

**General Note: BHARAT HEAVY ELECTRICALS LIMITED**

Page:1/7

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

PHONE : 2577419
 GRAMS : BHARATELEC
 FAX NO: 2520719
 E-mail :
 Web :

429-002/A

OFFICE COPY**Collective No.**

1901400251

Enquiry Date

29.09.2014

Due Date For Quotation

14.10.2014

Please quote Enquiry No, Date and due date in all correspondences.
 This is only a request for quotation and not an order

Item	Description	Unit	Quantity	Delivery Quantity	Schedule Date
10	220201410000 CAF JOINTING GR W/1-3 MM AA21504 IS:2712/LATEST ✓	KG	900.000	900.00	28.01.15
20	220203090000 CAF JOINTING GR O/2-3 MM - AA 21503 ✓	KG	100.000	100.00	28.01.15
30	220203250000 CAF JOINTING GR W/1-5 MM AA21504 ✓	KG	200.000	200.00	28.01.15
40	220204610000 CAF JOINTING GR O/1-3 MM AA 21501 ✓	KG	1500.000	1,500.00	28.01.15
50	220204730000 ASBESTOS CLOTH 3MM IS 4687/1995-TP 21597/REV 02 GR.AAA ✓	KG	2000.000	2,000.00	28.01.15
60	220205250000 CAF JOINTING GR W/3-3 MM AA 21502 ✓	KG	1500.000	1,500.00	28.01.15
70	220205320000 ASBESTOS MILL BOARD 10MM TP ✓ 21596/REV 03	KG	300.000	300.00	28.01.15
80	220205440000 ASBESTOS CLOTH 2MM IS 4687/1995-TP ✓ 21597/REV 02 GR.AAA	KG	1000.000	1,000.00	28.01.15
90	220206270000 PACKING ROPE DA DIA 10X7000 MM- ✓ TP:21599/REV 02	KG	1000.000	1,000.00	28.01.15
100	220207440000 ASBESTOS ROPE LGA 8MM SQ - TP ✓ 21598/REV 02	KG	1000.000	1,000.00	28.01.15
110	220207450000 PACKING ROPE LGA SQ 10 MM - ✓ TP:21598/REV 02	KG	1000.000	1,000.00	28.01.15

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

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

Yours faithfully,
 For BHARAT HEAVY ELECTRICALS LIMITED

N. SHANMUGASUNDARAM

Purchase Officer

MM / MFG / Purchase / PPS
 BHEL, TRICHY - 620 014
 MANAGER / PURCHASE
 FOSSIL BOILERS)



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Page:2/7

1901400251 / 29.09.2014

23505

120	220208110000 ASBESTOS MILL BOARD 25 MM TP 21596/REV 03	KG	3000.000	3,000.00	28.01.15
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General Note:

Annexure

BHARAT HEAVY ELECTRICALS LIMITED
(A GOVT.OF INDIA UNDERTAKING)
HIGH PRESSURE BOILER PLANT
TIRUCHIRAPPALLI - 620 014

TERMS AND CONDITIONS OF THE ENQUIRY (TWO PART BID)

1. The tender will be operated on two part bid basis i.e.
(I).Techno-Commercial Bid & (II).Price Bid.
2. Techno-Commercial Bid: Containing Technical details, specifications, commercial terms and conditions like percentage of P&F charges, Freight & Insurance, ED, Cess, Taxes, delivery terms, delivery schedule, validity of offer, payment terms (except price details), acceptance for LD clause, etc. shall be put in a cover and super scribed as "Techno-Commercial Bid" for Enquiry No.XXXXXXXXXX Dt:XX.XX.XX Due Dt.XX.XX.XX
3. Price Bid: Containing the price details shall be put in a separate cover and super scribed as "Price Bid" for Enquiry No: XXXXXXXXXXXX Dt:XX.XX.XX Due Dt.XX.XX.XX
4. You are requested to put the above two envelopes (Techno-Commercial Bid & Price Bid) inside a separate larger sealed envelope and this envelope shall be super scribed as "Techno-Commercial Bid and Price Bid" for Enquiry No: XXXXXXXXXXXX Dt:XX.XX.XX Due Dt.XX.XX.XX
Your Quotations should be sent

to:

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

5. Please submit point wise compliance to our specifications, terms and conditions. Otherwise it will be presumed that you are accepting BHEL's terms and conditions.
6. The offer should reach this office on or before the due date as mentioned in the enquiry by 14.00 Hrs. Tenders received after 14.00 Hrs. will not be considered for evaluation.
7. Validity of quoted rates shall be maintained at least for 90 days

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

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Purchase Officer
MANAGER / PURCHASE
MM / MFG / Purchase / (FOSSIL BOILERS)
BHEL, TRICHY - 620 014
Yours faithfully,



BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)
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THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

Page:3/7

1901400251 / 29.09.2014

23505

from the date of Tender opening for ordering. The quoted/Finalized rates shall be Firm till completion of the supplies.

8. The rates are to be quoted on F.O.R. destination basis (Inclusive of Packing, Forwarding, and Freight and Transit Insurance charges to supplier account. The material should be delivered at BHEL Complex, Trichy by your carrier and at your own cost

(Delivery condition like Ex-works / Ex-godown / Transportation of materials through transport carriers from your works up to the transport carrier's office at Tiruchy and taking delivery of goods by BHEL from such office of transport carriers, Transportation of materials on "TO PAY" basis etc is not acceptable to us)

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

10. Payment Terms (Indigenous)

Payment term is 100% direct payment after 45 days from the date of receipt and acceptance of materials.

Any deviation in the above payment term will attract loading as mentioned below.

"Base rate of SBI (as applicable on the date of bid opening.

Techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidders.

11. Liquidated Damages / Penalty:-

Liquidated damages shall be 0.5% of the total order value per week or part thereof subject to a maximum of 10% of the total order value.

For staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week of the delay or part thereof subject to a maximum of 10% of the total order value.

Any deviation from the above LD clause, loading will be applied to the extent to which it is not agreed by the bidder (at offered value). Each tender should be sealed with tenderer's distinctive seal and super scribed with correct tender no., item of supply and due date of opening. Two or more quotation should not be sent in one cover but the quotation against each tender should be sent separately to avoid confusion. Tender should not be addressed to any individual's name but only by designation.

12. Tenders should be free from CORRECTION AND ERASURES. Corrections if any must be attested; all amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall only be considered.

13 No revision of prices will be entertained after tenders are opened.

14 If any sales tax is payable as extra to the quoted price it should be specifically stated in quotations along with CST & VAT Number failing which the purchaser will not be liable for payment of sales tax.


Our TIN 33243560005 dt.01.01.2007 & CST no 239383 DT, 11.06.1991

15 On the due date of tender opening, only the technical bids will be opened. Technical bids will be evaluated by us and clarifications

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED

N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 014,


MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,



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THIRUCHIRAPALLI - 620014
TAMILNADU (INDIA)

Page:4/7

1901400251 / 29.09.2014

23505

required, if any, will be called for from the bidders on technical and commercial points. The price bids of techno-commercially suitable bidders will be opened on a later date with prior intimation to respective bidders.

16 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.

17 BHEL reserves the right to increase or decrease the tender quantity and split up the tender quantity among more than one vendor at the lowest acceptable price to BHEL and place order accordingly in any proportion at our own discretion.

18 Lowest price received against BHEL tenders need not be the technically acceptable one and in that case BHEL reserves the right not to consider the same. The purchaser shall be under no obligation to accept the lowest or any other tender and shall be entitled to accept or reject any tender in part or full without assigning any reason whatsoever.

19. In event of more than one vendor becoming L1 for any of the item / items, the enquiry quantity for those item / items will be shared equally among all the L1 vendors. For such item / items splitting will be done among L1 vendors alone .

20. BHEL reserves the right to negotiate or re-float the tender opened if L1 price is not the lowest acceptable price to them inter-alia other reasons

21. PACKING AND MARKING: The supplier shall arrange for securely protecting and packing the stores to avoid loss or damages during transit.


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

23. PREFERENTIAL DELIVERY: It should be noted if a contract is placed on a higher tendered as a result of this invitation to tender in preference to the lowest acceptable offer in consideration of the earlier delivery, the seller will be liable to pay to the purchaser the difference between the contract rate and that of the lowest acceptable tender on the basis of final price F.O.R destination, including all elements of freights, Sales tax, duties and other incidents, incidental in case of failure to complete supplies in terms of such contract within the date of delivery specified in the tender and incorporated in the contract.

24. CENVAT CREDIT: If any Excise Duty is payable, the Chapter Head / Sub

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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED


MANAGER / PURCHASE
(FOSSIL BOILERS)
Yours faithfully,

N. SHANMUGASUNDARAM
Purchase Officer

MM / MFG / Purchase / PS@
BHEL, TRICHY - 620 014



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Page:5/7

1901400251 / 29.09.2014

23505

-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.

25. Any other conditions which might have been quoted by the seller and are in contravention to the terms prescribed in the order and which have not been specifically accepted in by purchaser will not be applicable to the contract.

26."All corrigenda, addend a, amendments, time extensions clarifications, etc. to the tender will be hosted on BHEL website (www.bhel.com) only (apart from unit website-if any). Bidders should regularly visit website(s) to keep themselves updated.

27. Special provisions for micro and small Enterprises (MSE):

i. 20% of the tendered quantity is earmarked for MSE suppliers in this enquiry.

ii. Out of 20% tendered quantity reserved for MSE suppliers, 4% shall be earmarked for procurement from MSE owned by SC/ST Entrepreneurs.

iii. In case MSE vendor participating in the tender quotes in the price band 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 intended benefit only if they submit along with offer, attested copies of either EM II certificate having deemed validity (two years from the date of issue of acknowledgement In EM II) or valid NSIC certificate or EM II certificate along with the CA certificate applicable for the year, certifying quantum of investment in the plant and machinery within 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 submit these documents.

28. Sample should be submitted along with the Technical Bid for evaluation. Offer without sample will be rejected by us.

29. IMPORTANT NOTE:-Terms and conditions to be confirmed /accepted/mentioned in your techno-commercial bid and price bid should be the same without any variation/deviation. In case of variation/deviation between the techno-commercial bid and price bid, the details furnished in techno-commercial bid only are considered for evaluation.

The new vendors for Trichy unit will be required to furnish the following documentary proof/information along with their offers:

- 1.,Certificate of Registration (copy of Certificate to be submitted).
- 2.,Banker's Information (copy of Bank Pass Book first Page to be submitted).
- 3.,MSME Vendor Certificate (if applicable).

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Purchase Officer / MANAGER / PURCHASE
MM / MFG / Purchase / PSS (FOSSIL BOILERS)
BHEL, TRICHY - 620 014. Yours faithfully,



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Page:6/7

1901400251 / 29.09.2014

23505

4. Address of your organization (Complete Postal Address with PIN Code)
 5. Contact Person/s, Phone No., Mobile No., FAX No., E-mail ID.
 6. Statutory documents - VAT/TIN/EXCISE REGISTRATION/SERVICE TAX REGISTRATION/CST REGN etc (copy to be furnished)
 7. NSIC/SSI Certificate (if applicable)
 8. ISO Certificate (if applicable)
 9. Experience certificate as proof of supply of similar item to any Govt. agencies/PSU/Organisations. (Copy of POs to be furnished).
 10. Audit Report / IT Return (if applicable)
 11. Agency Agreement with manufacturer (if applicable).
 12. Partnership Deed (if applicable)
- If the new vendors for Trichy unit fail to submit the above documentary proof/information, their offers will not be considered for this enquiry.

Enclosures:

"LD clause has to be confirmed without fail."

PR Links

Material.	PR.No	PR.Item.	Quantity	Acc. Assign	Customer Number
220201410000	107336511	00010	900.000	/000000	
220203090000	107336511	00020	100.000	/000000	
220203250000	107336511	00030	200.000	/000000	
220204610000	107336511	00040	1500.000	/000000	
220204730000	107336511	00050	2000.000	/000000	
220205250000	107336511	00060	1500.000	/000000	
220205320000	107336511	00070	300.000	/000000	
220205440000	107336511	00080	1000.000	/000000	
220206270000	107336511	00090	1000.000	/000000	
220207440000	107336511	00100	1000.000	/000000	
220207450000	107336511	00110	1000.000	/000000	
220208110000	107336511	00120	3000.000	/000000	


list of suppliers

RFQ-5200003325

Open Tender Dummy Code

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Page:7/7

1901400251 / 29.09.2014

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tenderers who have submitted their offer and who may like to be present for the tender
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Yours faithfully,
For BHARAT HEAVY ELECTRICALS LIMITED


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Purchase Officer / MANAGER / PURCHASE
MM / MFG / Purchase / PSS (FOSSIL BOILERS)
BHEL, TRICHY - 620 014
Yours faithfully,

COMMERCIAL TERMS CONFIRMATION FROM THE SUPPLIER (TO BE SUBMITTED IN SEPARATE COVER[NO:1])

S/No	DESCRIPTION	BHEL REQUIREMENTS	SUPPLIER CONFIRMATION
1	VALIDITY	90 Days from Date of tender opening	
2	PRICE QUOTED	FOR-DESTINATION BHEL STORES TRICHY -620014	
3	PACKING & FORWARDING (Whether inclusive (or) extra) Clearly mention the percentage (or) amount	Supplier Options	INCLUDED / EXTRA (INCASE OF EXTRA MENTION THE PERCENTAGE _____)
4	EXCISE DUTY WITH CESS (Whether inclusive (or) extra) Clearly mention the percentage (or) amount	Supplier Options	INCLUDED / EXTRA (INCASE OF EXTRA MENTION THE PERCENTAGE _____)
5	VAT / CST Clearly mention the percentage	Supplier Options	
6	FREIGHT (Whether inclusive (or) extra) Clearly mention the percentage (or) amount	Supplier Options	INCLUDED / EXTRA (INCASE OF EXTRA MENTION THE PERCENTAGE _____)
7	DEIVERY SCHEDULE	As per our schedule	
8	PAYMENT TERMS	100% After 45 days from the receipt and acceptance of materials at BHEL/STORES	
9	LD CLAUSE	0.5% per week to maximum of 10% for the undelivered portion/Qty.	
10	MSME CERTIFICATION	To be attached	ATTACHED / NOT ATTACHED
11	CONTACT PERSON DETAILS	NAME: MOBILE NO: EMAIL:	
12	For New Vendor (Annexure-A1)	Format to be filled	Y e s / N o

BIDDERS SHALL SUBMIT THEIR PRICE IN THE FOLLOWING FORMAT ONLY. (TO BE SUBMITTED IN A SEPARATE COVER [NO: 2]).

IMPORTANT NOTE:

Note:-Terms and conditions to be confirmed /accepted/mentioned in your techno-commercial bid and price bid should be the same without any variation/deviation. In case of variation/deviation between the technocommercial bid and price bid, the details furnished in techno-commercial bid only are considered for evaluation.

ENQ SL NO	BHEL SPECIFICATIONS	YOUR SPECIFICATION	PRICE IN RS
10			
20			



PLANT PURCHASING SPECIFICATION

HPBP TIRUCHIRAPPALLI

TP 21599

Rev. No. 02

PAGE 1 OF 2

DRY ASBESTOS GLAND PACKINGS

(Excluding those for corrosive acid services)

1. GENERAL.

1.1 This specification governs the quality of dry asbestos gland packing.

2. APPLICATION.

2.1 Suitable for flanged joints of ducts and fans for leakage prevention, valves, expansion provision for refractory, thermal insulation, furnace joints, air heaters and doors in boilers.

3. COMPLIANCE WITH NATIONAL STANDARDS:

3.1 This standard is based on IS: 4687-1980, Gr.1, "Specification for Gland Packing Asbestos". Dry asbestos gland packing referred in this standard shall comply with IS :4687-1980, in respect of requirements not covered in this standard.

4. DIMENSIONS & SIZES:

Dimensions & sizes shall be as per Table-1 of this standard.

5. DESIGNATION:

Dry Asbestos gland packing of sizes 6 mm, round shape shall be designated as :

ON DRAWING:

- | | | |
|----|-----------------------|-------------------------|
| 1. | Description column | : PACKING ROPE DIA 6 mm |
| 2. | Drawing Number column | : TP 21599 |
| 3. | Material code column | : 22 020 66100. |

5.1 ORDERING DESCRIPTION

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

GLAND PACKING ASBESTOS-GR.1, 6 MM ROUND, IS: 4687-1980, Gr 1

6. SAMPLING AND ACCEPTANCE

- 6.1 This shall be as per IS :4687-1980 for Gr.1, materials.
- 6.2 The density of packing rope shall be 0.96 to 1.2 gm/cc and shall be determined in dry condition.

Revisions 02 Brought up to date. *			Approved STANDARDS SECTION PRODUCT ENGINEERING/EB HPBP, TIRUCHIRAPPALLI		
Rev. No. 02	Amd. No.	Reaffirmed	Prepared	Issued	Dt of 1st Issue
Dt. 31-05-2000	Dt.	Year	STANDARDS	STANDARDS	May 1985

N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY. - 620 014.

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**PLANT PURCHASING
SPECIFICATION**
HPBP TIRUCHIRAPPALLI

TP 21599

Rev. No. 02

PAGE 2 OF 2

7. **ADDITIONAL INFORMATION.**

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

7.2 This specification supersedes the plant standard BPS:512501

TABLE - 1

SHAPE	SIZE in mm	MATL.CODE	WEIGHT(KG) per metre length.
ROUND	6	22 020 66100	0.0297
	8	22 020 23400	0.0528
	10	22 020 62700	0.0825
SQUARE	6	22 020 33300	0.0347
	8	22 020 33400	0.0616
	10	22 020 34100	0.0963
	12	22 020 36400	0.1387
	15	22 020 52000	0.2167
	20	22 020 52100	0.3852
	30	22 020 33500	0.8667
40	22 020 33600	1.5408	

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**PLANT PURCHASING
SPECIFICATION
HPBP TIRUCHIRAPPALLI**

TP 21598
Rev. No. 02
PAGE 1 OF 2

**LUBRICATED AND GRAPHITED ASBESTOS
PACKING ROPES**

1. SCOPE

1.1 This standard covers lubricated and graphited asbestos packing ropes used for high pressure conditions.

2. APPLICATION

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

3. MATERIALS

3.1 The packing rope shall be made of yarn spun from long staple, white chrysotile variety of asbestos fibre free from grit or rocky matter and from the inclusion of metal wire and spun cotton threads.

3.2 The loss of drying 2 grams of material for one hour at 104 °C shall not exceed 2.5 % by weight. The further loss on ignition of the portion thus dried, determined by heating in an open crucible in a gas muffle for 30 minutes at 850 ± 25 °C shall not exceed 25 % by weight of original undried sample.

4. CONSTRUCTION AND WORKMANSHIP

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

4.2 Each yarn shall either previously or during the construction of the packing be steepened in or impregnated with a high grade lubricating oil and graphite so that each individual fibre shall be thoroughly treated. The whole packing is to form a tightly plaited self lubricating packing.

4.3 The surface of the packing rope shall be smooth and it shall not have torn-out threads.

4.4 The packing rope shall be flexible enough to take up any shape.

5. TECHNICAL REQUIREMENTS

5.1 The density of the packing rope shall be 1.37 to 1.67 gm/cu.cm.

5.2 The packing rope shall withstand high temperature of 540°C of steam or of the flue gases of either coal or oil fired boilers containing 6 % of sulphur.

5.3 The high grade lubricating oil conform to an open flash point of not less than 200°C and viscosity of not less than 36 centistokes at 98.5°C. No powder, fillers or pigments to be added to the high grade lubricating oil with the exception of the requisite amount figures below and as specified for the moisture and ignition, clause,3.2

5.4 An analysis of packing rope shall give the results within the following mass limits:

Asbestos	63 % Min.
Graphite	11 % Max.
Lubricant	33 % Max.

Revisions 02 Brought up to date			Approved STANDARDS SECTION PRODUCT ENGINEERING /FB HPBP, TIRUCHIRAPPALLI		
Rev. No. 02	Amd. No.	Reaffirmed	Prepared	Issued	Dt of 1st Issue
Dt. 31-05-2000	Dt.	Year	STANDARDS	STANDARDS	AUG.1987

N. Shanmugasundaram
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**PLANT PURCHASING
SPECIFICATION
HPBP TIRUCHIRAPPALLI**

TP 21598

Rev. No. 02

PAGE 2 OF 2

The % of Graphite & Lubricant shall be estimated by the methods of Test described in Appendix -A of BS : 4371-1991

- 5.5 The lubricating oil shall be free from organic and mineral acids and also from sulphur compounds. The graphite shall be flake graphite containing not less than 90 % of carbon.

6. DIMENSIONS

- 6.1 The recommended sizes of ropes for our factory use are as follows.

SECTION	SIZE	MATL.CODE	WEIGHT(Kg.) per metre length.
SQUARE	10 mm	22 020 74500	0.1520

6.2 PREFERRED SIZES

For square section: 6mm,8mm, 10mm, 12mm, 15mm, 20mm.
For round section: 15 mm, 20mm.

7. PERMISSIBLE DEVIATION

For Sizes upto and including 10 mm, ± 0.5 mm
For Sizes above 10 mm, ± 1 mm.
The permissible deviation on length of rope shall be $\pm 5\%$
The weight is calculated based on the mean density of rope 1.52 gm/cu. centimetre.

7. DESIGNATION.

Lubricated and graphited asbestos packing rope of size 10 mm, square shall be designated as:

On Drawing

1. Material specification column : 22 020 74500
2. Description column : PACKING ROPE LGA. SQ., 10 MM.
3. Drawing number column : TP 21598


ORDERING DESCRIPTION

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

LUBRICATED AND GRAPHITED ASBESTOS PACKING ROPES AS PER BOILER PLANT
STANDARD TP :21598.

8. ADDITIONAL INFORMATION

- 8.1 This ropes shall be procured in coils of length 25 or 50 or 100 metres.
- 8.2 This standard supersedes BPS 512502.
- 8.3 For procurement purpose, this standard shall be enclosed along with purchase order.
- 8.4 In this formulation of this standard considerable assistance has been derived from the following specifications.
IS : 4687 : 1995 Gaskets & packing-gland packing asbestos.
BS : 4371-1991 Specification for fibrous gland packing.


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**PLANT PURCHASING
SPECIFICATION**
HPBP TIRUCHIRAPPALLI

TP 21597
Rev. No. 02
PAGE 1 OF 2

ASBESTOS CLOTH

1. SCOPE

This standard covers white asbestos cloth, twine woven for use upto temperature of 400°C.

2. MATERIAL

The threads used for the manufacture of asbestos cloth shall be evenly spun from long white chrysotile fibre free from grit or rocky matter.

3. TECHNICAL REQUIREMENTS

- 3.1 Asbestos cloth shall be fire resistant, vermin-proof and capable of withstanding temperature of 400 °C.
- 3.2 The loss of drying 2 grams of material, as received, for one hour at 104.5°C. shall not exceed 2.5 % by weight.
- 3.3 Ignition loss, when the cloth is heated for 30 minutes in an open crucible to 450°C. shall not exceed 20% by weight of the original undried sample.
- 3.4 The asbestos cloth shall be made of 2 ply wrap yarn with 16 ends per 2.5 cm and the weft with single ply yarn 12 ends per 2.5 cm.
- 3.5 The recommended thickness of asbestos cloth for BHEL's use shall be 2 or 3 mm.
- 3.6 Density and weight of the cloth shall be as specified in Table I.
- 3.7 The asbestos cloth shall be supplied in rolls of nominal width 1 M and length 25 to 40 M.

4. DESIGNATION

- 4.1 Asbestos cloth, thickness 2 mm, according to this standard shall be designated as:

On drawing:

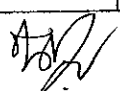
1. Material specification column : 22 020 54400
2. Description column : ASBESTOS CLOTH 2 MM
3. Drawing number column : TP 21597

4.2 ORDERING DESCRIPTION

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

ASBESTOS CLOTH TWILL WOVEN 2 MM THICK, 1 M X 25 M, - AS per BHEL Standard TP: 21597.

Revisions Brought upto date			Approved STANDARDS SECTION PRODUCT ENGINEERING/FB HPBP, TIRUCHIRAPPALLI		
Rev. No. 02	Amd. No.	Reaffirmed	Prepared STANDARDS	Issued STANDARDS	Dt of 1st Issue AUG. 1987
Dt. 31-05-2000	Dt.	Year			


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**PLANT PURCHASING
SPECIFICATION**
HPBP TIRUCHIRAPPALLI

TP 21597

Rev. No. 02


PAGE 2 OF 2

TABLE - 1

Recommended Thickness	Density in dry condition gm/cu.cm.	Material code	Weight in Kg/sq.m
2	0.7	22 020 54400	1.35
3	0.8	22 020 47300	2.40

5. **ADDITIONAL INFORMATION**

- 5.1 This standard supersedes TP 21597 rev.01
- 5.2 Copies of this standard shall be enclosed along with purchase order.
-


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**PLANT PURCHASING
SPECIFICATION
HPBP TIRUCHIRAPPALLI**

TP 21596

Rev. No. 03

PAGE 1 OF 2

ASBESTOS MILL BOARDS

1. SCOPE

This standard cover asbestos mill boards used as fire proof thermal insulating material.

2. APPLICATION

2.1 White asbestos mill board shall be manufactured from pure asbestos fibers, entirely free from iron, cotton and other vegetable fibers by adding fire resistant filler and only sufficient amount of inorganic bonding materials necessary for the manufacture of homogenous mill board.

2.2 The asbestos mill board shall contain not less than 65% by weight of pure asbestos fiber when tested in accordance with the following method.

2.3 Ten grams of undried asbestos material are to be digested with one liter of hot water at a temperature just below 100°C for not less than one hour with constant stirring. The mixture when thoroughly digested, is to be poured on to a 30 BS meshes sieve and whirled on the sieve wash with hot water. The washed fiber remaining on the sieve, after being dried at 104.5°C, must be not less than 65% of the original weight of the undried asbestos material.

2.4 TECHNICAL REQUIREMENTS

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

2.6 The asbestos mill board shall possess the following properties in dry condition.

Density in Kg/Cu.dm : 1.0 to 1.3

Minimum Tensile strength,

Longitudinal : 10 Kg/Sq.cm

Transverse : 9 Kg/Sq.cm.

Max. Moisture content : 5% (One hour at 105°C .)

Max. Loss on ignition : 15% (One hour at 540°C on dried sample.)

Fire proofness :

The material shall be incombustible and shall not get charred.

2.5 The asbestos mill board should withstand the high temperature of 540°C of steam or of flue gases of either coal fired boilers or oil fired boilers containing 6% of sulphur.

Revisions
Brought upto date. *

Approved
STANDARDS SECTION
PRODUCT ENGINEERING / B
HPBP, TIRUCHIRAPPALLI

Rev. No. 03
Dt. 31-05-2000

Amd. No.
Dt.

Reaffirmed
Year

Prepared
STANDARDS

Issued
STANDARDS

Dt of 1st Issue
August 1987

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**PLANT PURCHASING
SPECIFICATION
HPBP TIRUCHIRAPPALLI**

TP 21596

Rev. No. 03

PAGE 2 OF 2

2.6 The asbestos mill board shall be of uniform thickness and suitable for easy shearing. The variations in thickness in one sheet should not exceed 10 %.

2.7 Tolerances on the size and thickness shall be as follows.

a) On size : ± 10 mm

b) On Thickness

Upto and including 2 mm : ± 0.2 mm

Above 2 mm : ± 0.3 mm

2.8 The recommended asbestos mill board for our factory use shall be procured in sheets of 1 M x 1 M and in thickness of 2, 3, 5, 10 and 25 mm.

2.9 Weights have been calculated based on mean density 1.15 Kg / cu.dm.

Thickness of Mill board.	Material Code	Weight Kg/sq.m
2	22 020 53100	2.3
3	22 020 67100	3.45
5	22 020 58700	5.75
10	22 020 53200	11.5
25	22 020 81100	28.75

3. DESIGNATION

3.1 Asbestos Mill board thickness 2 mm , according to this standard shall be designated as:

ON DRAWING

1. Material specification column : 22 020 53100
2. Description column : ASBESTOS MILL BOARD 2 MM
3. Drawing number column : TP 21596

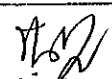
3.2 ORDERING DESCRIPTION

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

ASBESTOS MILL BOARD 2 mm THICK, 1 M X 1M.
As per BHEL STANDARD TP : 21596.

4. ADDITIONAL INFORMATION

1. This standard supersedes TP 21596 rev 02.
2. Copies of this standard shall be enclosed along with purchase order.


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**COMPRESSED ASBESTOS FIBRE JOINTING SHEETS
LOW PRESSURE STEAM AND WATER****1. GENERAL:**

This specification governs the quality of Compressed Asbestos Fibre Jointing Sheets - Low Pressure Steam And Water.

2. APPLICATION:

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

3. COMPLIANCE WITH NATIONAL STANDARDS:

The material shall comply with the requirements of the following National Standard and also meet the requirements of this specification.

IS: 2712-1979 (Reaffirmed 1989): Compressed Asbestos Fibre
Gr: W/3 : Jointings.

4. DIMENSIONS AND TOLERANCES:**4.1 Dimensions:**

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

4.2 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.

4.3 Tolerances:

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

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Revisions:
Ref. Cl. 26.2.18 of MOM of MRC (E)

Approved:
INTERPLANT MATERIAL
RATIONALISATION COMMITTEE-MRC (E)

Rev. No.	Rev. Date	Revised:	Prepared	Issued	Date
01	JAN. '93	BHOPAL	HYDERABAD	CORP. R&D	MAR. '82

N. Shanmugasundaram
N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 014.

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Nominal Thickness mm		Permissible deviation from nominal thickness \pm mm	Max. variation between points not more than 250 mm apart, \pm mm
Above	Upto & incl.		
-	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

5. **MATERIAL:**

The sheets shall consist mainly of well opened asbestos fibres and inorganic fillers thoroughly mixed with heat resistant binders/elastomers.

6. **FREEDOM FROM DEFECTS:**

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

7. **TEST SAMPLE**

Selection of test samples shall be as per Appendix A of IS:2712.

All specimen shall be conditioned as per Appendix B of IS:2712.

8. **PROPERTIES:**

When tested in accordance with the relevant test methods of IS:2712 shown against each, the material shall show the following properties:

8.1 **Density:**

1.57 - 2.20 g/cm³

8.2 **Flexibility After Accelerated Ageing (IS:2712, Appendix C):**

Shall show no visual sign of cracking.

8.3 **Compressibility And Recovery Test (IS:2712, Appendix D):**

8.3.1 **Compressibility:**

6 to 14%

8.3.2 **Recovery:**

40 % minimum

8.4 **Tensile Strength (IS:2712, Appendix H):**

6.7 N/mm² minimum

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BHEL, TRICHY - 620 014:

9. 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.

10. TEST CERTIFICATES:

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

AA 21502 : Compressed Asbestos Fibre Jointing Sheet -
(REV.No.01): Low Pressure Steam And Water.
BHEL Order No.
Manufacturer's/Supplier's Name.
Trade Mark, if any.
Batch/Lot No.
Quantity supplied.
Test results of Clauses 4 and 8.

11. PACKING AND MARKING:


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

Manufacturers name and grade shall be clearly marked on one corner of each sheet.

Each package shall be legibly marked with the following information:

AA 21502 : Compressed Asbestos Fibre Jointing Sheet -
Low Pressure Steam And Water.
BHEL Order No.
Manufacturer's/Supplier's Name.
Trade Mark, if any.
Batch /Lot No.
Date of manufacture.
Quantity supplied.

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CORPORATE PURCHASING SPECIFICATION

AA 215 01

Rev. No. 01

PAGE 1 OF 3

4.2 Preferred thicknesses (mm):

0.25, 0.4, 0.5, 0.8, 1, 1.5, 2, 2.5, and 3.

4.3 Tolerance on Thickness:

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

Thickness mm	Max. Permissible variation from Nominal thickness (+) mm	Max. Deviation on thickness bet- ween points not more than 300 mm apart (+) mm
Over 0.5	0.05	0.025
0.5 to 1.0	0.08	0.05
1.0 to 1.5	0.13	0.08
1.5 to -	0.18	0.10

5. TEST METHODS:

Unless otherwise specified, the tests shall be conducted in accordance with the relevant methods of IS: 2712.

Revisions: Crushing strength was on.
Brought upto date.

Approved: INTERPLANT MATERIAL
RATIONALISATION COMMITTEE MRC(E)

Rev. No.	Rev. Date	Revised:	Prepared	Issued	Date
01	DEC. '89	BHOPAL	BHOPAL	CORP. R&D	SEPT. '78

Revisions : Crushing Strength was on.
Brought upto date; Cf: 34.1.22 of MOM of
(MRC/E)

APPROVED :
INTERPLANT MATERIAL RATIONALISATION
COMMITTEE-MRC (E)

Rev. No. 01	Amd.No	Reaffirmed	Prepared	Issued	Dt. of 1st Issue
Dt: Dec.1989	Dt :	Year :2007	BHOPAL	Corp. R&D	SEPT, 1978

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Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY - 620 014.

**6. TEST SAMPLES:**

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

7. FINISH:

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

8. PHYSICAL PROPERTIES:

8.1 Density: 1.8 to 2.0 g/cm³.

8.2 Oil Absorption:

The oil absorption of the material after 5 hrs at 150°C shall be not more than 25 percent. Oil No.3 (high volume increase oil) or a light grade Turbine oil to IS: 1012 may be used.

8.3 Water Absorption:

After immersion in water for 48 hrs at 20°C the water absorption of the material shall be not more than 10%.

8.4 Loss on Ignition:

The loss on ignition shall be not more than 2% after ignition at 850°C.

9. CHEMICAL PROPERTIES:**9.1 Sulphur Content (Extractable):**

The total amount of sulphur content shall not exceed 0.05 per cent, after vulcanising for 48 hrs at 130°C.

10. MECHANICAL PROPERTIES:**10.1 Tensile Strength:**

The average value of eight test results of asbestos jointing shall be not less than the minimum values as given below:

Nominal Thickness		Tensile Strength Min	
Over	Upto and including	Longitudinal N/mm ²	Transverse N/mm ²
-	0.5	35	14
0.5	1.2	45	16
1.2	-	60	18

10.2 Flexibility:

(Signature)
 N. SHANMUGASUNDARAM
 Purchase Officer
 MM / MFG / Purchase / PSS
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CORPORATE PURCHASING SPECIFICATION

AA 215 01

Rev. No. 01

PAGE 3 OF 3

10.4 Cutting and Punching:
Shall be capable of being cut or punched without cracking or flaking.

11. TEST CERTIFICATE:

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

AA 21501 - Rubberised Compressed Asbestos Fibre Sheet.
(Rev.01)

BHEL Order No:

Batch/Lot No.

Test Values obtained/certificate for compliance for clause 8 to 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


AA 21501 : Rubberised Compressed Asbestos Fibre Sheet.

BHEL Order No.

Manufacturer's or suppliers' name & grade Batch/Lot No.

Thickness, Width & Length.

Net Volume.


N. SHANMUGASUNDARAM
Purchase Officer
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RATNA Spengler



CORPORATE PURCHASING SPECIFICATION

AA 215 UJ 16/

PAGE 1 OF 3

COMPRESSED ASBESTOS FIBRE JOINTING SHEETS

MEDIUM PRESSURE OIL

1. GENERAL:

This specification governs the quality of Compressed Asbestos Fibre Jointing Sheets - Medium Pressure Oil.

2. APPLICATION:

Suitable for use with oil in steam turbine and industrial applications at maximum operating pressure of 7.0 N/mm² and temperature of 425°C.

3. COMPLIANCE WITH NATIONAL STANDARDS:

The material shall comply with the requirements of the following National Standard and also meet the requirements of this specification.

IS:2712-1979 (Reaffirmed 1989) Compressed Asbestos Fibre Jointings.
Gr: O/2

4. DIMENSIONS AND TOLERANCES:

4.1 Dimensions:

The material shall be supplied to the dimensions specified on our order.

4.2 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.

4.3 Tolerances:

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

Nominal Thickness mm		Permissible deviation from nominal thickness ± mm.	Max. deviation between points not more than 250 mm apart, + mm
Above	Upto & incl.		
-	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

Revisions:
Ref. Cl. 26.2.19 of MOM of MRC (E)

Approved: INTERPLANT MATERIAL-MRC (E)
RATIONALISATION COMMITTEE

Rev. No. 01	Rev. Date JAN 93	Revised: BHOPAL	Prepared HYDERABAD	Issued N. SHANMUGASUNDARAM Purchase Officer	Date MAY 82
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5. MATERIAL:

The sheets shall consist mainly of well opened asbestos fibres and inorganic fillers thoroughly mixed with heat resistant binders/elastomers.

6. FREEDOM FROM DEFECTS:

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

7. TEST SAMPLE

Selection of test samples shall be as per Appendix A of IS:2712.

All specimen shall be conditioned as per Appendix B of IS:2712.

8. PROPERTIES:

When tested in accordance with the relevant test methods of IS:2712 shown against each, the material shall show the following properties:

8.1 Density:

1.57 - 2.20 g/cm³

8.2 Flexibility After Accelerated Ageing (IS:2712, Appendix C):

Shall show no visual sign of cracking.

8.3 Compressibility And Recovery Test (IS:2712, Appendix D):8.3.1 Compressibility:

6 to 14%

8.3.2 Recovery:

40 % minimum

8.4 Oil Absorption (Cl 7.7 Appendix E IS:2712):

The percentage increase in thickness and mass shall not exceed the values given below:

8.4.1 Oil No.2 (IS:1012-Medium Grade):

Increase in thickness/mass for 5 hours at 150±2° C - 50% maximum

8.4.2 Petrol:

Increase in thickness for 5 hours at 20 to 30 °C : 50% maximum.
Increase in mass for 5 hours at 20 to 30 °C : 30% maximum.

8.5 Water Absorption (IS:2712-Appendix F):

Increase in mass : 10% maximum

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CORPORATE PURCHASING SPECIFICATION

AA 215 03

PAGE 3 OF 3

8.6 Tensile Strength (IS:2712-Appendix H):

For 0.4 mm up to and including 1.0 mm thick : 9.0 N/mm²
Above 1.0 mm thick : 12.8 N/mm²

8.7 Stress Relaxation (IS:6210):

Residual Stress : 17.5 N/mm² minimum.

9. 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.

10. TEST CERTIFICATES:

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

AA 21503 : Compressed Asbestos Fibre Jointing Sheet -
(REV.No.01): Medium Pressure Oil.
BHEL Order No.
Manufacturer's/Supplier's Name.
Trade Mark, if any.
Batch/Lot No.
Date of manufacture.
Quantity supplied.
Test results of Clauses 4 and 8.

11. PACKING AND MARKING:


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

Manufacturers name and grade shall be clearly marked on a piece of 300X300 mm cut from any position of the sheet.

Each package shall be legibly marked with the following information:

AA 21503 : Compressed Asbestos Fibre Jointing Sheet -
Medium Pressure Oil.

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


N. SHANMUGASUNDARAM
Purchase Officer
MM / MFG / Purchase / PSS
BHEL, TRICHY. - 620 014.

5150-48



COMPRESSED ASBESTOS FIBRE JOINTING SHEETS -

HIGH PRESSURE STEAM AND WATER

1. GENERAL:

This specification governs the quality of Compressed Asbestos Fibre Jointing Sheet - High Pressure Steam and Water.

2. APPLICATION:

Suitable for use in Steam turbines, boilers, thermal insulation, packing and sealing purposes at maximum operating pressure of 14 N/mm² and temperature of 540 °C

3. COMPLIANCE WITH NATIONAL STANDARDS

The material shall comply, with the requirements of the following National Standard and also meet the requirements of this specification.

IS:2712-1979
(Reaffirmed 1989) : Compressed Asbestos Fibre Jointing.
Gr.W/1

4. DIMENSIONS AND TOLERANCES:

4.1 Dimensions:

The material shall be supplied as per the dimensions specified on our order.

4.2 Thickness:

The dimensions for thickness shall preferably be selected from the following:

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

4.3 Tolerance On Thickness:

The maximum permissible deviation on thickness of sheets shall be as follows:

Thickness (mm)		Permissible deviation from nominal thickness + mm	Maximum variation between points not more than 250 mm apart + mm
Above	Upto and 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

Revisions: Ref. Cl. 26.2.20 of MOM of MRC (E)			Approved: INTERPLANT MATERIAL RATIONALISATION COMMITTEE - MRC (E)		
Rev. No. 01	Rev. Date JAN 93	Revised: BHOVAL	Prepared HYDERABAD	Issued CORP. R&D	Date MAR 82

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5. MATERIAL:

The sheets shall consist mainly of well opened asbestos fibres and inorganic fillers thoroughly mixed with heat resistant binder.

6. FREEDOM FROM DEFECTS:

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

7. TEST SAMPLE:

Selection of test samples and acceptance criteria shall be as per Appendix A of IS:2712.

All specimen shall be conditioned as per Appendix B of IS:2712.

8. PROPERTIES:

When tested in accordance with test methods shown against each clause, the test samples shall show the following properties.

8.1 Density:

1.57 to 2.2 g/cm³.

8.2 Flexibility After Accelerated Ageing (Appendix C-IS:2712):

Shall show no visual signs of cracking.

8.3 Compressibility And Recovery Test (Appendix D-IS:2712):

8.3.1 Compressibility : 6 - 14%

8.3.2 Recovery : 40% minimum.

8.4 Water Absorption (Appendix F-IS:2712):

Increase in mass shall not exceed 10%.

8.5 Tensile Strength (Appendix H-IS:2712):

For 0.4 upto and including 1 mm thick : 18 N/mm² minimum

Above 1 mm thick : 24 N/mm² minimum

8.6 Stress Relaxation (IS:6210):

Residual stress : 23 N/mm² minimum

9. TYPE APPROVAL:

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

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10. TEST CERTIFICATES

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

- AA 21504 : Compressed Asbestos Fibre Jointing Sheet - (Rev.No.01) : High Pressure Steam and Water.
- BHEL Order No.
- Manufacturer's/Supplier's name.
- Batch/Lot No.
- Trade mark, if any.
- Quantity supplied.
- Test results for clause 4 and 8.

11. PACKING AND MARKING:

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

Manufacturers name and grade shall appear on a piece of 300 x 300 mm cut from any position of the sheet.

Each package shall bear the following information:

- AA 21504 : Compressed, Asbestos Fibre Jointing Sheet - High Pressure Steam and Water.
- BHEL Order No.
- Manufacturer's/Supplier's Name.
- Trade Mark, if any
- Batch/Lot No.
- Quantity supplied.