



BHARAT HEAVY ELECTRICALS LTD.
 (A GOVT. OF INDIA UNDERTAKING)
 P.O BHEL Jhansi - 284120, INDIA
 Tel.:0510-277001/2412260
 Website : jhs.bhel.com

PURCHASE ENQUIRY

ENQ NO/DT: **E26260004** 01/05/26
 REV NO/DT: **0** 01/05/26

PAGE **1**
4

PLEASE SEND YOUR BEST QUOTATION AS PER TERMS & CONDITIONS AND REMARK MENTIONED UNDERNEATH.

Enq Due on:	08-05-26 FRIDAY		
Close at:	13:15	Open at:	14:00
Matcat:	261008 METAL PART		
Validity:	120 days from Technical bid opening date		
IEM:			
TOP:	See Special Remarks		
RA:	RA not applicable		
Est. Value:	Item wise		
Bid Type:	TWO BID	Delivery:	FOR Jhansi
Tot Item:	1	E-Proc:	Yes

REQUIRED:

ITEM NO : 1 PSL QTY/UM: 2.00 NO
 MATL CODE : TR673790G610 PO QTY /UM: 2.00 NO
 DESTINATION: JS

DESCRIPTION	DELIVERY	QUANTITY (PSL UM)
1.1KV, 5000 AMPS. FIBER BOARD AND BUSHING WITH COPPER BAR AS PER DRG.NO.24678350029, REV.01.	MAY-26	2.00

SPECIAL REMARKS:

- E-PROCUREMENT ENQUIRY IS BEING FLOATED IN "TWO BID" SYSTEM ON NIC PORTAL. PLEASE SUBMIT YOUR OFFER ONLY ON E-PROCUREMENT PORTAL <https://eprocarebhel.co.in>. OFFER SUBMITTED THROUGH ANY OTHER MODE SHALL NOT BE CONSIDERED.
- VENDORS ARE HEREBY INFORMED TO REFER OUR GENERAL TERMS & CONDITIONS UPLOADED AT https://jhs.bhel.com/apps/sip/enq_terms/enq_tems_current.pdf
- INSPECTION BY BHEL AT BHEL JHANSI.
- PLEASE UPLOAD SEAL & SIGNED COPY OF "ACCEPTANCE TO TECHNO-COMMERCIAL TERMS & CONDITION" (PART-I, PART-II AND BLANK PRICE BID ALONGWITH ALL THE ANNEXURES) FOR ENQUIRY ALONG WITH QUOTATION.
- PLEASE QUOTE ON FOR BHEL JHANSI WITH FREIGHT & INSURANCE TO YOUR ACCOUNT.
- KINDLY QUOTE BASIC PRICE CONSIDERING ALL CHARGES. GST AS APPLICABLE AT THE TIME OF DISPATCH SHALL BE PAYABLE EXTRA ONLY. CHARGES QUOTED SEPARATELY IN THE DOCUMENTS ATTACHED BY SUPPLIER SHALL NOT BE CONSIDERED.
- PRICE TO BE QUOTED CONSIDERING PVC. PVC IS APPLICABLE AS PER S.NO. 20 OF NIT ANNEXURE-I.
- REVERSE AUCTION IS NOT APPLICABLE IN THIS ENQUIRY.
- TEST CERTIFICATE, CONFORMANCE CERTIFICATE AND GUARANTEE CERTIFICATE ARE REQUIRED ALONGWITH SUPPLY.
- MATERIALS ARE TO BE SUPPLIED AS PER ITEM DESCRIPTION AND DRGS. & SPECIFICATIONS UPLOADED IN TENDER.
- ENQUIRY DUE DATE AND TIME ON NIC PORTAL SHOULD BE TREATED AS FINAL DUE DATE AND TIME.

In case the bidder has not submitted PAN No, TIN No. and E-mail ID, the bidder has to submit the same along with the copy of PAN No and TIN No. Else his offer will be liable to be rejected.

If you are not in a position to quote due to any reason, you must send regret letter titled enquiry no. etc, failing which you may not be considered for sending future enquiries.

ENCLOSERS:



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ENQ NO/DT: E26260004 01/05/26
REV NO/DT: 0 01/05/26

PAGE 2
4

FOR AND ON BEHALF OF
BHARAT HEAVY ELECTRICALS LTD

VIKAS KR BADGUJAR
SR MANAGER (MM-1)
Email:-VKBADGUJAR@BHEL.IN

***** END OF PURCHASE ENQUIRY*****

NOTE :

- * THE BIDDER IS INFORMED THAT THE GENERAL TERMS & CONDITIONS OF ENQUIRY (JHS 2055A Rev 03) WHICH ARE UPLOADED AT <https://jhs.bhel.com/apps/sip/index.php> AT (TERMS & CONDITION -> FOR ENQUIRY) LINK, ARE TO BE READ BY THE BIDDER BEFORE SUBMITTING QUOTE IN THE ENQUIRY. BHEL SHALL CONSTRUE THE PARTICIPATION BY THE BIDDER IN ENQUIRY AS ACCEPTANCE TO THE GENERAL TERMS AND CONDITIONS OF ENQUIRY.
- * SUPPLIERS ARE REQUESTED TO INFORM US WITH VALID CERTIFICATE, IF THEY ARE REGISTERED UNDER MSMED ACT'2006. (APPLICABLE FOR INDIAN SUPPLIERS ONLY).
- * FOR SUPPLIERS SUPPLYING FROM OUTSIDE THE LOCAL AREA OF BHEL JHANSI, ENTRY TAX WILL BE APPLICABLE. SUPPLIERS SHOULD NECESSARILY INDICATE RATE OF ENTRY TAX SEPARATELY WHEREVER APPLICABLE. THEY SHOULD ALSO MENTION THE ENTRY TAX CHARGED SEPARATELY IN THE INVOICE.
- * FOR SUPPLIERS SUPPLYING FROM OUTSIDE UP, IN CASE THE OFFER IS SILENT ON ENTRY TAX, IT SHALL BE LOADED SUITABLY WITH THE APPLICABLE RATES
- * IN CASE IF THERE IS ANY DIFFERENCE BETWEEN THE 'SPECIAL REMARKS/ANNEXURES' OF THE ENQUIRY AND THE PREPRINTED TERMS & CONDITIONS (REF JSC140/M2053), THE REQUIREMENT GIVEN IN REMARKS WILL PREVAIL.
- * Reference Sl. No. 2(B) of General Terms and Conditions regarding option for offer submission through Email addressed to tenderbox.jhs@bhel.in , please note that the maximum mail size including attachments should not exceed 15 MB , otherwise the offer shall not be delivered due to size limitation and bidder sending mail attachments more than 15 MB will have no claim whatsoever on the subject tender . Also due to any technical snag , if offer has not reached tenderbox.jhs@bhel.in , it will be bidder's sole responsibility to ensure offer submission through alternate routes before the due date and time .BHEL will not entertain any such claim for non-receipt of offer on time .



BHARAT HEAVY ELECTRICALS LIMITED JHANSI – 284120

(A Govt. of India undertaking)

MATERIAL MANAGEMENT

E26260004

**FOLLOWING BELOW MENTIONED NIT DOCUMENTS TO BE COMPLETELY FILLED AND
UPLOADED BY SUPPLIERS WITH TECHNO -COMMERCIAL BID (TECHNO -COMMERCIAL
BID TENDER PART-I)**

Sl. No.	Contents	Annexure
1.	Techno-Commercial Bid for Enquiry	Annexure-I
2.	Blank Price Bid	Annexure-II
3.	Format for Local Content Declaration	Annexure-III
4.	PQR FOR OPEN TENDER ON GEM/NIC	Annexure-IV
5.	Declaration for Conflict of Interest	Annexure-V
6.	Drawings and Specification	-

Supplier Sign and Seal



MANDATORY SHEET (TECHNO-COMMERCIAL) - ENQUIRY NO. E26260004

ANNEXURE-I

QUOTATION NO _____ DATE _____
SUPPLIER'S NAME: _____

We have gone through all Special Remarks, Technical Specifications, "General Terms, and Conditions of Enquiry" and submitting offer as under:

Sl. no.	Particulars	
1	Complete acceptance for supply of items as per Purchase / Tech. specification mentioned in the enquiry. Technical deviations, if any, are to be clearly brought out in offer itself. (Note: offers with technical deviations are liable for rejection)	<input type="checkbox"/> Accepted
2	Acceptance to all special remarks and General Terms & Condition of Enquiry (Rev. 03) uploaded at:- BHEL Jhansi Supplier information Portal >>>Terms and condition >>> Enquiry Link:- https://jhs.bhel.com/apps/sip/enq_terms/enq_tems_current.pdf (Note: Read & Accept the terms & condition carefully before quoting)	<input type="checkbox"/> Accepted
3	Enquiry # 1- Qty.- 2 NO.; Material Code- TR673790G610) 1.1KV, 5000 AMPS. FIBER BOARD AND BUSHING WITH COPPER BAR AS PER DRG.NO.24678350029, REV.01. (Copper Weight: 98 KG /NO.)	
	a) MATERIAL TO BE SUPPLIED AS PER ITEM DESCRIPTION IN LINE WITH ATTACHED DRAWINGS AND SPECIFICATIONS	<input type="checkbox"/> Accepted
	b) Desired delivery from the date of issue of PO for item #1- Within 30 days. However, Vendor may quote their delivery time for item #1 from the date of issue of PO. Days
	c) TEST CERTIFICATES AS PER BHEL DRAWING TO BE SUBMITTED ALONGWITH SUPPLY OF MATERIALS.	<input type="checkbox"/> Accepted
	d) GUARANTEE/ CONFORMANCE CERTIFICATES REQUIRED ALONGWITH SUPPLY OF MATERIALS.	<input type="checkbox"/> Accepted
4	Taxes & Duties :- Extra as applicable & bidders to indicate following	<input type="checkbox"/> Accepted
	(a) Tariff Head / HSN No.	
	(b) Applicable GST (mention NA if not applicable) <input type="checkbox"/> IGST OR <input type="checkbox"/> CGST & SGST Each	@% @ %
5	Price to be quoted considering PVC. PVC is applicable in line with s.no. 20 of this Annexure.	<input type="checkbox"/> Accepted
6	Acceptance to Price Validity of 120 days from date of bid part-I opening.	<input type="checkbox"/> Accepted
7	Acceptance to Delivery Terms on F.O.R. BHEL Jhansi as per clause 6(A)	<input type="checkbox"/> Accepted
8	Acceptance to LD / Penalty for Delayed Performance (including Risk Purchase) as per clause 8 (A to C)	<input type="checkbox"/> Accepted
9	Acceptance to Pricing Terms as per clause 11	<input type="checkbox"/> Accepted
10	Acceptance to Payment Terms as per clause 15(A). Any deviation from the above payment terms, if accepted (by BHEL), shall be loaded @ SBI base rate (as on date of Part I bid opening) + 6%, for the purpose of bid evaluation. Note: For payment through TReDS bill discounting facility, please mention the same. (applicable only for MSME bidders)	Accepted with <input type="checkbox"/> 90 days <input type="checkbox"/> MSME <input type="checkbox"/> TReDS
11	Inspection of Goods as per clause 16 (A to D) (Inspection will be done by BHEL Jhansi at our works)	<input type="checkbox"/> Accepted

Sign of Authorized Signatory Company seal :

Contact Detail: Name Cell No.: E-mail :

12	Acceptance to Warranty, Corresponding Repairs / Replacement of Goods, and Deductions as per clause 17(A) . Bidders to issue a certificate to this effect.	<input type="checkbox"/> Accepted												
13	Blank price bid (Annexure-II) submitted along with Tender Document (Part-I of Tender).	<input type="checkbox"/> Submitted												
14	Price Bid (BOQ) submitted as per attached price bid format only. (Part-II of Tender)	<input type="checkbox"/> Submitted												
15	<p>Any Bidder falling under MSE category shall furnish the following details & submit documentary evidence/ Govt. Certificate etc. in support of the same along with their techno-commercial offer.</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Type under MSE</th> <th>SC/ST Owned</th> <th>Women Owned</th> <th>Others (excluding SC/ST & Women Owned)</th> </tr> </thead> <tbody> <tr> <td>Micro</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Small</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Please submit MSME certificate.</p>	Type under MSE	SC/ST Owned	Women Owned	Others (excluding SC/ST & Women Owned)	Micro				Small				<input type="checkbox"/> Submitted
Type under MSE	SC/ST Owned	Women Owned	Others (excluding SC/ST & Women Owned)											
Micro														
Small														
16	% of Local content as per MII-2017 order. (Declaration for % of Local Content to be submitted along with offer in format attached herewith (Annexure-III)).% <input type="checkbox"/> Submitted												
17	<p>In line with PPP-MII order - 2017:</p> <p>"For this procurement, the local content to categorize a supplier as a Class I local supplier/ Class II local Supplier/ Nonlocal supplier and purchase preference to Class I local supplier, is 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 this NIT.</p>	<input type="checkbox"/> Accepted												
18A	<p><u>BREACH OF CONTRACT, REMEDIES AND TERMINATION</u></p> <p>In case of breach of contract, BHEL shall have the right to terminate the Purchase Order either in whole or in part thereof without any compensation to the Supplier.</p> <p>The following shall amount to breach of contract:</p> <p>(i) Non-supply of material by the Supplier within scheduled delivery as per contract or as extended from time to time. (ii) The Supplier delivers material not of the contracted quality. (iii) The Supplier fails to replace the defective material as per guarantee clause. (iv) Assignment, transfer, subletting of Contract by the Supplier without BHEL's written permission resulting in termination of Contract or part thereof by BHEL. (v) Non-compliance to any contractual condition or any other default attributable to Supplier. (vi) Any other reason(s) attributable to supplier towards failure of performance of contract. (vii) Any of the declarations furnished by the supplier at the time of bidding and/ or entering into the contract for supply are found untruthful and such declarations were of a nature that could have resulted in non-award of contract to the contractor or could expose BHEL and/ or Owner to adverse consequences, financial or otherwise. (viii) Supplier/Vendor is convicted of any offence involving corrupt business practices, antinational activities or any such offence that compromises the business ethics of BHEL, in violation of the Integrity Pact entered into with BHEL has the potential to harm the overall business of BHEL/ Owner. (ix) Note-Once BHEL considers that a breach of contract has occurred on the part of Supplier, BHEL shall notify the Supplier by way of notice in this regard. Supplier shall be given an opportunity to rectify the reasons causing the breach of contract within a period of 14 days. In case the contractor fails to remedy the breach, as mentioned in the notice, to the satisfaction of BHEL, BHEL shall have the right to take recourse to any of the remedial actions available to it under the relevant provisions of contract.</p>	<input type="checkbox"/> Accepted												

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Contact Detail: Name Cell No.: E-mail :

<p>18B</p>	<p>REMEDIES IN CASE OF BREACH OF CONTRACT</p> <p>(i) Wherein the period as stipulated in the notice issued under clause 20.ix has expired and Supplier/Vendor has failed to remedy the breach, BHEL will have the right to terminate the contract on the ground of "Breach of Contract" without any further notice to contractor.</p> <p>(ii) Upon termination of contract, BHEL shall be entitled to recover an amount equivalent to 10% of the Contract Value for the damages on account of breach of contract committed by the Supplier. This amount shall be recovered by way of encashing the security instruments like performance bank guarantee etc.available with BHEL against the said contract. In case the value of the security instruments available is less than 10% of the contract value, the balance amount shall be recovered from other financial remedies (i.e. available bills of the Supplier, retention amount, from the money due to the Supplier etc. with BHEL) or the other legal remedies shall be pursued.</p> <p>(iii) wherever the value of security instruments like performance bank guarantee available with BHEL against the said contract is 10% of the contract value or more, such security instruments to the extent of 10% contract value will be encashed. In case no security instruments are available or the value of the security instruments available is less than 10% of the contract value, the 10% of the contract value or the balance amount, as the case may be, will be recovered in all or any of the following manners:</p> <p>(iv) In case the amount recovered under sub clause (a) above is not sufficient to fulfil the amount recoverable then; a demand notice to deposit the balance amount within 30 days shall be issued to Supplier.</p> <p>(v) If Supplier fails to deposit the balance amount within the period as prescribed in demand notice, following action shall be taken for recovery of the balance amount:</p> <p>a) From dues available in the form of Bills payable to defaulted Supplier against the same contract.</p> <p>b) If it is not possible to recover the dues available from the same contract or dues are insufficient to meet the recoverable amount, balance amount shall be recovered from any money(s) payable to Supplier under any contract with other Units of BHEL including recovery from security deposits or any other deposit available in the form of security instruments of any kind against Security deposit or EMD.</p> <p>(vi) In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against defaulted supplier/Vendor.</p> <p>(vii) It is an agreed term of contract that this amount shall be a genuine pre-estimate of damages that BHEL would incur in completion of balance contractual obligation of the contract through any other agency and BHEL will not be required to furnish any other evidence to the Supplier/Vendor for the purpose of estimation of damages.</p> <p>(viii) In addition to the above, imposition of liquidated damages, debarment, termination, de-scoping, short-closure, etc., shall be applied as per provisions of the contract</p> <p>Note: 1) The defaulting Supplier shall not be eligible for participation in any of the future enquiries floated by BHEL to supply the balance or whole material. The defaulting supplier shall mean and include:</p> <p>(a) In case defaulted Supplier is the Sole Proprietorship Firm, any Sole Proprietorship Firm owned by same Sole Proprietor.</p> <p>(b) In case defaulted Supplier is The Partnership Firm, any firm comprising of same partners/ some of the same partners; or sole proprietorship firm owned by any partner(s) as a sole proprietor.</p>	<p><input type="checkbox"/> Accepted</p>
<p>19</p>	<p>" Grievance Redressal Mechanism</p> <p>To promote transparency and ensure fair treatment of all bidders, a structured Grievance Redressal Mechanism is in place to address any concerns or issues arising during the tendering process or in subsequent business dealings with the company.</p> <p>Suppliers/Contractors are requested to follow the below escalation process for grievance resolution:</p> <p>1. First Level: Any grievance should initially be addressed to the designated Dealing Officer, whose contact details are provided in the Notice Inviting Tender (NIT)/Contract.</p> <p>2. Second Level: If the issue remains unresolved, it may be escalated by lodging a formal grievance through the SUVIDHA Portal: https://suvudha.bhel.in/suvudha/. Responses will be provided in accordance with the defined escalation matrix."</p>	<p><input type="checkbox"/> Noted</p>

Sign of Authorized Signatory Company seal :

Contact Detail: Name Cell No.: E-mail :

20	<p>PVC Clause: Suppliers have to quote rates on for BHEL Jhansi basis with PVC as under:</p> <p>Rate of Copper (Cu) is to be referred from IEEMA Circular for PVC Calculation. The price of Copper Wire Rod for the month of March-2026 (from IEEMA circular no. IEEMA(PVC)/PWR_DIST_TRF (R-1)/03/206) has been taken as Base Rate of Copper (Cu) for this tender.</p> <p>Base Rate of Copper (Cu) = ₹ 1245.400 / Kg. For Each ₹ 1.00 / Kg. variation in the price of Copper wire Rod the Basic Price of quoted item shall vary as follows:</p> <p>For Enquiry Item #1: ₹ 1.00 : ₹ 98.00 / NO. (Copper weight is 98.00 Kg per No. for Enq. #1)</p> <p>a)For PVC calculation final rate of copper wire rod (from IEEMA circular) shall be taken one month prior from PO delivery or Actual delivery whichever is lower. b)In case of earlier supply, given in writing by BHEL w.r.t. contractual delivery as given in contract- for PVC calculation, final rate of copper wire rod (from IEEMA circular) shall be taken one month prior to actual delivery. Vendors are also requested to note the below mentioned points while quoting-</p> <p>The Definition of Schedule Delivery is as under: - If delivery schedule of a particular Lot mentioned in contract is 25-05-2026 to 10-07-2026, the month of Jul-2026 shall be taken as Scheduled Delivery month and Rate shall be calculated accordingly as per PVC formulae mentioned above.</p>	<input type="checkbox"/> Accepted
21	Supplier's Nature of Business	<input type="checkbox"/> Manufacturer <input type="checkbox"/> Trader
22	Vendor to submit duly signed with seal PQR criteria form in complete manner (Annexure-IV) with all supporting documents.	<input type="checkbox"/> Submitted
23	Vendor to submit declarartion regarding "Conflict of Interest (Annexure-V)"	<input type="checkbox"/> Submitted
24	Enquiry due date and time of NIC tender should be treated as final due date of enquiry	<input type="checkbox"/> Accepted
25	If bidder do not accept any of the above clause or failed to submit any of the desired documents, their offer shall be liable for rejection.	<input type="checkbox"/> Accepted
26	Mention deviation,if any.	<input type="checkbox"/> N/A
27	The above terms and conditions shall be read in conjunction with BHEL's standard terms and conditions of Enquiry. Wherever difference in terms and conditions is there, the terms and conditions mentioned in this mandatory sheet shall prevail.	<input type="checkbox"/> Accepted
28	In case of deviation in acceptance given on this sheet from anywhere in your offer, acceptance given in this mandatory sheet shall be treated as final.	<input type="checkbox"/> Accepted

Sign of Authorized Signatory Company seal :

Contact Detail: Name Cell No.: E-mail :

BLANK PRICE BID (Annexure- II)

Enquiry No.: E26260004

Name of the Bidder/ Bidding Firm / Company :						
<u>PRICE SCHEDULE</u>						
NUMBER #	TEXT #	TEXT #	NUMBER #	TEXT #	TEXT #	TEXT #
Sl. No.	Item Description	Item Code / Make	Quantity	Units	Quoted Currency in INR / Other Currency	Supplier Response (Please Tick) Quoted or Not Quoted
1	2	3	4	5	12	13
1.01	1.1KV, 5000 AMPS. FIBER BOARD AND BUSHING WITH COPPER BAR AS PER DRG.NO.24678350029, REV.01.	TR673790G610	2	NO.	INR	<input type="checkbox"/> Quoted / <input type="checkbox"/> Not Quoted

Supplier Sign and Seal



BHARAT HEAVY ELECTRICALS LIMITED JHANSI – 284120

(A Govt. of India undertaking)

MATERIAL MANAGEMENT

E26260004

Annexure-III

DECLARATION OF LOCAL CONTENT AS PER PREFERENCE TO MII ORDER-2017

Date:

To,
Bharat Heavy Electricals Limited
Khailar, Jhansi, U.P.-284120

Subject: - Certification regarding Local Content

Reference: Tender enquiry NO.....

Name of items:

Dear Sir,

We hereby certify that the quoted items offered by us against above Enquiry is having local content of

Further, to certify that the local content % certified above is in line with definition of Local content given in point no. 2 Of Public Procurement (Preference to Make in India), Order 2017 and we qualify as (Class-I/Class- II/Non-Local supplier — fill in one which is applicable) local supplier.

We further confirm that details of location at which the local value addition is made will be at.....

I hereby declare that the details furnished above are true and correct to the best of my knowledge and belief and I undertake to inform you of any changes therein, immediately. In case any of the above information is found to be false or untrue or misleading or misrepresenting, I am aware that I may be held liable for it.

Regards,

Supplier Sign and Seal



DECLARATION REGARDING CONFLICT OF INTEREST

To,
Bharat Heavy Electricals Limited
Khailar, Jhansi, U.P.-284120

Subject: - Certification regarding Conflict of Interest

Reference: Tender Enquiry No.

Dear Sir,

We declare that we have read and understood the **below mentioned aspects** regarding conflict of interest, and we confirm that such conflict of interest does not exist and undertake that we will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s), in this regard. This applies in particular to prices, specifications, certifications, Subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, we are found having indulged in above activities, the same will be considered as a violation of the tender conditions, and suitable action shall be taken by BHEL as per extant policies/guidelines.

Aspects regarding conflict of interest-

“The bidder notes that a conflict of interest would said to have occurred in the tender process and execution of the resultant contract, in case of any of the following situations:

i) If its personnel have a close personal, financial, or business relationship with any personnel of BHEL who are directly or indirectly related to the procurement or execution process of the contract, which can affect the decision of BHEL directly or indirectly;

ii) The bidder (or his allied firm) provided services for the need assessment/ procurement planning of the Tender process in which it is participating;

iii) Procurement of goods directly from the manufacturers/suppliers shall be preferred. However, if the OEM/ Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than One manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. In case bids are received from both the manufacturer/ supplier and the agent, bid received from the agent shall be ignored. However, this shall not debar more than one Authorised distributor (with/ or without the OEM) from quoting equipment manufactured by an Original Equipment Manufacturer (OEM) in procurements under a Proprietary Article Certificate.

iv) A bidder participates in more than one bid in this tender process. Participation in any capacity by a Bidder (including the participation of a Bidder as a partner/ JV member or sub-contractor in another bid or vice-versa) in more than one bid shall result in the disqualification of all bids in which he is a party. However, this does not limit the participation of an entity as a sub-contractor in more than one bid if he is not bidding independently in his own name or as a member of a JV.”



TSD 6206 A

PLANT PURCHASING SPECIFICATION

BHOPAL

BP 22492

Rev. No. 02

PAGE 1 OF 4

SUPERSEDES
BP 22492(Rev.01)EPOXY GLASS MAT SHEET SUPERIOR QUALITY

1. GENERAL:

This specification governs the quality of epoxy resin impregnated 'E' glass fibre mat swirl or random laid having high mechanical strength, good electrical properties, low water absorption. The material has a temperature index of at least 155.

2. APPLICATION:

Used for slot wedge applications where high mechanical strength including edge impact resistance is required.

3. COMPLIANCE WITH NATIONAL STANDARDS:

There is no Indian Standard covering this type of material.

4. DIMENSIONS AND TOLERANCES:

4.1 Sizes

Thickness x Width x Length of the sheet shall be as stated on the order. Components machined out of sheet can also be ordered to drawings.

4.2 Tolerances on nominal thickness

Unless otherwise specified, the tolerance on nominal thickness shall be as given below:

Nominal thickness (mm)		Tolerance
Above	Upto & incld.	(±) mm
-	6	0.6
6	10	0.8
10	20	1.0
20	30	1.2
30	40	1.5
40	50	1.8
50	60	2.0

Revision : ● Reviewed & Reaffirmed
● Brought upto date.

Issued by : *J. K. Samant*
STANDARDS AND MATERIALS GROUP
TECHNICAL SERVICES DEPARTMENT

Rev. No. : 02

Date : 28.5.97

Date of first issue : 3.11.1981

**4.3 Tolerances on Width & Length**

Unless otherwise specified, the tolerance on width and length shall be as given below:

<u>Size, mm</u>	<u>Tolerance, (±)</u>
Below 1000	35
Above 1000	50

5. FINISH:

The surface of the sheets shall be even, smooth, free from visible defects like blisters, loose fibres, resin concentration, wrinkles, local deformation and dents. The sheet shall be supplied with trimmed edges.

6. COMPOSITION:**6.1 Glass Mat**

Type 'E' glass containing not more than 1% of alkali metal oxide Na_2O .

6.2 Resin

The resin shall be thermosetting epoxy resin, the identity of which shall be disclosed to, and approved by the purchaser.

7. MANUFACTURE:

The material comprises a swirl or random laid mat of glass fibres saturated with epoxy resin fully cured under heat and pressure.

No change in resin formulation, type of glass or any other aspect of manufacture shall be made without first advising the purchaser of such change and getting approved.

8. TEST METHODS:

Unless otherwise specified, the tests shall be conducted in accordance with Corporate Standard AA 085 17 01 & AA 085 17 16.

9. SAMPLE FOR TEST:

Three sheets of ordered thickness and size 300 x 300 mm, prepared from the same batch, shall be supplied for testing.

10. PHYSICAL PROPERTIES:**10.1 Specific Gravity**

1.85 g/cc, Min.



TSD 6207 A

PLANT PURCHASING SPECIFICATION

BHOPAL

BP 22492

Rev. No. 02

PAGE 3 OF 4

10.2 Water Absorption

0.15%, Max.

10.3 Resin Content

40 ± 5%

10.4 Marten's Heat Distortion Temperature

160°C, Min.

11. MECHANICAL PROPERTIES:**11.1 Tensile Strength**275 N/mm² Min.**11.2 Cross-Breaking Strength****11.2.1 As received Condition : 310 N/mm², Min.****11.2.2 After heating at 150 ± 3°C for : 120 N/mm², Min.
1 hour and tested at 150 ± 3°C.****11.3 Shear Strength**100 N/mm², Min.**11.4 Compression Strength - Proof**400 N/mm²,**11.5 Impact Strength - Charpy, Edgewise**100 KJ/m², Min.**11.6 Machinability**

Shall be capable of being sawn, milled, drilled and tapped with a M3.5 tap and being shaped in a shaping machine without showing any sign of cracking or chipping.

12. ELECTRICAL PROPERTIES:**12.1 Electric Strength (Proof) in oil at 90 ± 2°C****12.1.1 Flatwise (upto 3 mm tk) : 12 kV/mm****12.1.2 Edgewise (Above 3 mm tk) : 70 kV.****12.2 Insulation resistance after 24 hours immersion in water at 27°C: 2000 Megohms, Min.****12.3 Comparative Tracking Index**

190, Min.



TSD 6207 A

PLANT PURCHASING SPECIFICATION**BHOPAL****BP 22492****Rev. No. 02****PAGE 4 OF 4****13. TEST CERTIFICATE:**

Unless otherwise specified three copies of test certificates shall be supplied.

In addition, the supplier shall ensure to enclose one copy of test certificate alongwith their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

**BP 22492 : Epoxy glass Mat Sheet - Superior Quality
Rev 02**

BHEL Order No.

Supplier's Reference

Batch /Lot No.

**Test values obtained/certificate for compliance for clause
10 to 12**

13. PACKING AND MARKING :

Identification slips shall be pasted suitably on all four corners of each board giving the size of the board and manufacturer's Code Number/grade. The boards shall be suitably packed in wooden case lined with water proof paper from inside, Each sheet should be separated from other sheet by a thick paper or card-board.

Each package shall be marked with the following information.

BP 22492 : Epoxy Glass Mat Sheet - Superior Quality

BHEL Order No.

Supplier's Name & Grade

Batch/Lot No.

Thickness, Width and Length

No. of sheets

Net weight and Gross Weight

Test Certificate No.



CORPORATE PURCHASING SPECIFICATION

AA 120 03

Rev. No. 04

PREFACE SHEET

COPPER STRIP – HARD

FOR INTERNAL USE ONLY

REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Comparable Standards:

1. INDIAN : IS : 1897 – 2008 , Gr.HD – Hard

Suggested/Probable Suppliers and Grades:

Refer plant vendors list.

User Plant References:

1. BHOPAL : PS 12003 (Strips)
PS 12056

Revisions :

Cl: 24.1 of MOM of MRC-NFCW+HE

APPROVED :

INTERPLANT MATERIAL RATIONALISATION
COMMITTEE-MRC (NFCW+HE)

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Year :

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Corp. R&D

December, 1978



CORPORATE PURCHASING SPECIFICATION

AA 120 03

Rev. No. 04

PAGE 1 OF 5

COPPER STRIP – HARD

1.0 GENERAL:

This specification governs the quality requirements of bright annealed bare Copper strip of thickness over 0.15 mm and upto 10 mm and widths upto 800 mm with radiused edges.

2.0 APPLICATION:

Used for general electrical purposes such as bus bars, transformers, switchgears etc.

3.0 CONDITION FO DELIVERY:

The strip shall be supplied in annealed condition, in coils or straight lengths as specified in BHEL order. The strips shall be supplied with their edges radiused as per clause 5.3.

4.0 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: 1897 – 2008 : Copper strips - for Electrical Purposes.
Gr.HD – Hard

5.0 DIMENSIONS AND TOLERANCES:

5.1 Sizes: Copper Strips shall be supplied to the dimensions specified in BHEL order:

5.2 Tolerances:

Tolerances on width, thickness, length and straightness shall be as per IS:3052, reproduced below.

5.2.1 Width:

5.2.1.1 Tolerance on width for rotary sheared strip upto 4mm thickness shall be as follows:

Width, mm			Tolerance, ±mm			
Over	upto and incl.	upto and incl. 0.25 thick	over 0.25 upto & incl 0.55 thick	over 0.55 upto & incl. 1.0 thick	over 1.0 upto & incl. 2.0 thick	over 2. upto & incl. 4.0 thick
-	10	-----By agreement-----				
10	50	0.10	0.15	0.2	0.3	-
50	100	0.15	0.20	0.3	0.5	0.6

Revisions : Cl: 24.1 of MOM of MRC-NFCW+HE			APPROVED : INTERPLANT MATERIAL RATIONALISATION COMMITTEE-MRC (NFCW+HE)		
Rev. No. 04	Amd.No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
Dt: 06.06.2012	Dt :	Year :	BHOPAL	Corp. R&D	December, 1978

CORPORATE PURCHASING SPECIFICATION



100	200	0.20	0.30	0.5	0.6	0.8
200	400	0.30	0.50	0.6	0.8	1.0
400	600	0.50	0.60	0.8	1.0	1.4
600	800	0.60	0.80	1.0	1.4	1.6

5.2.1.2 Tolerance on width for guillotine sheared strip above 4 mm thick shall be as follows:

Width, mm		Tolerance, \pm mm	
Over	upto & Incl.	over 4.0 upto & incl.5.0 thick	over 5.0 upto & incl.10.0 thick
---	500	2	3
500	800	3	4

5.2.2 Thickness:
Tolerance on thickness shall be as follows:

Thickness, mm			Tolerance, \pm mm			
Over	upto and incl.	upto and incl. 160 wide	over 160 upto & incl. 300 wide	over 300 upto & incl. 450 wide	over 450 upto & incl. 630 wide	over 630 upto & incl. 800 wide
0.16	0.20	0.015	0.020	0.025	0.03	0.04
0.20	0.63	0.020	0.025	0.03	0.04	0.05
0.63	0.90	0.025	0.030	0.04	0.05	0.06
0.90	1.20	0.030	0.04	0.05	0.06	0.07
1.20	2.00	0.040	0.05	0.06	0.07	0.09
2.00	2.80	0.050	0.05	0.07	0.09	0.11
2.80	3.50	0.060	0.07	0.09	0.11	0.14
3.50	4.50	0.070	0.09	0.11	0.14	0.17
4.50	6.00	0.090	0.11	0.14	0.17	0.20
6.00	8.00	0.110	0.14	0.17	0.20	0.25
8.00	10.0	0.140	0.17	0.20	0.25	0.30

5.2.3 Length (Rotary Sheared):

Length, mm		Tolerance, \pm mm
Over	upto & incl.	
160	1000	3
1000	2000	6
2000	4000	9

5.2.4 Straightness:
The edges of strips supplied in straight lengths shall not vary from a straight line by more than 3 mm in any 1000 mm length.



CORPORATE PURCHASING SPECIFICATION

AA 120 03

Rev. No. 04

PAGE 3 OF 5

5.3 Radius on Edges:

The strip shall be supplied with edges radiused as per IS:1897, reproduced below:

Thickness, mm		Nominal radius on edge, mm	Tolerance on radius, mm
Over	up to & incld.		
--	1.00	semi-circular	± 0.06
1.0	1.60	0.60	+ 0.15 - 0.10
1.6	2.25	0.80	± 0.15
2.25	3.55	1.00	± 0.20
3.55	10.00	1.25	± 0.25

6.0 MANUFACTURE:

The material shall be manufactured from copper of ETP grade conform to IS:191.

The conductor shall be manufactured from ETP grade copper conforming to BHEL specification: AA 12024: Electrolytic Tough Pitch Copper Wire/Bars/Ingots/Continuously cast wire rods.

NOTE: It is preferable to manufacture conductor from continuously cast copper rods provided all other parameters and conditions remain same.

7.0 FREEDOM FROM DEFECTS:

The material shall be clean, bright, smooth and free from harmful defects.

8.0 CHEMICAL COMPOSITION:

The analysis of copper when analysed in accordance with IS: 440 or any other conventional/instrumental methods shall be as follows:

Element	Percent, min.	Percent, max.
Copper and Silver	99.90	--
Bismuth*	--	0.001
Lead*	--	0.005
Total of all impurities excluding silver and oxygen excl. silver and oxygen	--	0.030

* These elements need not be determined when the material supplied conforms with mechanical and electrical properties specified in this specification. However, the supplier shall ensure that the composition of the material lies within the limits specified above.

9.0 TEST SAMPLES:

One sampling per size per melt per consignment of 3 tonnes or part thereof shall be taken for chemical, mechanical and electrical tests.

The sample shall be cut off cold and shall receive no further treatment before being tested.

CORPORATE PURCHASING SPECIFICATION



10.0 MECHANICAL PROPERTIES:

10.1 Tensile strength (For sizes over 0.5mm to 10mm thick):

The test samples, when tested in accordance with IS:1608 shall show the following properties:
IS:1608 , shall show the following properties:

Thickness mm		Tensile Strength, N/mm ² Minimum	
		For widths	
Over	upto & incl.	Upto & incl.3000 mm	Over 300 mm & Upto & Incl. 800 mm.
0.50	2.50	310	285
2.50	10.00	295	275

10.2 Bend Test:

The strip shall not be subjected to transverse bend test. where this is not possible, it shall be subjected to a longitudinal bend test. The strip when tested in accordance with IS: 1897 shall withstand a close bend test, through an angle of 180°, without showing any sign of cracks or failures upon the convex surface of the bend.

10.3 Hardness (Vickers):

When tested in accordance with IS:1501, the strips shall have a Vickers hardness not exceeding 90 HV, min.

11.0 ELECTRICAL RESISTIVITY (AS RECEIVED):

When measured in accordance with IS: 3635, the electrical resistivity at 20^o C shall not be greater than 0.01777 ohm-mm²/metre, which is equivalent to an electrical conductivity of 97%, minimum of IACS standard. (Refer Appendix B of IS: 613 for temperature correction factor).

Alternatively, the method of measurement employing eddy current probes as per ASTM E 1004 is also acceptable.

12.0 INSPECTION AT SUPPLIER'S WORKS:

Whenever specified, tests and inspection are to be conducted in the presence of BHEL'S representative.

The supplier shall offer BHEL'S representative all reasonable facilities, without charge to satisfy the latter that the material is being furnished in accordance with this specification.



CORPORATE PURCHASING SPECIFICATION

AA 120 03

Rev. No. 04

PAGE 5 OF 5

The supplier shall prepare and provide necessary test specimens for testing to be carried out at his premises. If facilities are not available at his carrying out the prescribed tests elsewhere. The supplier shall notify BHEL in advance about the readiness of the material for inspection and BHEL reserves the right to test the material at BHEL'S works and the final acceptance of the testing.

BHEL reserves the right to test the material at BHEL's works and the final acceptance of the material shall be based on these test results.

13.0 TEST CERTIFICATES:

Unless otherwise specified, three copies of test certificates shall be supplied along with each consignment.

In addition, the supplier shall ensure to enclose one copy of the test certificate along with their despatch documents to facilitate quick clearance of the material.

The test certificate shall bear the following information:

AA 120 03, Rev 04: Copper strip – Hard

BHEL Order No,

Manufacturer's/Supplier's Name :

Lot/Identification/Batch/Melt No.

Sizes and Quantity Supplied

Results of dimensional inspection, chemical analysis, mechanical and electrical tests called for in this specification.

14.0 PACKING AND MARKING:

The material shall be supplied in coils or drums or in straight length as ordered. The minimum eye of coil or barrel diameter of drums shall be 250 mm.

The material not supplied in drums shall be hessian wrapped and tied with string and not with wire and shall be suitably protected to with wire and shall be suitably protected to avoid damage in transit. Each coil or drum or bundle shall be legibly marked or labeled with the following information.

Each coil or drum or bundle shall be legibly marked or labeled with the following information:

AA 12003 : Copper strip – Hard

BHEL Order No.

Manufacturer's/Supplier's Name :

Lot/Identification/Batch/Melt No.

Sizes and Quantity Supplied

15.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1. IS:191

2. IS:440

3. IS:613

4. IS: 1501

5. IS:1897

6. IS:1608

7. IS:3052

8. IS:3635

9. ASTM E 1004



CORPORATE PURCHASING SPECIFICATION

AA59802

Rev No.06

PREFACE SHEET

SYNTHETIC RUBBER BONDED CORK SHEETS, STRIPS & GASKETS

FOR INTERNAL USE ONLY

REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Comparable Standards:

- 1. INDIAN : IS: 4253 – Part – 2 – 1980
Gr: RC70A-Type C

Suggested/Probable Suppliers and Grades

User Plants and Replaced Plant Specifications/References:

- 1. BHOPAL : PS 24801 / Rev. 04
- 2. HYDERABAD : HY 59198

Revisions: Preface sheet & Clause 3.0, 8.1, 8.3 & 8.5

APPROVED:
INTERPLANT MATERIAL RATIONALISATION COMMITTEE – MRC(CPO+NM)

Rev No.06	Amd No.	Reaffirmed	Prepared	Issued	Dt. of 1 st Issue
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CORPORATE PURCHASING SPECIFICATION

AA59802

Rev No. 06

PAGE 1 of 4

SYNTHETIC RUBBER BONDED CORK SHEETS, STRIPS & GASKETS

1.0 GENERAL:

This specification governs the quality requirements of flexible resilient synthetic rubber bonded cork sheets-and-strips gaskets composed of uniformly granulated cork bonded with synthetic rubber of nitrile butadiene or neoprene rubber or a suitable mixture of these two.

2.0 APPLICATION:

Used as gasket material in transformers, switchgears, bushings, oil rigs etc.

3.0 COMPLIANCES WITH NATIONAL STANDARDS:

There is no National Standard covering this material. However, assistance has been drawn from the following National Standard.

IS: 4253 – Part – 2 – 1980 : Cork Composition Sheets –
Gr: RC70A-Type C Cork and Rubber.

4.0 DIMENSIONS AND TOLERANCES :

4.1 Sizes :

Length width and thickness of the sheet/strip shall be stated on the order. All the four edges of the sheet/strip shall be uniformly trimmed. Gaskets shall be supplied as per drawing accompanying the order.

Preferred Dimensions are given below:

Thickness

1, 1.6, 3, 5, 6, 10, 12, 15, 16 mm.

Width : Sheet : 610 & 925 mm, Strip : 60 mm.

Length : Sheet : 915mm, Strip : 20 metre without joints

4.2 Tolerances :

Unless otherwise stated on the order/drawing, tolerances shall be as given below:

4.2.1 On Length and Width :

4.2.1.1 For Sheets

Length and width: ± 3 mm

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Revisions: Preface sheet & Clause 3.0, 8.1, 8.3 & 8.5

APPROVED:
INTERPLANT MATERIAL RATIONALISATION
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01-01-1980

CORPORATE PURCHASING SPECIFICATION



4.2.1.2 For Strips

Width: ± 0.5 mm, **Length:** ± 10.0 mm

4.2.1.3 On Thickness :

The permissible variation in thickness at any point on the sheet shall be as given below:

Thickness, mm	Tolerance
UP to 2.5	± 10 %
Above 2.5	± 0.25 mm

5.0 MANUFACTURE:

Cork sheets manufactured by moulding and slicing process only are acceptable. 100/150 mm thick block is first moulded and cured under temperature and pressure. Then individual thicknesses are cut from the block on the slicing machine. Raw materials used shall be free from all impurities such as hard board, wood flour, dust, metallic particles and other foreign materials which may be detrimental to the serviceability of the gaskets. The material shall be capable of being cut or punched without cracking or tearing and shall have very good oil resistant properties.

Note:

- 1) Cork sheets manufactured by moulding individual thicknesses are not acceptable.
- 2) Fresh cork granules shall be used and grain size shall preferably be Fine.
i.e. passing through 1.00 mm IS sieve and retained by 425 micron IS sieve.

6.0 FINISH:

Shall be uniform in texture and colour, free from cracks and shall have a smooth finish.

7.0 TEST SAMPLES:

Following test samples in ordered thickness shall be supplied for testing

7.1 Sheets: 300 X 300 mm: 3 Nos.

7.2 Strip: 2 metre long 1 No in ordered width

7.3 Gaskets: 300 X 300 mm: 3 Nos, from the sheet used for making gaskets with proper correlation, along with 3 gaskets.

8.0 PROPERTIES:

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

8.1 Hardness (IS : 3400-Part II) :

70 ± 5 shore hardness A & D



CORPORATE PURCHASING SPECIFICATION

AA59802

Rev No.06

PAGE 3 of 3

8.2 Compression Set $110 \pm 2^\circ\text{C}$, (IS : 3400 - Part X):

85% maximum when tested on small type test specimens, except that duration of test shall be 24, +0, -2 hours and recovery time shall be 1 hour.

8.3 Tensile Strength (IS : 4253-Part II):

1550 kPa

8.4 Flexibility (IS : 4253-Part II) :

There shall be no breakage though the granules of cork or separation of the granules.

8.5 Compressibility And Recovery (IS : 4253-Part II):

Compressibility : 25 to 35%

Recovery : 80% Minimum.

Thickness of test piece shall be thickness of sheet/strip under test except that for sheet/strip of less than 6mm thickness sufficient no. of test pieces shall be stacked so as to built up thickness up to at least 6 mm.

8.6 pH Value of 5% Aqueous Extract (IS : 4253-Part II):

5 to 8.5

8.7 Density (Weight/Volume Method) :

0.65 to 0.9 g/cc.

Test shall be carried out on a sample of size 50cm² Min.

8.8 Side Flow Under Compression (For 6 mm thick sheets/strips and above) :

18% Max.

Test shall be carried out on a sample of size 22mm dia disc (4 cm²). This is compressed by 40% between the machined oil free flanges of a press at ambient temperature and diametric side flow shall be measured. The load shall be increased at a uniform rate to achieve 40% compression which shall be reached within 30±10 seconds, after which the load shall be maintained for a further period of 30±5 seconds. The side flow measurement shall be immediately determined. Thickness of test piece shall be thickness of sheet/strip under test.

8.9 Ageing In Oil :

Two test specimens of size at least 50 cm² and three test specimens of size 25 mm wide and 200 mm length from each direction in case of sheet & in longitudinal direction only for strips (for flexibility test) shall be cut from each sheet/strip in the sample from widely separated positions. The specimens shall be aged in insulating oil conforming to IS: 335 at 90 ± 2 deg. C for 72 ± 1 hour. After the oil is wiped by blotting paper. The specimens shall show the following properties

8.9.1 Finish :

Shall be free from cracks and blisters and there shall not be any disintegration of rubber and cork.

8.9.2 Flexibility :

There shall be no breakage through the granules of cork or separation of granules.

8.9.3 Change In Volume :

8% , maximum

CORPORATE PURCHASING SPECIFICATION



9.0 KEPING PROPERTY:

When stored under cover in a dry place in the original packing under normal temperature conditions, the material shall retain the properties prescribed in this specification for a period of not less than 24 months after the date of manufacture which shall not be earlier than one month of the scheduled delivery date mentioned in BHEL order.

The expiry date shall be marked clearly on each sheet/gasket/strip

10.0 TEST CERTIFICATES:

Unless otherwise stated three copies of test certificates shall be supplied along with each consignment.

In addition, the supplier shall ensure to enclose one copy of test certificates along with their despatch documents/packing or shipping list to facilitate quick clearance of the material. The test certificates shall bear the following information

AA59802, (Rev. 06): SYNTHETIC RUBBER BONDED CORK SHEETS, STRIPS & GASKETS

BHEL Order No.

Batch/lot no.

Manufacturer's / Supplier's name and grade.

Trade mark, if any.

No. of sheets/gaskets/strips supplied.

Size of sheet/strip

Drawing No. and item No (for Gaskets).

Date of manufacture and expiry

Tests Results of clauses 4.0, 6.0 and 8.0

11.0 PACKING AND MARKING:

The material shall be suitably packed to prevent damage during transit. Each package shall be legibly marked with the following information.

Individual sheet, strip at an interval of one meter and gasket shall be marked with supplier's Trade mark and Date of expiry using a permanent legible marking:

AA59802: SYNTHETIC RUBBER BONDED CORK SHEETS, STRIPS & GASKETS

BHEL Order No

Batch / lot no.

Manufacturer's/Supplier's name and grade.

Trade mark, if any

No. of sheets/gaskets/strip supplied.

Size of sheet/Strip

Drawing No. and item No (for Gaskets).

Date of manufacture and expiry.

12.0 REFERRED STANDARDS (Latest Publications Including Amendments):

1) IS:3400

2) IS:4253



CORPORATE PURCHASING SPECIFICATION

AA77015

Rev No.03

PREFACE SHEET

COPPER - PHOSPHORUS BRAZING ALLOY (BA Cu P5)

FOR INTERNAL USE ONLY

REMOVE THIS PREFACE BEFORE ISSUE TO SUPPLIERS

Equivalent/Comparable Standards:

- | | | |
|----|-----------|-----------------------------------|
| 1. | INDIAN | IS 2927-1975
Gr: BA Cu P5 |
| 2. | EURO NORM | DIN EN 1044-1999*
Grade CP102* |

* Nearest Equivalent

User Plants and Replaced Plant Specifications/References:

BHOPAL	P.S.77004-A
HYDERABAD	
HARIDWAR	

Revisions:
Brought upto date

APPROVED:
INTERPLANT MATERIAL RATIONALISATION
COMMITTEE – MRC(W)

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CORPORATE PURCHASING SPECIFICATION

AA77015

Rev No.03

PAGE 1 of 2

COPPER - PHOSPHORUS BRAZING ALLOY (BA Cu P5)

1 GENERAL

This specification governs the quality of Copper Phosphorus, Brazing Alloy for general purposes.

2 APPLICATION

Used for joining Copper and Copper alloys. These alloys are not recommended for ferrous and nickel bearing metals. Copper can be brazed without the use of the flux. However, for brazing copper alloys flux may be necessary.

3 CONDITION OF DELIVERY

Forms and sizes shall be as per Purchase Order requirement.

4 COMPLIANCE WITH STANDARDS

This specification is based on

IS 2927 – 1975 : “Specification for Brazing Alloys”
Grade BA Cu P5

5 DIMENSIONS AND TOLERANCES

5.1 Sizes

All dimensions and forms shall be as per the purchase order.

5.2 Tolerances

The variations in dimensions shall comply with table-11 of IS 2927.

6 MANUFACTURE

The brazing alloys may be manufactured by any method that shall yield a product which will be of uniform quality and conform to the requirements of this specification.

7 FREEDOM FROM DEFECTS

The brazing alloys shall be of uniform quality, clean and free from foreign matters.

NOTE — The melting ranges of the filler metals given in IS 2927 are for general information only.

8 TEST SAMPLES

A composite sample of 30 g from each lot of 50 kgs or fraction thereof shall be taken for chemical composition. The sample so selected shall be representative of the lot.

8.1 Samples from wire, strip, shall be taken by sawing or by any other mechanical means through their entire cross section and thoroughly mixed. No lubricant shall be used when sawing or machining.

8.2 Samples of powder or granulated brazing alloys shall contain the grains as supplied.

Revisions:
Brought upto date

APPROVED:
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DRC-R5113



9 CHEMICAL COMPOSITION

	Min	Max
Silver	14.50	15.50
Phosphorus	4.50	5.00
Copper	Remainder	
Other Elements Total	-	0.15

10 PHYSICAL PROPERTIES

Melting Range (Approx.)

Solidus	Liquidus
643°C	802° C

11 TEST CERTIFICATE

The supplier shall submit 5 copies of test certificate giving the following information

BHEL Order No.

BHEL Spec No. AA77015

Supplier's Name

Chemical composition

Consignment/Identification No.

Size/Form

Cast/Lot No.

12 MARKING AND IDENTIFICATION

On each straight length of wire/strip/powder the classification/grade shall be embossed or stamped at one end for positive identification. Alternatively an adhesive label shall be affixed carrying the classification/grade at one end of each wire/strip/powder such that the label shall not get peeled off while handling or storage for at least one year.

13 PACKING

These brazing alloys shall be suitably wrapped & boxed in wooden crates before despatched to protect it against damage during transport or under normal dry storage conditions.

AA77015: COPPER - PHOSPHORUS BRAZING ALLOY (BA Cu P5)

BHEL Order No.

Manufacturer's Name & Trade Mark.

Size/Form.

Weight.

14 REFERRED STANDARDS (Latest Publications including Amendments)

Nil



Form No. 2038

उत्पाद मानक
परिणामित्र
शाप/अभि. निर्देश

PRODUCT STANDARD
TRANSFORMER
SHOP/ENGG INSTRUCITONS

TR 10017P

1पृष्ठों में

PAGE 1 OF 1

TITLE : PLATING OF FERROUS & NONFERROUS PARTS & FASTENERS

SL. NO	PART/FASTENER	MATERIAL	MEDIUM IN WHICH USED	TYPE OF COATING	COATING THICKNESS	REMARKS
1.	BUS BAR, ROD, PLATE, LUG, JUMPER, PALM & ANY OTHER SECTION FOR CURRENT CARRYING	COPPER OR COPPER ALLOY CONTAINING MORE THAN 50% OF COPPER e.g. BRASS	AIR OR OIL	ELECTROPLATED COATING OF TIN (ET) GRADE Sn C OF IS:1359	LOCAL THICKNESS =15µm (MIN)	A. IF THE PART IS INSIDE TANK DURING PROCESSING CONTACT SURFACE ET. (JOINTED PORTION). ONE LAYER OF 50% OVERLAP WOUND CREPE PAPER TO AA21117 TYPE B. SEE TR10005P. B. IF THE PART IS NOT MOUNTED DURING PROCESSING CONTACT SURFACE-ET. UNJOINTED PORTION:- OIL RESISTANT AIR DRYING SYNTHETIC ENAMEL RED SHADE TO AA56132
2.	AIR END TERMINALS OF BUSHINGS, PRIMARY TERMINAL OF 400 KV, CT ETC.	COPPER OR COPPER ALLOY	AIR	ELECTROPLATED COATING OF SILVER	LOCAL THICKNESS=15 µm (MIN)	CLASSIFICATION NO. Cu/Ag. 10 AS PER IS:1771
3.	CAP, COLLER, BOLT, SPECIAL NUT WASHER & ANY OTHER ITEM (NORMALLY USED AROUND CURRENT CARRYING COMPONENT FORMING A CLOSED CIRCUIT FROM EDDY CURRENT CONSIDERATIONS	Cu OR Cu ALLOY/CONTAINING MORE THAN 50% OF Cu e.g. BRASS.	AIR OR OIL	ELECTROPLATED COATING OF TIN (ET) GRADE Sn 15 C OF IS : 1359	LOCAL THICKNESS =15µm (MIN)	(I) BOLT/SCREW HEAD, NUT OUTER SURFACE, SCREWED ROD/STUD ENDS SHALL BE TAKEN AS 'SIGNIFICANT SURFACE' FOR MEASUREMENT OF LOCAL THICKNESS AS PER CL:4-2.1.1 OF IS:1573 FOR ZPP & CL:2.1 OF IS:1359 FOR ET. (II) FOR ZPPOF HARDWARES OF P.CL. 10/10.9 & ABOVE & SPRING WASHERS SEE NOTE:3
4.	ALL TYPE OF HARDWARES / FASTENERS INCLUDING THOSE IN JOINTED PORTION OF CURRENT CARRYING PARTS. (STUDS, AUTOWELD STUDS, BOLT, NUT, PLAIN WASHER & SPRING WASHER ETC. SCREW	MAGNETIC STEEL (BLACK, BRIGHT, SHAFT, HIGH TENSILE, SPRING STEEL	AIR OR OIL	ELECTROPLATED COATING OF ZINC TO GRADE Fe/Zn 12.5 WITH CHROMATE CONVERSION COATING TYPE 'D' AS PER IS:1573	LOCAL THICKNESS 12.5µm (MIN)	



NOTES: 1. ALL DRAWINGS WHERE PLATING HAS BEEN CALLED WILL GIVE REFERENCE OF THIS DRG: i.e. ZPP/ET TO DRG. I.e. ZPP/ET TO TR10017P.
2. SILVER PLATING SHALL BE CALLED WHEN SPECIFICALLY ASKED FOR BY THE CUSTOMER.
3. HARDWARES OF P.CL. 10/10.9 & ABOVE & SPRING WASHER WHICH ARE REQUIRED TO BE ZPP SHALL BE HEAT TREATED BEFORE & AFTER PLATING FOR STRESS RELIEF & HYDROGEN EMBRITTELEMENT RELIEF AS PER IS: 1573.

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PAGE 1 OF 1

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