

ANNEXURE - PQC

ENQ.NO:

	Material: NON ASBESTOS MATERIALS	
Sl.No	PRE QUALIFICATION CRITERIA ---Points	Vendor to confirm
01	<i>Acceptance for supplying NON ASBESTOS MATERIALS as per standard indicated for Each item</i>	<i>ACCEPTED / NOT ACCEPTED</i>
02	<i>Bidders have to confirm 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.</i>	<i>YES / NO</i>
03	<i>Offers from Manufacturers will only be accepted. Offers from traders will summarily be rejected.</i>	<i>Manufacturer / Trader</i>
04	<i>Suppliers should enclose any one of the purchase order copy against their experience in supplying Non-Asbestos materials during recent past from Jan 2017.</i>	<i>ENCLOSED / NOT ENCLOSED</i>

NOTE:

Offers meeting the above prequalification criteria points only will be evaluated further. Otherwise it will summarily be rejected.

SIGN AND SEAL OF AUTHORIZED PERSON



An ISO 9001
Company

Bharat Heavy Electricals Limited
(High Pressure Boiler Plant)
Tiruchirappalli-620 014, Tamil Nadu, India
Dept: MATERIALS MANAGEMENT/BOI

Annexure – A (Rev.01)- Terms and Conditions
ACCEPTANCE OF TECHNO - COMMERCIAL TERMS & CONDITIONS BY THE
BIDDERS

Description of the Equipment:		Non Asbestos material and Packing rope
Enquiry No:		1802000519 dt 19.08.2020
Sl. No.	Terms and conditions	Vendor's confirmation
1 (a)	<u>Technical:</u> Supply shall be as per BHEL's Technical Specifications as indicated with the enquiry, without deviation.	
1 (b)	Inspection by BHEL Approved Third Party Inspection Agencies/BHEL/Customer at vendor works before dispatch is applicable. Shipment shall be made only after obtaining despatch clearance from BHEL.	
1 (C)	Confirmation & submission of all PQR documents as per annexure -A (Technical pre-qualification requirements) Note: Vendors not meeting PQR will be rejected.	
1 (d)	Offer will be considered as item wise basis for evaluation & ordering, as indicated in the tender. Evaluation will be on total cost to BHEL, after all loadings as applicable.	
2	<u>Firm Price:</u> The quoted / finalised rates shall be Firm till execution of the supplies. Offer with Price Variation Clause (PVC) will not be considered.	
3	The tender will be operated in two part bid system. One-part consisting of Technical bid with Commercial terms & conditions and other part is Price Bid. Based on the above and other conditions, as well as technical capability, vendors will be short-listed. The Techno-commercial bid will be opened on the due date and based on the suitability of techno-commercial bid, the price Bid of the techno-commercial suitable qualified vendors will be considered (without reverse auction) and opened on a suitable date with due intimation to vendors.	
4	<u>Delivery term :</u> The quote shall be on FOR BHEL Trichy Stores basis (Tamil Nadu state). Packing & forwarding and Freight to yours account. Transit Insurance is on BHEL scope <u>Ex-Works Contracts will not be entertained.</u>	
5	<u>Payment term:</u> "100% direct EFT payment after 60 days from the date of receipt & acceptance of material at our stores.	

6 (a)	<u>Liquidated damages:</u> Delivery of the goods specified in the purchase order should be made within the time prescribed. Failure to dispatch the materials in the time as per the delivery quoted in our Purchase Order would make the supplier liable to an un-conditional LD at the rate of 0.5% of the pending purchase order value per week of the delay or part thereof subject to a maximum of 10% of the total order value.	
6 (b)	<u>Loading Criteria on LD term for arriving the L1 rate:</u> Any deviation on BHEL LD clause, loading (Offered Value) will be applied to the extent to which it is not agreed by the bidder. Acceptance of LD on undelivered portion will be loaded at the rate of 10% (max).	
7 (a)	<u>Guarantee / Warranty Period:</u> The offered system shall be guaranteed for 18 months from the date of supply or 12 months from the date of commissioning, whichever is earlier	
7 (b)	<u>Loading Criteria:</u> <u>Guarantee / Warranty Period:</u> No Deviation is permitted. If still vendor offered any deviation on the Guarantee / warranty period, it may lead to rejection of offer.	
8	<u>Risk purchase:</u> If the supplier fails to deliver the goods within the delivery specified in the Purchase Order, BHEL 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 despatch within the delivery period mentioned in the Purchase Order.	
9	<u>Delivery Period:</u> 50 % within 6 weeks from PO. Balance by 8 weeks from PO.	
10	LR date will be considered for LD calculation.	
11	<u>Validity:</u> 90 days minimum from techno commercial bid opening (Part-1). Any Deviation with respect to validity your offer is liable for rejection. Ensure your quoted rates will have 90 days minimum validity from techno commercial bid opening. The delay in responding to BHEL technical clarification beyond four days will be subsequently added to the validity period, Revised Price Bids will not be encouraged.	
12	<u>Inspection and testing requirements:</u> Inspection and testing requirements are to be carried out as per the specification. Inspection notice period: For TPI inspector visit to vendor works, a minimum of 3 working days' notice period for indigenous vendors and 30 working days' notice period for import vendors is required well in advance from the proposed date of inspection	
13	<u>Repair & replacements:</u> Within the guarantee period vendor has to replace / rectify the defective/ damaged items on free of cost within a reasonable time of reporting from our end.	

14	Documents are to be submitted along with technical bid (Part-1) 01. Covering letter 02. Unpriced offer. 03. Filed technical specification 04. Filed BHEL Terms and condition sheet (Annexure-B) 05. Catalogue's 06. PQR (Special Conditions annexure -A) 07. Third party non-disclosure agreement Documents are to be submitted along with Price bid (Part-2) 01. Priced offer Note: All the pages of documents are to be signed and stamped by authorized signatory of the company.	
15	<u>MSE Applicability as per Annexure C. The vendors shall furnish valid certificates (Latest audited CA certificate & UAM) as per annexure C, for availing the benefits of MSE with deemed validity in the offer itself.</u> Note: As per Gazette Notification no. S.O. 2119(E) dated 26.06.2020 issued by Ministry of MSME regarding change in definition of Micro, Small & Medium Enterprises (MSMEs) applicable w.e.f. 01.07.2020, you are hereby requested to obtain 'UDYAM Registration' and submit the same. <u>Note for MSE vendors.</u> 1. Udyam Registration is a new process of MSME Registration launched by the Ministry of Micro, Small and Medium Enterprises on July 1, 2020 2. All existing enterprises registered under EM-Part-II or UAM or any other registration issued by any authority under the Ministry of MSME are required to register again on the Udyam Registration portal (https://udyamregistration.gov.in). Such enterprises are required to apply and obtain Udyam Registration on or after 1st July 2020. 3. On registration, an enterprise is assigned with a permanent identity number, known as "Udyam Registration Number". An e-certificate, namely, "Udyam Registration Certificate" will be issued on completion of the registration process. 4. The MSE status of existing enterprises registered prior to 30th June 2020 shall be valid only till 31st March 2021. (i.e.) Udyam Registration Certificate is mandatory for all MSME enterprises from 1st April 2021.	
16	<u>Make in India:</u> For this procurement, Public Procurement (Preference to Make in India), order 2017 dated 15.06.2017, 28.05.2018 & 04.06.2020 issued by DPIIT and subsequent orders issued by the respective Nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT. In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this	

	procurement, same shall be applicable. Default margin of purchase preference shall be 20% to local suppliers with default minimum local content of 50%. “For this procurement, the local content to categorize a supplier as Class I local supplier/ Class II local Supplier/ Non- Local supplier and purchase preference to Class I local supplier, as defined in Public Procurement (Preference to make in India), Order 2017 dated 04.06.2020 issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, The same shall be applicable even if issued after issue of This NIT, but before opening of part-II bids against his NIT” For more details, pls. refer the Public Procurement (Preference to Make in India), order 2017 dated 15.06.2017 & 28.05.2018 and subsequent orders issued by the respective Nodal ministry.	
17 a	<u>Important Information w.r.t GST:</u>	
	Kindly indicate the GST No of your Firm	
	Kindly Indicate the HSN Code for the Enquiry item.	
	Please indicate the applicable GST % (IGST, SGST, CGST)	
18 b	Kindly Note the BHEL Trichy Unit GST NO : 33AAACB4146P2ZL	
	Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GST registration number which should clearly have mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.	
	<u>In Case of Order Placement:</u>	
	Supplier shall mention their GSTN registration number in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc.	
	All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).	
	A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.	
	All dispatch and quality documents like Mill Test Certificate, LR copy, Guarantee/Warrantee certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-	

	submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so	
	In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL	
	For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.	
	Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number. For this, Debit note will be issued by BHEL indicating the respective supply invoice number. Debit note will be available on our B2B portal.	
Note:	BHEL may negotiate the L1 rate, if not meeting our budget/estimated cost. BHEL may re-float the tender opened, if L1 price is not the acceptable price to BHEL. Any deviation in specified commercial terms- Annexure B, will lead to rejection of offer. Any other Techno –Commercial Terms indicated by the vendor in their offer elsewhere will be ignored. BHEL will proceed with tender evaluation as per Annexure A only.	

Vendor's Seal and Signature

Annexure C

Clause: Special Provisions for Micro and small Enterprises (MSE):

1. 25% of the tendered quantity is earmarked for MSE suppliers in this tender.
2. Out of the 25% tendered quantity reserved for MSE suppliers, 3% & 6.25% shall be earmarked for procurement from MSE owned by women & SC/ST entrepreneurs respectively. Relevant proof as per Govt. norms to be submitted to claim against this requirement.
3. 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.
4. MSE suppliers can avail the intended benefits only if they submit along with offer, attested copies of either EM II certificate having deemed validity (Five years from the date of issue of acknowledgement in EM II) or valid NSIC certificate or EM II certificate along with CA certificate (Format enclosed) applicable for the year, certifying quantum of investment in plant and machinery within the permissible limit as per the act for relevant status (Micro or small) where the deemed validity of EM II is over. Date to be reckoned for determining the deemed validity will be the last date of technical bid submission. Non submission of such documents will lead to consideration of their bids at par with other bidders and MSE status of such suppliers shall be shifted to Non MSE supplier till the supplier submits these documents.
5. Declaration of UAM number by MSE bidders is mandatory. Failing which, such bidders will not be able to enjoy the benefits as per Public Procurement Policy for MSEs Order, 2012.
6. Payment for MSE Indigenous vendors will be as per MSMED Act 2006.
7. Criteria for SC/ST & Women entrepreneurs are as following
 - i. In case of proprietary MSE, proprietary shall be (SC/ST) / Women
 - ii. In case of partnership MSE, the (SC/ST) / Women partner shall be holding at least 51% share in the unit.
 - iii. In case of Pvt Ltd company, at least 51% share shall be held by the (SC/ST) / Women promoters.

Domain :	bhel.abcprocure.com		
Parent department:	BHEL Trichy		
Unit name	:	BHEL Trichy	
Purchase group	:	FB Sub-Dely(Mech).	RFQ/NIT/Enquiry Officer : AKHILK DAS
Event ID	:	46575	RFQ/NIT/Enquiry no. : 1802000519
Enquiry Date	:	18/08/2020 05:30:00	
Tender Description	:	Supply of Non Asbestos material and packing rope as per BHEL Trichy specification	
Terms & Conditions	:	This tender is an Indegenous Open tender. Offers from Indegenous vendors only accepted. 01) The Tender will be operated on TWO PART BID basis and you are requested to submit Techno-commercial bid and Price bids in E-procurement site.(Vendors who are not having DSC, shall obtain the same & quote accordingly). For details related to bidding through e-procurement site (abcprocure) please visit URL - https://bhel.abcprocure.com. Refer the following documents in the site - minimum system requirement & Bidder manual. 02) supply shall be in line with our technical specification as indicated in the enquiry item description 03) Please confirm the PQR(Annxure-A)along with the required documents and submit the filled in Annexure B (applicable commercial terms and conditions) along with the techno-commercial bid for evaluation. 04) The tender will be considered on item wise basis for evaluation and ordering on total cost to BHEL as indicated in Annexure B. 05) In the course of evaluation ,if more than one bidder happens to occupy L1 status, effective L1 will be decided by soliciting discounts from the respective L1 bidders. In case more than one bidder happens to occupy the L1 status even after soliciting discounts ,the L1 bidder shall be decided by a toss /draw of lots ,in the presence of the respective L1 bidder(s) or thier representative(s). Ranking will be done accordingly. BHEL decision in such situation shall be final and binding. 06) Delivery term:The quote shall be on FOR BHEL Trichy Stores basis. Packing & forwarding, Freight & Transit Insurance to your account. Ex-Works Contracts will not be entertained. Transit insurance is on BHEL scope 07) Specific confirmation is required for the following commercial terms and conditions attached separately with this enquiry as Annexure -B. Offer will be evaluated on total cost to BHEL after all loadings as applicable. 08) 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. 09) unloading at BHEL has to be done by the suppliers and BHEL will not be in a position to provide any handling/unloading facilities. 10) Third party non-disclouser agreement has to be signed & submitted. Deviation may lead to rejection of your offer.	

- 11) The offers of the bidders who are under suspension as also the offers of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site www.bhel.com.
- 12) The bidder along with its associate/collaborators/sub-contractors/sub-vendors/consultants/service providers shall strictly adhere to BHEL fraud prevention policy displayed on BHEL website <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.
- 13) Bid should be free from correction, overwriting, using corrective fluid. etc. Any interlineation, cutting, erasure or overwriting shall be valid only if they are attested under full signature (s) of person (s) signing the bid.
- 14) 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.
- 15) Before uploading scanned documents, the bidders shall sign on all the statements, documents, certificates uploaded by him, owning responsibility for their correctness / authenticity.
- 16) Disclaimer Clause : The Organization (Bharat Heavy Electricals Ltd.) nor the service provider (ABC procure.) is responsible for any failure of submission of bids due to failure of internet or other connectivity problems or reasons thereof.
- 17) MSE preference is applicable for this tender. In case MSE vendor participating in the tender quotes within the price band of L1 + 15%, they will be allowed to supply the entire quantity of that item subject to acceptance of L1 price by MSE vendor(as per the attached Annexure C).

In case of counter offering rate has not been accepted by MSE vendors, entire quantity will be ordered on L1 vendor."

- 18) Material Test Certificate Should Be Sent Along with The Supply. The Material Will Be Checked by Buyer's Lab & the Results of the Lab will be the Sole Criteria for Acceptance of the Item.
- 19) Details of contact person(s).

(1)Name: Akhil K Das,Sr Engineer, Deptt: MM/BOI

Address: 24 Building, BHEL Trichy, Kailasapuram /Phone: (Landline/0431257-4553)

Email:akhildas@bhel.in

(2) Name: S Karunanidhy /DGM Deptt: MM/BOI

Address: 24 Building, BHEL Trichy, Kailasapuram/Phone: (04312577653)

Email: karunanidhy@bhel.in

Enclosures:

- 01) Annexure A (Technical Pre Qualification Requirement)
- 02) Annexure-B(Applicable Commercial terms & conditions and Loading)
- 03) TP 23294 Rev02
- 04) TP 23296 Rev02
- 04) TP 23297 Rev02
- 05) TP 23299 Rev02
- 06) CA certificate format
- 07) Annexure C for MSE vendors

08) Make in India Declaration			
09) Third party Non disclosure agreement			
Product / service / work keywords		: Non Asbestos Sheet,packing rope,	
No. of Bid Parts		: Multiple	Envelope : Techno-commercial bid , Price bid
Type of contract		: Goods	Project duration / delivery or completion period : 8 weeks from PO
Download document		: Before login	RFQ floated under the policy : PP-PURCHASE POLICY
Estimated Category		: F	No. of items already attached : 6
Delivery/Location At		: BHEL Trichy Stores	Delivery Date : 28/09/2020 05:30:00
Inspection by Agency		: Third party inspection agency	Inspection Location : At vendor works
Min. bid required		: 1	
Bid submission configuration			
Bid evaluation		: Item wise	Bidding access : Open Tender
Base currency		: INR	Bidding type : NCB/Indigenous
Key configuration			
Pre-bid meeting		: Don't allow	
Dates configuration			
Document downloading start date		: 19/08/2020 12:00:00	Document downloading end date : 02/09/2020 14:00:00
Bid submission start date		: 19/08/2020 12:00:00	Bid submission end date : 02/09/2020 14:00:00
Bid opening date		: 02/09/2020 14:01:00	
Document / EMD / Security fee detail			
Document fees		: Not required	EMD : Not required
Bidding forms			
Price Bid			
Price Bid			
Material Code	Item description	Quantity	Unit

000000220300170000	CARBON/CERAMIC FIBRE GLAND PACKING-8SQMM	210.00	KG
000000220300200000	NONASBESTOS COMPRESSED FIBREJOINTING-2MM	900.00	KG
000000220300400000	PACKING ROPE DIA - 10MM	2000.00	KG
000000220300460000	PACKING ROPE SQ.40MM - TP23299	14.00	M
000000220300500000	CARBON FIBRE/CERAMIC FIBRE CLOTH-3MM	2600.00	KG
000000220300600000	CARBON/SILICON FIBRE MILLBOARD-5MM	100.00	KG

Information for Online Participation

Bidder who wish to participate in this tender needs to procure Digital Certificate as per Information Technology Act-2000 using that they can digitally sign their electronic bids. Bidders can procure the same from any or the CCA approved certifying agencies, or they may contact e-Procurement Technologies Ltd. at below mentioned address and they will assist them in procuring the same. Bidders who already have a valid digital Certificate need not to procure the same. In case bidders need any clarification regarding online participation, they can contact,

e-Procurement Technologies Ltd.

Corporate Office:

Address : A-201/208, Wall Street - 2, Opp. Orient Club,
Nr. Gujarat College, Ellis Bridge,
Ahmedabad - 380006, Gujarat(INDIA)

Digital Certificate Contacts

Contact Person : Mr. Himalay Vaishnav
Cell : +91-9099090830
Phone Nos. : +91-9099090830
Fax No :
e-Mail : info@abcProcure.com

Support Team Contacts

Contact Person : BHEL Support Team Ahmedabad
Cell : +91-9265562819
Phone Nos. : +91-79-68136849/50/48
Fax No :
e-Mail : Bhel.Support@abcProcure.com

Bidder who wish to participate in e-Tender need to fill data in predefined forms of Price bid available in respective tender only. After filling data in predefined forms bidders need to click on final submission link to submit their encrypted bid. Bidder need to submit Document Fees, EMD & Reference Documents in hard copy if such instruction are given by tendering authority. As Per the new Inter-operability guidelines released by Controller of Certifying Authorities(CCA), the Secured Socket Layer(SSL) certificate for a e-procurement application is generated on a new algorithm, SHA2.

Also, the Digital Certificates that will be applicable for these platforms have to be SHA2 algorithm compliant. For the same, the users have to ensure that they have Windows XP(SP3)/Windows Vista/Windows7 installed in their respective PC/Laptop. In case of Windows XP Service pack - 3, if you get any issue you can install the SSL patch, which is available at our download section of our e-Tender/e-Auction Portal and also at our corporate website www.abcprocure.com just below the label of "Knowledge section".

Fraud Prevention

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

Preference to Make in India

For this procurement, Public Procurement (Preference to Make in India), order 2017 dated 15.06.2017 & 28.05.2018 and subsequent orders issued by the respective Nodal ministry shall be applicable even if issued after issue of this NIT but before finalization of contract/PO/WO against this NIT. In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and/ or local content in respect of this procurement, same shall be applicable. Default margin of purchase preference shall be 20% to local suppliers with default minimum local content of 50%.



**PLANT PURCHASING
SPECIFICATION
HPBP-TIRUCHIRAPPALLI**

TP 23294
Rev. No.02
PAGE 1 OF 4

**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 aramid fibre with suitable binder material meeting the temperature requirement as specified under application.

Revisions

- Requirement of withstanding Flue gas with 6% sulphur deleted.
- Parameters and test revised as per discussion with MM.

Approved:

STANDARDS SECTION
ITS&S
HPBP, TIRUCHIRAPPALLI

Rev. No. 02	Amd. No.	Reaffirmed	Prepared:	Issued:	Dt. of 1 st issue
Dt. 15-09-16	Dt.	Dt.	STANDARDS	STANDARDS	21.02.2014



**PLANT PURCHASING
SPECIFICATION**
HPBP-TIRUCHIRAPPALLI

TP 23294

Rev. No. 02

PAGE 2 OF 4

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 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.



**PLANT PURCHASING
SPECIFICATION**
HPBP-TIRUCHIRAPPALLI

TP 23294
Rev. No. **02**
PAGE **3** OF **4**

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



**PLANT PURCHASING
SPECIFICATION**
HPBP-TIRUCHIRAPPALLI

TP 23294

Rev. No. 02

PAGE 4 OF 4

TABLE -1

SI No	Characteristic	Requirement	Method of Test
1	Material of the fibre jointing	Glass, ceramic or aramid fibre with suitable high temperature binder.	The supplier shall certify the product as asbestos free by doing the test methods like FT-IR, XRD, Microscopic or any other standard test methods.*
2	Density gm/CC	1.57 to 2.20	ASTM C1185 #
3	Tensile strength N/mm ²	6.7 min	ASTM F152 #
4	Compressibility %	6 to 14	ASTM F 36 #
5	Recovery %	40 min	ASTM F 36 #
6	Water Absorption- % increase in mass. Duration – 24 hrs	10 max	ASTM C1185 #
7	Loss on ignition at 400 °C ± 5 °C Duration – 1 hr	30% max	ASTM F495 #
8	Flexibility Test (after accelerated ageing)	No sign of crack	ASTM C1185/ASTM F147 #
9	Stress relaxation – residual Stress	15 N/mm ² minimum	ASTM 6147/BS 7531 #
10	Moisture content 105 °C ± 5°C	2 max	ASTM C1185 #

- * - Test Report shall be submitted by the vendor along with materials as a compliance certificate to confirm the material supplied is asbestos free.
- # - Standard Methods along with applicable test and acceptance standard applied at test centres shall be declared in TC. Other international standard testing methods are also valid.
- The compressibility, tensile strength of the fibre shall not be sacrificed due to use of non-asbestos material. Vendor may guarantee the above and these properties shall be certified by Vendor on Test Certificate.



PLANT PURCHASING SPECIFICATION HPBP - TIRUCHIRAPPALLI

TP 23296

Rev. No. 02

PAGE 1 OF 3

CERAMIC FIBRE MILL BOARD

1. SCOPE

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

2. MATERIAL

The material used for manufacturing this mill board is 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

Ceramic fibre mill board used as fire proof thermal insulating material.

4. TECHNICAL REQUIREMENTS

Properties and conditions refer table 1.

The 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.
- Parameters and test revised as per discussion with MM.

Approved:

STANDARDS SECTION
ITS&S
HPBP, TIRUCHIRAPPALLI

Rev.No. 02	Amd. No.	Reaffirmed	Prepared:	Issued:	Dt. of 1 st issue
Dt. 15-09-16	Dt.	Dt.	STANDARDS	STANDARDS	12.02.2014



PLANT PURCHASING
SPECIFICATION
HPBP - TIRUCHIRAPPALLI

TP 23296

Rev. No. 02

PAGE 2 OF 3

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

Ceramic fibre mill board thickness 10 mm, according to this specification shall be designated on drawings as:

- i. Material specification column : 220300060000
- ii. Description column : Ceramic fibre 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.



**PLANT PURCHASING
SPECIFICATION
HPBP TIRUCHIRAPPALLI**

TP 23296

Rev. No. 02

PAGE 3 OF 3

TABLE -1

1	Material (preferable. Better material meeting physical properties may be used. But must be certified in TC)	Ceramic fibre base with suitable high temperature binder.	The supplier shall certify the product as asbestos free by doing the test methods like FT-IR, XRD, Microscopic or any other standard test methods.*
2	Density (gm/cc)	0.5 to 1	ASTM C1185 #
3	Moisture at 105°C ± 5 °C	2 max	ASTM C1185 #
4	Loss on ignition at 550°C ±5°C after exposure for 30 minutes	20% max	ASTM F495 #
5	Continuous service temperature	450 °C	-----
6	Maximum resistance temperature	500 °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 at 800 °C (W/m °C)	0.17	ASTM F433 #
13	Linear shrinkage % (max)	3	Standard Method #

- * - Test Report shall be submitted by the vendor along with materials as a compliance certificate to confirm the material supplied is asbestos free.
- # - Standard Methods along with applicable test and acceptance standard applied at test centres shall be declared in TC. Other international standard testing methods are also valid.
- The compressibility, tensile strength of the fibre shall not be sacrificed due to use of non-asbestos material. Vendor may guarantee the above and these properties shall be certified by Vendor on Test Certificate.



**PLANT PURCHASING
SPECIFICATION**
HPBP - TIRUCHIRAPPALLI

TP 23297

Rev. No. 02

PAGE 1 OF 3

CERAMIC FIBRE CLOTH

1. SCOPE

This standard covers asbestos free ceramic fibre cloth.

2. MATERIAL

The material used for cloth is a 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 ceramic fibre cloth, thickness 3 mm, according to this standard shall be designated on drawings as:

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

Revisions: 1. Plain Woven added in ordering description in addition to twill woven. 2. Parameters and test revised as per discussion with MM.			Approved: STANDARDS SECTION ITS&S HPBP, TIRUCHIRAPPALLI		
Rev. No: 02	Amd. No.	Reaffirmed	Prepared:	Issued:	Dt. of 1 st issue
Dt. 15-09-16	Dt.	Dt.	STANDARDS	STANDARDS	12.02.2014



**PLANT PURCHASING
SPECIFICATION**
HPBP - TIRUCHIRAPPALLI

TP 23297

Rev. No. 02

PAGE 2 OF 3

5. ORDERING DESCRIPTION

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

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

6. Thickness and weight

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

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

7. ADDITIONAL INFORMATION

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



**PLANT PURCHASING
SPECIFICATION**
HPBP - TIRUCHIRAPPALLI

TP 23297

Rev. No. 02

PAGE 3 OF 3

TABLE-2

1	Material of cloth		Ceramic fibre	The supplier shall certify the product as asbestos free by doing the test methods like FT-IR, XRD, Microscopic or any other standard test methods.*
2	Density gm/cc (dry condition)	2mm thick	0.5 to 1.2	ASTM C1185 #
		3 mm thick	0.5 to 1.2	ASTM C1185 #
		5 mm thick	0.5 to 1.2	ASTM C1185 #
3	Chloride content max		50 ppm	Standard method #
4	Sulphur content max		50 ppm	Standard method #
5	Service Temperature		500 °C	-----
6	Resistance Temperature		550 °C	Standard method #
7	Loss on ignition at 600 °C ± 5 °C after exposure for 30 minutes.		25% max	ASTM F495 #
8	Moisture content at 105 °C ± 5 °C		2.5% max	ASTM C1185 #
9	Thermal conductivity at 800°C (W/m°C)		0.17	ASTM F433 #

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.

- * - Test Report shall be submitted by the vendor along with materials as a compliance certificate to confirm the material supplied is asbestos free.
- # - Standard Methods along with applicable test and acceptance standard applied at test centres shall be declared in TC. Other international standard testing methods are also valid.
- The compressibility, tensile strength of the fibre shall not be sacrificed due to use of non-asbestos material. Vendor may guarantee the above and these properties shall be certified by Vendor on Test Certificate.



**PLANT PURCHASING
SPECIFICATION**
HPBP - TIRUCHIRAPPALLI

TP 23299
Rev. No. **02**
PAGE **1** OF **3**

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

1. SCOPE

1.1 This specification covers free 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 provided by vendor/supplier 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. |
| 2. Parameters and test revised as per discussion with MM. 40 mm SQ rope added. |

Approved:

STANDARDS SECTION
ITS&S
HPBP, TIRUCHIRAPPALLI

Rev. No. 02	Amd. No.	Reaffirmed	Prepared:	Issued:	Dt. of 1 st issue
Dt. 10-09-16	Dt.	Dt.	STANDARDS	STANDARDS	12.02.2014



**PLANT PURCHASING
SPECIFICATION**
HPBP - TIRUCHIRAPPALLI

TP 23299
Rev. No. **02**
PAGE **2** OF **3**

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
	40	220300460000	1.54

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



**PLANT PURCHASING
SPECIFICATION**
HPBP - TIRUCHIRAPPALLI

TP 23299
Rev. No. **02**
PAGE **3** OF **3**

Table-2 (Technical parameters)

1	Material of the Gland Packings	Glass ply or Ceramic fibre	The supplier shall certify the product as asbestos free by doing the test methods like FT-IR, XRD, Microscopic or any other standard test methods.*
2	Density gm/cc (in Dry condition)	The density shall be indicated by vendor / supplier	ASTM C1185 #
3	Chloride content max	50 ppm	Standard Method #
4	Sulphur content max	50 ppm	Standard Method #
5	Temperature resistance	450 °C Min	----
6	Continuous service temperature	400 °C	----
7	Loss on ignition at 500 °C $\pm$ 5 °C for 30 minutes by mass %	To be specified by the supplier	ASTM F495 #
8	Moisture content at 105 °C $\pm$ 5 °C % by mass	2 max	ASTM C1185 #
9	The wire Dia of the reinforcement	0.15 to 0.2 mm	----
10	Reinforcement wire	Inconel/SS 304 Grade	----

- * - Test Report shall be submitted by the vendor along with materials as a compliance certificate to confirm the material supplied is asbestos free.
- # - Standard Methods along with applicable test and acceptance standard applied at test centres shall be declared in TC. Other international standard testing methods are also valid.
- 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.

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