever necessary.
- f. Products with I.S.I. certification marks will be preferred.
- g. The Purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept in Part or full without assigning any reason whatsoever.
- h. The bidder has to keep track of any changes by viewing the addendum / Corrigendum's issued by the Purchaser on time-to- time basis in the E-Procurement platform. The Company calling for tenders shall not be responsible for any claims/problems arising out of this.
- i. The user should complete all the processes and steps required for bid submission. The successful bid submission can be ascertained once acknowledgement is given by the system through bid submission number after completing all the processes and steps. BHEL and mjunction Services Ltd. will not be responsible for incomplete bid submission by users. Users may also note that the incomplete bids will not be saved by the system and are not available for the Purchaser for processing.
- j. Before uploading scanned documents if any, the bidders shall sign on all the statements, documents, certificates uploaded by him, owning responsibility for their correctness / authenticity.
2. Offers should have a validity of minimum 90 days from the date of price bid opening. The quoted/Finalized rates shall be Firm till completion of the supplies including amendment / deviation / extension if any in quantity / date.
3. On the due date of tender opening, only technical bids will be opened. The opened technical bids will be evaluated by us and clarifications required, if any, will be called for from the bidders on technical and commercial points. If no reply is received from the vendor for the clarification raised by BHEL with in the final cut-off date those vendors offer will be processed with the documents available / submitted against this tender. Offers not meeting the required specification and technical condition will be summarily rejected. The price bids of technically suitable bidders will be opened on a later date with prior intimation to techno-commercially suitable bidders.
4. Ranking L-1, L-2 etc. shall be done for individual items for the techno-commercially acceptable offers on landed cost to BHEL, Trichy basis and BHEL reserves the right to place order for individual items with different vendors. In the event of more than one vendor becoming L1 for the item, the enquiry quantity will be shared equally among all the L1 vendors. For such item / items splitting will be done among L1 vendors alone and as mentioned in the point no 11 below.
5. BHEL reserves the right to negotiate with L1 vendor or re-float the tender for items where, L1 price is not the lowest acceptable price; BHEL reserves the right to increase or decrease the tender quantity.
6. **TERMS OF PAYMENT:** Payment will be made after 45 days from the date of receipt and acceptance of materials at BHEL Trichy. Offers quoting for Advance payment / LC / thro bank payment will be rejected. Any deviation in the payment terms below 45 days shall attract loading as below.

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

7. LD clause & Risk purchase clause are applicable.

(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.

**Staggered delivery schedule**

In case of staggered delivery schedule, if the Supplier fails to deliver the quantity of any line item of the P.O within the period specified in that line item, Purchaser shall deduct Liquidated Damages, 0.5% of the undelivered portion per week delay or part thereof subject to maximum of 10% of the total order value

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

**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 therefor. 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 LD clause above.

**8. 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 tenderer is availing CENVAT credit for this input material, the effect of Proforma credit should be passed on to the purchaser. Tenderer under "CENVAT" shall be preferred. In case of ordering vendor should issue CENVAT invoice along with the material.

**9. PACKING AND MARKING:** The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit. BHEL name, Supplier name, PO No & DC no & Date shall be stencilled on the materials supplied to BHEL.

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

- i. 20% of the tendered quantity is earmarked for MSE suppliers in this tender. (Applicable only for items whose Quantity is 1000 Kg or more than 1000 Kg)
- 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.

#### 10.1

- 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 case of non-acceptance of the counter offering of 20% reservation to MSE vendors, the total tender quantity will be ordered as mentioned in 10.1 (c). For the balance 80% of the tendered quantity, BHEL reserves the right to order in the ratio of 70:30 on L1, L2 / L3 vendors (at matched L1 F.O.R rate in the order of commercial ranking) irrespective of the category (MSE or NON MSE). 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 10.1 (a) & 10.1 (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 counter offering rate has not been accepted by the L2 / L3 vendors in the order of commercial ranking, such counter offer quantity also will be ordered on L1 vendor.

11. For the enquired items, where the quantity is 1000 Kg and less than 1000 Kg will not be split as mentioned in the Sl. No 10. Such items will be ordered on L1 vendor alone.

13. The correspondences between the bidder and BHEL through email are considered as valid document legally though 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.

14. Disclaimer Clause: Neither the Organization (Bharat Heavy Electricals Ltd.) nor the service provider (mjunction Services Ltd.) is responsible for any failure of submission of bids due to failure of internet or other connectivity problems or reasons thereof.

15. Bidders participating in the tender 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 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 under any stage of the finalization of the tender. Such bidders will not be permitted to participate in the further tender proceedings and will be communicated suitably.

16. 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.

18. 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.

19. Unloading at BHEL has to be done by the suppliers and BHEL will not be in a position to provide any handling / unloading facilities.

20. Bidders not confirming to the enquiry specifications will be disqualified.

**TECHNO COMMERCIAL BID  
TO BE SUBMITTED ALONG WITH PART – I (TECHNO COMMERCIAL BID)**

**ANNEXURE –B**

S. NO	DESCRIPTION	BHEL REQUIREMENTS	SUPPLIER CONFIRMATION / DEVIATION (STRIKEOUT WHICHEVER IS NOT APPLICABLE)
1	VALIDITY	90 DAYS FROM DATE OF TECHNICAL BID OPENING	NON DEVIATABLE
2	PRICE QUOTED	FOR-DESTINATION BHEL STORES / TRICHY	NON DEVIATABLE
3	LD CLAUSE	(For details please read S.No:07 of "Annexure – A")	NON DEVIATABLE
4	RISK PURCHASE CLAUSE	(For details please read S.No:07 of "Annexure – A")	NON DEVIATABLE
5	ACCEPTANCE FOR SUPPLYING MATERIALS AS PER PLANT STANDARD INDICATED FOR EACH ITEM		CONFIRM / NOT CONFIRM
6	DEIVERY SCHEDULE *	Delivery terms will be full quantity within 6 weeks from the date of PO.	CONFIRM / NOT CONFIRM
7	PREVIOUS EXERIENCE	Suppliers should enclose any one of the purchase order copy against their experience in supplying Non-Asbestos materials during past three years from Jan 2013.	ATTACHED / NOT ATTACHED
8	Whether the suppliers have been black listed by any PSU / Other units of BHEL.		BLACK LISTED / NOT BLACK LISTED
9	Offers from Manufacturers will be accepted, Offers from traders will summarily be rejected.		MANUFACTURER / TRADER
10	Samples from the Non-Asbestos material lot offered to BHEL/TPI at vendor premises will be selected by BHEL/TPI. Such samples shall be tested at any of the NABL approved Lab. Acceptance shall be based on the satisfactory test results and test certificates. In addition to the above, on receipt of the Non-Asbestos materials at BHEL Trichy stores, samples will be selected for each size and tested for <b>FTIR (Fourier Transform Infrared Spectroscopy)</b> at BHEL Trichy Lab. Acceptance of materials will be made based on the test results of FTIR.		ACCEPTED / NOT ACCEPTED
11	CONTACT PERSON DETAILS	NAME: MOBILE NO: EMAIL :	

\* Bidders are requested to adhere to BHEL Delivery schedule strictly.

SIGN AND SEAL OF AUTHORIZED PERSON

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 at .....is 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 MSMED 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:

**ANNEXURE - N (For NEW VENDORS only)**

SI No	Details	Document submission
1	Nature of ownership & relevant documents. <i>(Proprietorship-Professional Tax Regn &amp; Municipal Regn; Partnership firm – Partnership Deed; Co-operative society – Society rules &amp; bye laws ; Private/Limited Company – memorandum &amp; Articles of Association)</i>	
2	Manufacturing range & facilities: • List down the product range & specification details. • List of Manufacturing facilities/equipment's (including material handling facility)	
3	Licence details of the factory	
4	<ul style="list-style-type: none"> <li>• Permanent Account No</li> <li>• Central Sales Tax registration number</li> <li>• State sales Tax / TIN number</li> <li>• Excise duty registration number</li> <li>• Excise control code number</li> <li>• Service tax registration number</li> <li>• Regn number of category as per MSMED Act <b>(If applicable)</b></li> </ul>	
5	If registered with any other BHEL unit • Letter of registration with BHEL unit <b>(If applicable)</b> • Proof of successfully executed or executing purchase orders	
6	Accreditation certificate for ISO:9001 / TOC of Quality System manual / ISO:14000 / OHSAS ISO 18000 <b>(If applicable)</b>	
7	Balance Sheet for the last three years along with the audit report	
8	EXPERIENCE IN SUPPLYING NON ASBESTOS MATERIALS TO VARIES INDUSTRIES (All the new vendors should enclose a Purchase Order copy against their experience in the supply of NON ASBESTOS MATERIALS to various industry)	



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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/mm<sup>2</sup> 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 <sup>st</sup> 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 <sup>2</sup> )
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 <sup>2</sup> minimum 24 N/mm <sup>2</sup> 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 <sup>2</sup> 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/mm<sup>2</sup> 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

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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 <sup>2</sup> )
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 <sup>2</sup> minimum 12.8 N/mm <sup>2</sup> 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 <sup>2</sup> 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/mm<sup>2</sup> 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 ( $\pm$ )mm	Max. deviation on thickness between points not more than 300mm apart ( $\pm$ ) 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

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21.02.2014



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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 <sup>2</sup> )
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 <sup>2</sup>	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.

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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 <sup>2</sup> )
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 <sup>2</sup>	Transverse N/mm <sup>2</sup>
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 <sup>2</sup>	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 :  $\pm 10$  mm**

**On thickness**

Upto and including 2 mm :  $\pm 0.2$  mm

Above 2 mm :  $\pm 0.3$  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 <sup>2</sup>	10 (max)	ASTM F152
	Transverse tensile strength N/mm <sup>2</sup>	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 <sup>3</sup> )	Material code	**Weight (kg/m <sup>2</sup> )
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 <sup>3</sup> (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:  $\pm 0.5$  mm  
For sizes above 10 mm:  $\pm 1$  mm  
For permissible deviation on length of rope shall be  $\pm 0.5$  %

*\*\*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.

<b>Revisions</b> 1. Lubrication requirements specified in table-2 (Sl. No.9 & 10) deleted & Sl. No. re-numbered.			<b>Approved:</b> STANDARDS SECTION ITS&S HPBP,TIRUCHIRAPPALLI		
Rev. No. <b>01</b>	Amd. No.	Reaffirmed	Prepared:	Issued:	Dt. of 1 <sup>st</sup> issue
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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.**