

MATERIAL DESCRIPTION & SPECIFICATION (Catalogue)

Enquiry Schedule No.	Item Detail	BHEL Material code
1.	Insulating Strip Drg: 4139360117400 Rev: 02 Spec: AA22415 Rev: 02	W90413900959
2.	Insulation Angle Drg: 31350401091 Rev: 03 Spec: AA22415 Rev: 02	W98413501580
3.	Insulating Screw Drg: 41431001191 Rev: 00 Spec: AA22415 Rev: 02	W98414301495
4.	Round Drg: 31430901115 Rev: 00 Spec: AA22415 Rev: 02	W98414301738
5.	Round Drg: 31430901116 Rev: 00 Spec: AA22415 Rev: 02	W98414301746
6.	Round Drg: 31430901104 Rev: 00 Spec: AA22415 Rev: 02	W98414301711
7.	Insulation Tube Drg: 31420501027 Var-03 Rev: 03 Spec: AA22415 Rev: 02	W98414200427

S No	Tender Term and Condition	Confirmation from bidder
General Requirements		
1.	Bidder to provide the documents as per pre-qualification requirements (PQR).	
2.	Bidder who fails to qualify Pre-qualification requirement, their offer will not be considered for technical evaluation and price bid opening part (part -2 of this tender).	
3.	Bidder to confirm that their quoted unit price in this tender is all-inclusive of basic rate, freight, insurance, packing & forwarding charges & any other charges if applicable + applicable GST.	
4.	Bidder to inform % of GST.	
5.	Term and condition shall be as per GeM T&C and GEM tender.	
6.	Confirm that there is no deviation with respect to BHEL Specifications. However, deviations, if any, are to be listed as a separate attachment. The offers that do not meet the substantial requirements of our enquiry are liable to be ignored. The bidders shall be deemed to comply with all the requirements of bidding documents except for listed deviations without any extra cost irrespective of any mention to the contrary anywhere else in the bid.	
QUALITY REQUIREMENTS		
1.	Vendor to submit Test Certificate (TCs) as per BHEL Specifications along with dispatch documents at the time of supply.	

2.	Vendor to submit Guarantee Certificate for satisfactory operation for a period of 12 months from the date of receipt & acceptance of material at BHEL works, along with dispatch documents at the time of supply.	
3.	Pre-Inspection will be done by BHEL / BHEL nominated inspection agency Intertek as per BHEL SQP "QA/BE/QP/323 Rev-11".	

Important Instruction to bidders.

1. Following attachment with this Catalogue for tender preparation.
 - Pre-qualification requirement (PQR)
 - FCA
 - BHEL SQP "QA/BE/QP/323 Rev-11"
2. All supporting document shall be sign and stamped by bidder.
3. FCA is required to be signed & stamped on every page after filling relevant details. Other cross-referred documents (Specifications &/or Drawings) can be obtained by email duly signed & Stamped FCA to bharat-b@bhel.in &/or puneet.krishna@bhel.in.

PRE-QUALIFICATION REQUIREMENTS (TECHNICAL) FOR INSULATING STRIP (AA22415)

INTRODUCTION: Insulating Strips (as per NEMA L1-1 Grade G11 or equivalent) are made from layers of fine & plain woven glass fabric (Non-Alkali Glass Type E) having suitable silane/volan finish with good electrical properties using thermosetting epoxy resin as bonding medium. The material has temperature index of Min.155°C. These sheet strips are used as an insulation in Turbo-Generator. Thickness tolerance of the sheet is 1 ± 0.05 mm and size is approx. 1500 x 250 mm.

1. **EXPERIENCE:** The vendor should have experience of successful manufacturing and supplying the above material of any thickness having thickness tolerance ≤ 0.05 mm to OEM of Turbo/Hydro-Generator/Rotating Electrical machines during last seven years from date of enquiry. In support of which, vendor to submit the following documents: -
 - 1.1. Unpriced Copies of two successfully executed purchase orders for above material, supplied to OEM of Turbo/Hydro-Generator/Rotating Electrical machines.
 - 1.2. Copy of Test Certificates (for dimensional, mechanical and electrical test, etc.) for the above item corresponding to the purchase orders submitted as per clause 1.1.
 - 1.3. Vendor to submit documentary evidence of acceptance of material, pertaining to purchase order submitted above as per clause 1.1.
2. **MANUFACTURING FACILITIES:** Vendor to confirm that they have all in-house manufacturing facilities for above Insulating Strip. Vendor to provide details of manufacturing facility required for manufacturing above Insulating Strip.
3. **TESTING FACILITIES:** Vendor to confirm that they have in-house test facilities (duly calibrated), sufficient to carry out all the test as per enquired specification AA22415 rev 02. Vendor to provide the details of testing facilities. In case vendor conducts test at an external testing agency, vendor to furnish the details of the same, e.g. NABL accredited/Government approved Lab.
4. The vendor shall source the raw material from reputed suppliers and shall furnish TC/details of the same to BHEL, along with the offer.
5. Vendor to confirm the detailed technical requirement of the enquired Specification AA22415 rev 02.
6. Vendor who is supplying this item to BHEL for the first time has to submit one complete set of samples as per Table – 1 for testing the material as per Clause 8,9 & 10 of BHEL specification AA22415 rev 02. Vendor will be qualified on the basis of successfully passing the test of submitted samples as per specification AA22415 rev 02 in addition to qualifying other requirement of PQR.

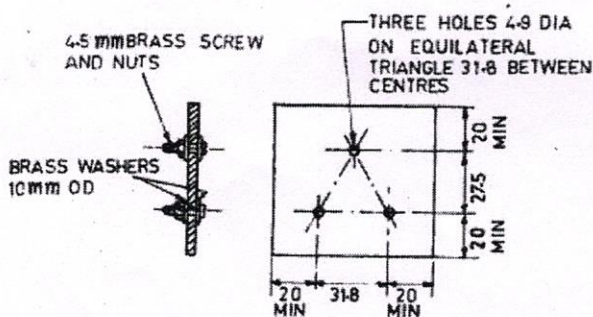


Fig. 12 Specimen And Electrodes

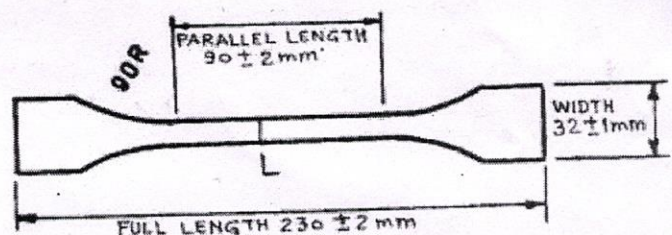


Fig. 1 Specimen for Tensile Strength Test.

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S.No	Test Parameter	Dimension (in mm)	Minimum No of samples
1	Specific Gravity	L/W/Tk = 20/20/10	2
2	MHDT	L/W/Tk = 120/15/10 (If sheet thickness is >10mm :Machine down to 10mm uniformly on both sides)	3
3	Water Absorption	L/W/Tk = 38/38/10 (If sheet thickness is >25mm:Machine down to 25mm leaving one surface intact)	2
4	Cross Breaking Strength at R.T	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
5	Cross Breaking Strength at 150°C)	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
6	Compression Strength	L/W/Tk = 15/15/25 (Layers can be buildup to achieve 25mm thickness of sample e.g. 15/15/10 & 15/15/5 samples piled up to make 15/15/25)	5
7	Impact Strength-Charpy Flatwise	L/W/Tk = 120/15/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
8	Electrical strength (Parallel to layers)	L/W/Tk = 100/25/10 (No surface machining allowed)	2
9	Heat shock test	L/W/Tk = 100 x 100 x 10 (No surface machining allowed)	2
10	Splitting load (Edgewise)	L/W/Tk = 20±0.2 /20±0.2/ 10±0.1 (Machine down to 10mm uniformly on both sides)	5
11	Insulation Resistance	L/W/Tk = Fig.12 / Fig.12 /10	2
12	Electrical strength (Perpendicular to layers)	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
13	Tan Delta	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
14	CTI	L/W/Tk = 20/20/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	2
15	Tensile Strength	Thickness: 10 mm. Other dimensions as per figure-1	5

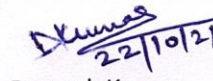
L: Length (in mm), W: Width (in mm), Tk: Thickness (in mm)

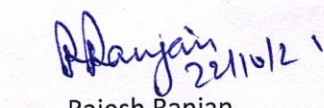
Sample machining must be done in a manner such that Length & Width side are parallel to Glass Fabric layers and Thickness is perpendicular to Glass Fabric layers.

NOTE

- BHEL reserves the right to verify the information submitted by the vendor. In case the information is found to be false or incorrect, the offer shall be rejected.
- All the documents should be furnished in English language only. If the document provided by vendor is in any language other than English, it must be supported with its certified English translation.


Nitin Raj 21/10/21
Manager / ISE & CPL


Deepak Kumar
Dy.Manager/ EME


Rajesh Ranjan
AGM / ISE, CPL & GRI

PRE-QUALIFICATION REQUIREMENTS (TECHNICAL) FOR INSULATION ANGLE (AA22415) Mat code: W98413501580

INTRODUCTION: Insulation Angle (as per NEMA L1-1 Grade G11 or equivalent) are made from layers of fine & plain woven glass fabric (Non-Alkali Glass Type E) having suitable silane/volan finish with good electrical properties using thermosetting epoxy resin as bonding medium. The material has temperature index of Min.155°C. The material shall withstand Minimum 5KV, 1-minute proof for Insulation thickness 1.2 ± 0.1 mm.

1. **EXPERIENCE:** The vendor should have experience of successful manufacturing and supplying the above material of any thickness with thickness tolerance ≤ 0.1 m to OEM of Turbo/Hydro-Generator/Rotating Electrical machines during last seven years from date of enquiry. In support of which, vendor to submit the following documents: -
 - 1.1. Unpriced Copy of three successfully executed purchase order of Insulating components (as per above material) manufactured by Extrusion/ Hot Pressing Process having thickness tolerance ≤ 0.1 m to OEM of Turbo/Hydro-Generator/Rotating Electrical machines.
 - 1.2. Copy of one Test Certificate for the above material corresponding to any of the purchase orders submitted as per clause 1.1.
 - 1.3. Vendor to submit the documentary evidence of acceptance of material, pertaining to purchase order for which TC has been submitted as per clause 1.2.
2. **MANUFACTURING FACILITIES:** Vendor to confirm that they have all in-house manufacturing facilities for above Insulating Strip. Vendor to provide details of manufacturing facility required for manufacturing above Insulating Strip.
3. **TESTING FACILITIES:** Vendor to confirm that they have in-house test facilities (duly calibrated), sufficient to carry out all the tests as per enquired specification AA22415 rev 02. Vendor to provide the details of testing facilities. In case vendor get the tests conducted at an external testing agency, vendor to furnish the details of the same, e.g. NABL accredited/Government approved Lab.
4. The vendor shall source the raw material from reputed suppliers and shall furnish details of the same.
5. Vendor to confirm the detailed technical requirements given in the enquired specification & Drawing.
6. Vendor who is supplying this item to BHEL for the first time has to submit one complete set of samples as per Table – 1 for testing the material as per Clause 8,9 & 10 of BHEL specification AA22415 rev 02. Vendor will be qualified on the basis of successfully passing the test of submitted samples as per specification AA22415 rev 02 in addition to qualifying other requirement of PQR.

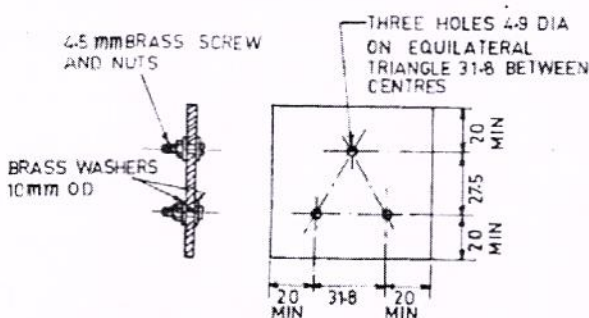


Fig. 12 Specimen And Electrodes

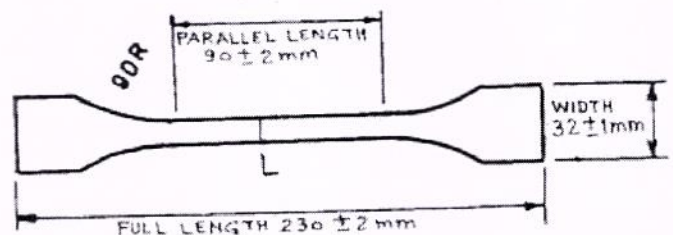


Fig. 1 Specimen for Tensile Strength Test.

[Signature]
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(NITIN RAS)
Manager/ISE&CPL

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24/01/2023
(PRATIBHA GUPTA)
Manager/EME

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(S. Majumdar)
DGM (ISE&CPL)
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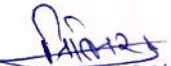
S.No	Test Parameter	Dimension (in mm)	Minimum No of samples
1	Specific Gravity	L/W/Tk = 20/20/10	2
2	MHDT	L/W/Tk = 120/15/10 (If sheet thickness is >10mm :Machine down to 10mm uniformly on both sides)	3
3	Water Absorption	L/W/Tk = 38/38/10 (If sheet thickness is >25mm:Machine down to 25mm leaving one surface intact)	2
4	Cross Breaking Strength at R.T	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
5	Cross Breaking Strength at 150°C)	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
6	Compression Strength	L/W/Tk = 15/15/25 (Layers can be buildup to achieve 25mm thickness of sample e.g. 15/15/10 & 15/15/5 samples piled up to make 15/15/25)	5
7	Impact Strength-Charpy Flatwise	L/W/Tk = 120/15/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
8	Electrical strength (Parallel to layers)	L/W/Tk = 100/25/10 (No surface machining allowed)	2
9	Heat shock test	L/W/Tk = 100 x 100 x 10 (No surface machining allowed)	2
10	Splitting load (Edgewise)	L/W/Tk = 20±0.2 /20±0.2/ 10±0.1 (Machine down to 10mm uniformly on both sides)	5
11	Insulation Resistance	L/W/Tk = Fig.12 / Fig.12 /10	2
12	Electrical strength (Perpendicular to layers)	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
13	Tan Delta	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
14	CTI	L/W/Tk = 20/20/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	2
15	Tensile Strength	Thickness: 10 mm. Other dimensions as per figure-1	5

L: Length (in mm), W: Width (in mm), Tk: Thickness (in mm)

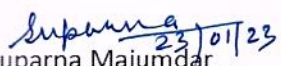
Sample machining must be done in a manner such that Length & Width side are parallel to Glass Fabric layers and Thickness is perpendicular to Glass Fabric layers.

NOTE

- BHEL reserves the right to verify the information submitted by the vendor. In case the information is found to be false or incorrect, the offer shall be rejected.
- All the documents should be furnished in English language only. If the document provided by vendor is in any language other than English, it must be supported with its certified English translation.


Nitin Raj 23/01/2023
Manager / ISE & CPL


Pratibha Gupta
Manager/ EME


Suparna Majumdar 23/01/23
DGM / ISE & CPL

PRE-QUALIFICATION REQUIREMENTS (TECHNICAL) FOR INSULATING SCREW (AA22415)

INTRODUCTION: Insulating screw are machined components, manufactured from Sheets (as per NEMA L1-1 Grade G11 or equivalent) made from layers of fine & plain woven glass fabric (Non-Alkali Glass Type E) having suitable silane/volan finish with good electrical properties using thermosetting epoxy resin as bonding medium. It is used in exciter diode assembly to electrically isolate diode assembly from diode wheel.

1. **EXPERIENCE:** The vendor should have experience of successful manufacturing and supplying the machined component, machined out of the sheet material mentioned above to OEM of Generator of capacity 200MW and above. In support of which, vendor to submit the following documents: -
 - 1.1. Unpriced Copies of two successfully executed purchase orders of the machined component (machined out of the sheet material mentioned above) to OEM of Generator of capacity 200MW and above.
 - 1.2. Copy of Test Certificates (for dimensional, mechanical and electrical test, etc.) for the above item corresponding to the purchase orders submitted as per clause 1.1.
 - 1.3. Vendor to submit documentary evidence of acceptance of material, pertaining to purchase order submitted above as per clause 1.1.
2. **MANUFACTURING FACILITIES:** Vendor to confirm that they have all in-house manufacturing facilities for above Insulating Screw. Vendor to provide details of manufacturing facility required for manufacturing above Insulating Screw.
3. **TESTING FACILITIES:** Vendor to confirm that they have in-house test facilities, sufficient to carry out all the test as per enquired specification AA22415 rev 02. Vendor to provide the details of testing facilities. In case vendor conducts test at an external testing agency, vendor to furnish the details of the same, e.g. NABL accredited/Government approved Lab.
4. The vendor shall furnish TC/details of the raw material required for manufacturing the enquired item.
5. Vendor to confirm the detailed technical requirement of the enquired Specification AA22415 rev 02.
6. Vendor who is supplying this material to BHEL for the first time has to submit one complete set of samples as per Table - 1 for testing the material as per Clause 8,9 & 10 of BHEL specification AA22415 rev 02. Vendor will be qualified on the basis of successfully passing the test of submitted samples as per specification AA22415 rev 02 in addition to qualifying other requirement of PQR.

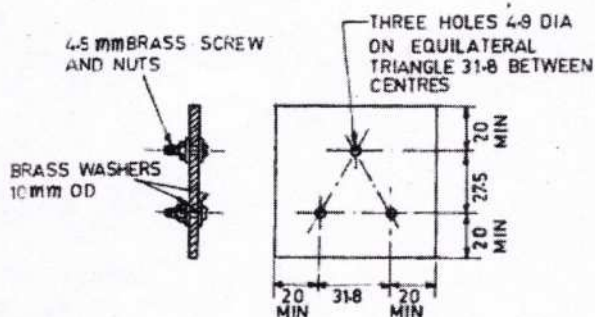


Fig. 12 Specimen And Electrodes

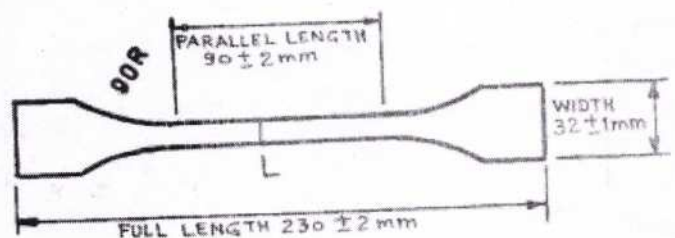


Fig. 1 Specimen for Tensile Strength Test.

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(NITIN RAJ)
Mgt/ISE&CPL

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TABLE - 1

S.No	Test Parameter	Dimension (in mm)	Minimum No of samples
1	Specific Gravity	L/W/Tk = 20/20/10	2
2	MHDT	L/W/Tk = 120/15/10 (If sheet thickness is >10mm :Machine down to 10mm uniformly on both sides)	3
3	Water Absorption	L/W/Tk = 38/38/10 (If sheet thickness is >25mm:Machine down to 25mm leaving one surface intact)	2
4	Cross Breaking Strength at R.T	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
5	Cross Breaking Strength at 150°C)	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
6	Compression Strength	L/W/Tk = 15/15/25 (Layers can be buildup to achieve 25mm thickness of sample e.g. 15/15/10 & 15/15/5 samples piled up to make 15/15/25)	5
7	Impact Strength-Charpy Flatwise	L/W/Tk = 120/15/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
8	Electrical strength (Parallel to layers)	L/W/Tk = 100/25/10 (No surface machining allowed)	2
9	Heat shock test	L/W/Tk = 100 x 100 x 10 (No surface machining allowed)	2
10	Splitting load (Edgewise)	L/W/Tk = 20±0.2 /20±0.2/ 10±0.1 (Machine down to 10mm uniformly on both sides)	5
11	Insulation Resistance	L/W/Tk = Fig.12 / Fig.12 /10	2
12	Electrical strength (Perpendicular to layers)	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
13	Tan Delta	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
14	CTI	L/W/Tk = 20/20/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	2
15	Tensile Strength	Thickness: 10 mm. Other dimensions as per figure-1	5

L: Length (in mm), W: Width (in mm), Tk: Thickness (in mm)

Sample machining must be done in a manner such that Length & Width side are parallel to Glass Fabric layers and Thickness is perpendicular to Glass Fabric layers.

NOTE

- BHEL reserves the right to verify the information submitted by the vendor. In case the information is found to be false or incorrect, the offer shall be rejected.
- All the documents should be furnished in English language only. If the document provided by vendor is in any language other than English, it must be supported with its certified English translation.


Nitin Raj 06/01/22
Manager / ISE & CPL


S.S. Meena
DGM/ EME

Rajesh Ranjan
AGM / ISE, CPL & GRI

PRE-QUALIFICATION REQUIREMENTS (TECHNICAL) FOR INSULATING ROUND (AA22415)

INTRODUCTION: Insulating Round are machined components, manufactured from Sheets (as per NEMA L1-1 Grade G11 or equivalent) made from layers of fine & plain woven glass fabric (Non-Alkali Glass Type E) having suitable silane/volan finish with good electrical properties using thermosetting epoxy resin as bonding medium. The material has temperature index of Min.155°C. The material has temperature index of Min.155°C. It is used in exciter lead assembly to provide insulation for earth fault monitoring slip rings.

1. **EXPERIENCE:** The vendor should have experience of successful manufacturing and supplying the machined component, machined out of the sheet material mentioned above to OEM of Generator of capacity 200MW and above. In support of which, vendor to submit the following documents: -
 - 1.1. Unpriced Copies of two successfully executed purchase orders of the machined component (machined out of the sheet material mentioned above) to OEM of Generator of capacity 200MW and above.
 - 1.2. Copy of Test Certificates (for dimensional, mechanical and electrical test, etc.) for the above item corresponding to the purchase orders submitted as per clause 1.1.
 - 1.3. Vendor to submit documentary evidence of acceptance of material, pertaining to purchase order submitted above as per clause 1.1.
2. **MANUFACTURING FACILITIES:** Vendor to confirm that they have all in-house manufacturing facilities for above Insulating Round. Vendor to provide details of manufacturing facility required for manufacturing above Insulating Round.
3. **TESTING FACILITIES:** Vendor to confirm that they have in-house test facilities, sufficient to carry out all the test as per enquired specification AA22415 rev 02. Vendor to provide the details of testing facilities. In case vendor conducts test at an external testing agency, vendor to furnish the details of the same, e.g. NABL accredited/Government approved Lab.
4. The vendor shall furnish TC/details of the raw material required for manufacturing the enquired item.
5. Vendor to confirm the detailed technical requirement of the enquired Specification AA22415 rev 02.
6. Vendor who is supplying this material to BHEL for the first time has to submit one complete set of samples as per Table – 1 for testing the material as per Clause 8,9 & 10 of BHEL specification AA22415 rev 02. Vendor will be qualified on the basis of successfully passing the test of submitted samples as per specification AA22415 rev 02 in addition to qualifying other requirement of PQR.

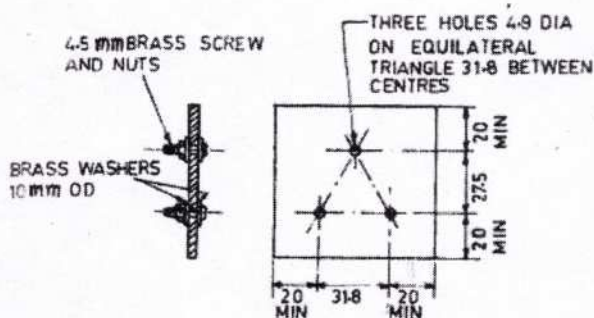


Fig. 12 Specimen And Electrodes

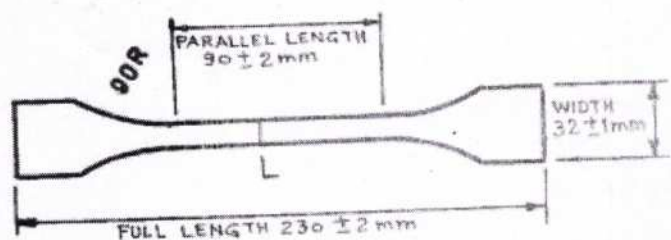


Fig. 1 Specimen for Tensile Strength Test.

(Signature)
(NITIN RAS)
Mgt / ISE&CPL

(Signature)

(Signature) 07/01/22

TABLE - 1

S.No	Test Parameter	Dimension (in mm)	Minimum No of samples
1	Specific Gravity	L/W/Tk = 20/20/10	2
2	MHDT	L/W/Tk = 120/15/10 (If sheet thickness is >10mm :Machine down to 10mm uniformly on both sides)	3
3	Water Absorption	L/W/Tk = 38/38/10 (If sheet thickness is >25mm:Machine down to 25mm leaving one surface intact)	2
4	Cross Breaking Strength at R.T	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
5	Cross Breaking Strength at 150°C)	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
6	Compression Strength	L/W/Tk = 15/15/25 (Layers can be buildup to achieve 25mm thickness of sample e.g. 15/15/10 & 15/15/5 samples piled up to make 15/15/25)	5
7	Impact Strength-Charpy Flatwise	L/W/Tk = 120/15/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
8	Electrical strength (Parallel to layers)	L/W/Tk = 100/25/10 (No surface machining allowed)	2
9	Heat shock test	L/W/Tk = 100 x 100 x 10 (No surface machining allowed)	2
10	Splitting load (Edgewise)	L/W/Tk = 20±0.2 /20±0.2/ 10±0.1 (Machine down to 10mm uniformly on both sides)	5
11	Insulation Resistance	L/W/Tk = Fig.12 / Fig.12 /10	2
12	Electrical strength (Perpendicular to layers)	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
13	Tan Delta	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
14	CTI	L/W/Tk = 20/20/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	2
15	Tensile Strength	Thickness: 10 mm. Other dimensions as per figure-1	5

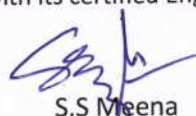
L: Length (in mm), W: Width (in mm), Tk: Thickness (in mm)

Sample machining must be done in a manner such that Length & Width side are parallel to Glass Fabric layers and Thickness is perpendicular to Glass Fabric layers.

NOTE

- BHEL reserves the right to verify the information submitted by the vendor. In case the information is found to be false or incorrect, the offer shall be rejected.
- All the documents should be furnished in English language only. If the document provided by vendor is in any language other than English, it must be supported with its certified English translation.


Nitin Raj 07/10/22
Manager / ISE & CPL


S.S. Meena
DGM/ EME


Rajesh Ranjan
AGM / ISE, CPL & GRI

PRE-QUALIFICATION REQUIREMENTS (TECHNICAL) FOR INSULATING TUBE (AA22415)

INTRODUCTION: Insulating Tubes are made by rolling process using fine & plain woven glass fabric (Non-Alkali Glass Type E) having suitable silane/volan finish with good electrical properties using thermosetting epoxy resin as bonding medium. The material has temperature index of Min.155°C. These tubes are used as insulating component in field coil of Turbo-Generator exciters. The raw material shall confirm to the technical requirements of NEMA L1-1 Grade G11 or equivalent, when several layers are laminated to sheets.

1. **EXPERIENCE:** The vendor should have experience of successful manufacturing and supplying the Insulating Tubes/sleeves (manufactured by rolling process and the above mentioned raw materials) to OEM of Generator of capacity 200MW and above. In support of which, vendor to submit the following documents: -
 - 1.1. Unpriced Copies of two successfully executed purchase orders of the Insulating Tubes/sleeves (manufactured by rolling process and the above mentioned raw materials) to OEM of Generator of capacity 200MW and above.
 - 1.2. Copy of one Test Certificates (for dimensional, mechanical and electrical test, etc.) for the above item corresponding to the purchase orders submitted as per clause 1.1.
 - 1.3. Vendor to submit documentary evidence of acceptance of material, pertaining to purchase order submitted for which TC has been submitted.
2. **MANUFACTURING FACILITIES:** Vendor to confirm that they have all in-house manufacturing facilities for above Insulating Tubes. Vendor to provide details of manufacturing facility required for manufacturing above Insulating Tubes.
3. **TESTING FACILITIES:** Vendor to confirm that they have in-house test facilities, sufficient to carry out all the test as per enquired specification AA22415 rev 02. Vendor to provide the details of testing facilities. In case vendor conducts test at an external testing agency, vendor to furnish the details of the same, e.g. NABL accredited/Government approved Lab.
4. The vendor shall furnish TC/details of the raw material required for manufacturing the enquired item.
5. Vendor to confirm the detailed technical requirement of the enquired Specification AA22415 rev 02.
6. Vendor who is supplying this material to BHEL for the first time has to submit one complete set of samples as per Table – 1 for testing the material as per Clause 8,9 & 10 of BHEL specification AA22415 rev 02. Vendor will be qualified on the basis of successfully passing the test of submitted samples as per specification AA22415 rev 02 in addition to qualifying other requirement of PQR.

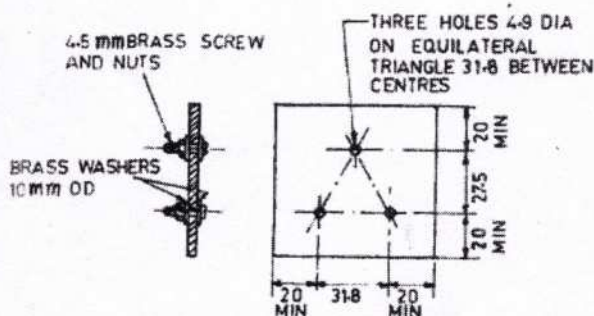


Fig. 12 Specimen And Electrodes

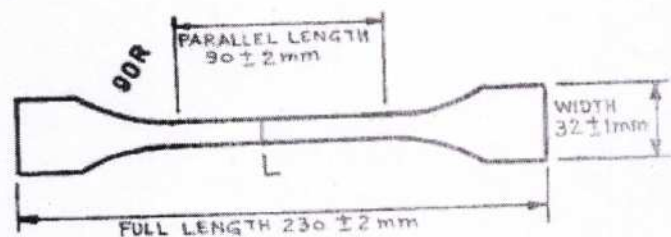


Fig. 1 Specimen for Tensile Strength Test.

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08/10/22

[Signature]

[Signature]
15/11/2022

TABLE - 1

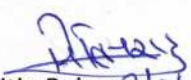
S.No	Test Parameter	Dimension (in mm)	Minimum No of samples
1	Specific Gravity	L/W/Tk = 20/20/10	2
2	MHDT	L/W/Tk = 120/15/10 (If sheet thickness is >10mm :Machine down to 10mm uniformly on both sides)	3
3	Water Absorption	L/W/Tk = 38/38/10 (If sheet thickness is >25mm:Machine down to 25mm leaving one surface intact)	2
4	Cross Breaking Strength at R.T	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
5	Cross Breaking Strength at 150°C)	L/W/Tk = 250/ 15±0.5/ 10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
6	Compression Strength	L/W/Tk = 15/15/25 (Layers can be buildup to achieve 25mm thickness of sample e.g. 15/15/10 & 15/15/5 samples piled up to make 15/15/25)	5
7	Impact Strength-Charpy Flatwise	L/W/Tk = 120/15/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	5
8	Electrical strength (Parallel to layers)	L/W/Tk = 100/25/10 (No surface machining allowed)	2
9	Heat shock test	L/W/Tk = 100 x 100 x 10 (No surface machining allowed)	2
10	Splitting load (Edgewise)	L/W/Tk = 20±0.2 /20±0.2/ 10±0.1 (Machine down to 10mm uniformly on both sides)	5
11	Insulation Resistance	L/W/Tk = Fig.12 / Fig.12 /10	2
12	Electrical strength (Perpendicular to layers)	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
13	Tan Delta	L/W/Tk = 150/150/1±0.05mm (No surface machining allowed)	2
14	CTI	L/W/Tk = 20/20/10 (If sheet thickness is >10mm : Machine down to 10mm leaving one surface intact)	2
15	Tensile Strength	Thickness: 10 mm. Other dimensions as per figure-1	5

L: Length (in mm), W: Width (in mm), Tk: Thickness (in mm)

Sample machining must be done in a manner such that Length & Width side are parallel to Glass Fabric layers and Thickness is perpendicular to Glass Fabric layers.

NOTE

- BHEL reserves the right to verify the information submitted by the vendor. In case the information is found to be false or incorrect, the offer shall be rejected.
- All the documents should be furnished in English language only. If the document provided by vendor is in any language other than English, it must be supported with its certified English translation.


Nitin Raj 08/01/22
Manager / ISE & CPL


S.S Meena 08.1.22
DGM/ EME


Ram Sewak 15/1/2022
AGM / ISE, CPL & GRI



STANDARD QUALITY PLAN

Page 1 of 2

LEGENDS:

P-PERFORMED BY 1-BHEL REP.
W-WITNESS BY 2-VENDOR
V-VERIFIED BY 3-SUB-VENDOR

QPNO : QA/BE/QP/323 REV.NO. : 11 DESCRIPTION: EPOXY LAMINATED GLASS FABRIC BASE SHEETS & COMPONENTS
SPECNO: AA22415 REV.NO. : 02
DRG : As Per PO REV.NO. : --

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY P W V	REMARKS
1	2	3	4	5	6	7	8	9	10 11 12	13

1.0 Raw Material

1.1		Verification of material certificate for glass cloth, epoxy resin, hardner and shelf life of resin.	Major	Verification	100%	AA22415	AA22415	TC / COC	2 - 1	
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2.0 Inprocess Inspection

2.1		Verification of process reigme, thickness, resin flow, soluble bond content, manufacturing date and shelf life of prepreg.	Major	Verification	100%	Vendor's Std.	Vendor's Std.	Internal record	2 - -	
2.2		Verification of process reigme of laminate manufacturing.	Major	Verification	100%	Vendor's Std.	Vendor's Std.	Internal record	2 - -	

3.0 Final Inspection

3.1	Routine tests	As per specification	Major	Test	As per specification	AA22415	AA22415	TC*	2 - 1	
3.2	Type tests	As per specification (One sample / thickness < 10mm & One for >10 mm , once in 2 years.)	Major	Test	As per specification	AA22415	AA22415	TC*	2 - 1	
3.3 A	Tests to be witnessed	Specific gravity, Cross breaking strength at RT & 150 deg. C. Splitting load (Cracking resistance) & Electric strength.	Critic	Test	One sample / thickness / lot	AA22415	AA22415	Test report*	2 1 -	
3.3 B		Heat shock test (A specimen of size 100x100 mm of ordered thickness is kept in an oven maintained at 250 deg.C for 15 minutes. The specimen is removed directly to ambient conditions ie RT, after this period and observed).	Major	Test	One sample / thickness / lot	AA22415	See note 5.	Test report*	2 1 -	
3.4		Dimensional check.	Major	Measurement	100% on each thickness	AA22415/ Drawing	AA22415/ Drawing	Inspection report*	2 1 -	
3.5		Additional tests as per drawing.	Major	Test	Per lot	Drawing	Drawing	Test report*	2 1 -	If applicable

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by Nishant Kumar
Date: 2020.10.23
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STANDARD QUALITY PLAN

Page 2 of 2

LEGENDS:

P-PERFORMED BY 1-BHEL REP.
W-WITNESS BY 2-VENDOR
V-VERIFIED BY 3-SUB-VENDOR

QPNO : QA/BE/QP/323 REV.NO. : 11 DESCRIPTION: EPOXY LAMINATED GLASS FABRIC BASE SHEETS & COMPONENTS
SPECNO: AA22415 REV.NO. : 02
DRG : As Per PO REV.NO. : --

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY P W V	REMARKS
1	2	3	4	5	6	7	8	9	10 11 12	13
3.6		Compliance of other technical requirements.	Major	Verification	100%	AA22415/ Drawing	AA22415/ Drawing	COC*	2 - -	
3.7		Completeness & correctness of document	Major	Verification	100%	AA22415/ PO/ QP	AA22415/ PO/ QP	Documents	2 - 1	
4.0	Packing & Marking									
4.1		Packing & marking	Major	Visual	100%	AA22415	AA22415	Internal record	2 - -	
	Note:	1. Woven roving fabric is not acceptable. Only woven glass yarn cloth is to be used as raw material. 2. In case of laminate / component (involving thickness 30 mm & more than 30 mm) specimen for testing for the mechanical properties shall be taken from both top / bottom & middle. 3. BHEL reserves the right to carry out repeat testing at their lab. 4. Records as marked * shall essentially be submitted by vendor as QA documentation package. 5. The material is considered satisfactory in this test if no delamination, cracks, splitting & blistering or resin - oozing is observed at the end of the test.								

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by Nishant
Kumar
Date: 2020.10.23
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Framework Confidentiality Agreement cum Undertaking

This Agreement made on this the _____ day of (month) _____ 20____
("Effective Date") by and between
M/s BHARAT HEAVY ELECTRICALS LIMITED, having registered office at "BHEL
House", Siri Fort, New Delhi – 110049 (India), acting through its _____ Unit
(hereinafter may be referred to as "BHEL" or "the Company").

And

M/s _____ (address) _____
represented by authorized representative Sri _____ (herein after
referred to as the "Supplier").

The Supplier and the Company may, unless the context otherwise requires, hereinafter be
collectively referred to as "Parties" or singly as the "Party".

RECITALS

Whereas, BHEL is engaged in the design, engineering, manufacturing, construction, testing,
commissioning and servicing of a wide range of products, systems and services for the core
sectors of the economy, viz. Power, Transmission, Industry, Transportation, Renewable
energy, Oil & Gas and Defence and providing associated services to varied customers in
relation to which BHEL/its affiliates own valuable information of a secret and confidential
nature.

Whereas the Company may, in connection with Contract(s) (as defined hereunder) placed or
to be placed upon the Supplier, or otherwise, from time to time, make available, Technical
Information as is defined hereunder.

And Whereas BHEL is willing to provide such Technical Information to the Supplier from
time to time and the Supplier understands and acknowledges that such Technical Information
is valuable for the Company and as such is willing to protect confidentiality of such
information, subject to the terms and conditions set out hereunder.

Now therefore, in view of the foregoing premises and in consideration of the mutual
covenants and agreements hereinafter set forth, the Parties agree as under:

1. Definitions:

Unless the context so requires, in this Agreement, the following terms will bear the meaning
ascribed to the said term in this clause.

- A. **"Contract"** means the Contract entered into with a Supplier and includes a Purchase
Order, or a Work Order for procurement of any goods or for provision of any services.
- B. **"Effective Date"** means the date of this Agreement as mentioned in the preamble of
this Agreement.

- C. **“Supplier”** includes a Contractor or a Vendor of the Company whether for supplying of goods or for providing any services under a Contract or both.
 - D. **“Technical Information”** includes Drawings, and/or Product Standards and/or Specifications and/or Corporate / Plant Specifications and/or Technological Process Sheets and/or Technical Data Sheets and/or Jigs & Fixtures and/or Pattern & Dies and/or Special Gauges and/or Tools etc. belonging to or wherein the Company has acquired from a third party a right of user and includes any improvement thereto from time to time whether carried out by the Company or by the Supplier.
 - E. **“Intended Purpose”** means the purpose for which the Technical Information is provided to the Supplier under or in connection with a Contract.
 - F. **“Improvement”** includes any modification made to, or adaptation of, the Technical Information which enhances or is calculated to enhance the performance (whether in terms of effectiveness or in terms of efficiency or both) of the product and/or the service to be provided by the Supplier under a Contract.
2. This Agreement shall come into force/deemed to have come into force, as the case may be, on the Effective Date; or, on the first date when the Technical Information or any part thereof is provided by BHEL to the Supplier; whichever is earlier.
3. **Agreement deemed to be incorporated in each Contract:** Unless and to the extent otherwise stipulated in the Contract, the conditions of this Agreement are deemed to be incorporated in all Contracts which may be entered into between the Company and the Supplier. Further, unless otherwise stipulated, the obligations under this Agreement are and will be independent of the obligations under the Contracts and such obligations of the Supplier hereunder will remain of full effect and validity notwithstanding that the period of validity of the Contracts has expired by efflux of time stipulated therein; or, the contract has been discharged by performance or breach; or, the termination of the Contracts for any reason whatsoever.
4. **Ownership:**
- 4.1 The Company may, from time to time, make available to the Supplier, Technical Information on a non-exclusive basis by way of loan.
- 4.2 The Supplier acknowledges and agrees that all Technical Information and copies thereof that are or may be provided by the Company to the Supplier, are and shall remain the property of BHEL or that of the concerned entity from whom BHEL has obtained the Technical Information and such Technical Information are and shall constitute trade secrets of the BHEL. Nothing in this Agreement or in any disclosures made hereunder by or on behalf of the Company shall be construed as granting upon the Supplier any patent, copyright or design or any other intellectual property rights of whatsoever description that subsists or may hereinafter exist in the Technical Information. Furthermore, nothing in this Agreement or in any disclosures made hereunder by or on behalf of the Company shall be construed as granting upon the Supplier any license or rights of use of such patent, copyright or design or any other

intellectual property rights of whatsoever description which may now or hereafter exist in the Technical Information except for use of the Technical Information strictly in accordance with this Agreement and the Contract and/or as directed in writing by the Company, solely for the Intended Purpose under the Contract.

4.3 Neither Party is obligated by or under this Agreement to purchase from or provide to the other Party any service or product and that any such purchase/sale of any product and/or service by one Party to the other Party will be governed by the Contract if any, that may be entered into by and between the Company and the Supplier.

4.4 The Supplier is/has been made well aware and acknowledges that the Technical Information being/which may be shared with it by the Company has been either generated by the Company by incurring huge investment and cost or obtained from foreign collaborators under Technical Collaboration Agreement (TCA) with stringent confidentiality conditions.

4.5 The Supplier agrees and undertakes to adhere to confidentiality requirements as applicable to BHEL under a TCA and also ensure that the confidentiality requirements are adhered to by all its concerned employees or sub-contractors/suppliers (where permitted to be engaged by BHEL). Any damages, losses, expenses of any description whatsoever, arising out of or in connection with a breach of the confidentiality requirements under a TCA owing to any act or omission on the part of the Supplier or its employees or sub-contractors/suppliers that is claimed by a foreign collaborator from the Company shall be wholly borne by the Supplier and it shall keep BHEL fully indemnified in this behalf. The demand by the Company shall be conclusive upon the Supplier who shall thereupon forthwith pay to the Company without demur, dispute or delay the amount as demanded without demanding any further proof thereof.

4.6 The Supplier agrees and undertakes that unless so decided and advised by the Company in writing all rights/title to any Improvement to the Technical Information shall vest in the Company. The Supplier undertakes and agrees to inform forthwith to the Company of any such Improvement made to the Technical Information and transfer all drawings/documents or other materials connected with such Improvement to the Company and also agrees to fully cooperate with the Company for protecting the Company's interests in such Improvement in the Technical Information including but not limited to obtaining necessary protection for the intellectual property rights in such improvement, if so desired by the Company. If a question arises whether a modification amounts to Improvement to the Technical Information, the same shall be decided by the Company and such decision shall be final and binding upon the Supplier.

5. Use and Non-Disclosure:

5.1 Unless otherwise stipulated by the Company, all Technical Information made available to the Supplier, by the Company shall be treated as Confidential irrespective of whether the same is marked or otherwise denoted to be Confidential or not.

- 5.2 The Supplier undertakes and agrees that the Technical Information in its possession shall be held in strict confidence and will be used strictly in accordance with this Agreement and solely for the Intended Purpose under the Contract. Use of the Technical Information for any other purpose other than Intended Purpose is prohibited.
- 5.3 In particular, the Supplier shall not use Technical Information or any Improvement in its possession for the manufacture or procurement of the Product(s) or components or parts thereof or use the Technical Information or any portion thereof or any modification or adaptation thereof in any form to provide any product and/or service to any third party, without the prior written consent of the Company.
- 5.4 The Supplier shall not disclose any of such Technical Information to any third party without the prior written consent of the Company. The Supplier agrees that without prior written consent of the Company, the Supplier shall not disclose to a third party about the existence of this Agreement, or of the fact that it is/was in possession of or has experience in the use of any Technical Information nor shall the Supplier share in any manner whatsoever, with a third party, the name or details of any Contract(s) awarded by the Company to it or performed by the Supplier or the scope of work thereof or share any document or correspondence by and between the Company and the Supplier in or in connection with this Agreement or such Contract(s). Notwithstanding what is stated elsewhere, the overall responsibility of any breach of the confidentiality provisions under this Agreement shall rest with the Supplier.
- 5.5 The Supplier undertakes and agrees not to make copies or extracts of and not to disclose to others any or all of the Technical Information in its possession, except as follows:
- (a) The Supplier may disclose the Technical Information to such of its officers and employees strictly to the extent as is necessary for such officer or employee for the Intended Purpose, provided that the Confidential Information (or copies thereof) disclosed shall be marked clearly as the confidential and proprietary information of Company and that such officers and employees shall similarly be bound by undertakings of confidence, restricted use and non-disclosure in respect of the Technical Information. The Supplier shall be responsible for any breach of such confidentiality provisions by such officers and employees.
 - (b) With the prior written consent of Company, the Supplier may disclose for the Intended Purpose such Technical Information as is provided for in such consent to such of its professional advisers: consultants, insurers and subcontractors who shall be similarly bound by undertakings of confidence, restricted use and non-disclosure in respect of such Technical Information.
 - (c) The Supplier shall not be prevented to make any disclosure required by (i) order of a court of competent jurisdiction or (ii) any competent regulatory authority or agency where such disclosure is required by law, provided that where the Supplier

intends to make such disclosure, it shall first consult Company and take all reasonable steps requested by it to minimize the extent of the Technical Information disclosed and to make such disclosure in confidence and also shall cooperate with the Company in seeking any protective order or any other remedy from proper authority in this matter.

6. Exceptions:

The obligations of the Supplier pursuant to the provisions of this agreement shall not apply to any Confidential Information that:

- a) was/is known to, or in the possession of the Supplier prior to disclosure thereof by the Company;
- b) is or becomes publicly known, otherwise than as a result of a breach of this agreement by the Supplier.
- c) is developed independently of the Disclosing Party by the Supplier in circumstances that do not amount to a breach of the provisions of this Agreement or the Contract;
- d) is received from a third party in circumstances that do not result in a breach of the provisions of this Agreement.

7. The obligation of maintaining confidentiality of the Technical Information on each occasion, shall subsist for the entire duration during which the Technical Information / equipment is in possession of the Supplier and shall thereafter subsist for a further period of --- years from the date when the complete Technical Information has been returned to the Company and if Technical Information has been returned in portions on different dates then, the period of ---- years will be reckoned from the date when the last portion of the Technical Information has been returned. Notwithstanding the expiry of the confidentiality obligation, the obligation of the Supplier under clause 5.4 shall continue to subsist for a further period of ----- years.

8. Warranties & Undertakings:

- a) The Supplier undertakes to ensure the due observance of the undertakings of confidence, restricted use and non-disclosure by its persons to whom it discloses or releases copies or extracts of the Technical Information.
- b) The Supplier shall keep the Technical Information or improvement made therein properly segregated and not mix up the same with any other material/documents belonging to him/it or to any other third party.
- c) The Supplier further undertakes that he/it shall not hypothecate or give on lease or otherwise alienate or do away with any of the Technical Information and/or equipment of the Company, made available to him/it, and undertakes that he/it shall hold the same as a trustee, in capacity of custodian thereof and use/utilise the same solely for the purpose of executing the Contract awarded by the Company.
- d) The Supplier further undertakes that he/it shall return all the equipment and/or Technical Information as far as practicable in the same condition in which the same was made available to him/it by the Company together with any Improvement thereon and the documents connected with such Improvement, to the Company forthwith upon completion of the scope

of work or Contract for which such Technical Information was provided by the Company to it or as directed by the Company together with a confirmation by way of an affidavit or in such manner as directed by the Company that it has not retained any equipment and/or Technical Information/Improvement thereof. In case any such equipment and/or Technical Information or Improvement thereof shall remain in his possession or is not capable of being returned, the retention and use of such Technical Information or Improvement thereto shall continue to be governed by this Agreement.

e) The Supplier undertakes to indemnify the Company for all the direct, indirect and/or consequential losses, damages, expenses whatsoever including any consequential loss of business, profits suffered by the Company owing to breach by the Supplier of its obligations under this Agreement and/or the confidentiality requirements, if any, contained in the Contract and that the Supplier hereby agrees that the decision of the Company in all such or any such matter/s shall be final and binding on the Supplier. On mere written demand of the Company, the Supplier shall forthwith and without demur or delay pay to the Company any such sum as determined by the Company as the amount of loss or damage or expense which has been suffered by the Company. The Supplier agrees that the Company shall be entitled to withhold and appropriate any amount payable to the Supplier under any Contract then existing between the Company and the Supplier, in case the Supplier fails to make payment, in terms of the written demand, within 7 days thereof. Without prejudice to the foregoing actions, in respect to any breach of this Agreement, the Company shall be entitled to take any other action against the Supplier as per applicable laws, the Contract, Company's applicable policies, guidelines rules, procedures, etc.

9. Without prejudice to any other mode of recovery as may be available to the Company for recovery of the amount determined as due as per Clause 8(e) hereinabove, the Company shall have a right to withhold, recover and appropriate the amount due towards such losses, damages, expenses, from any amount due to the Supplier in respect of any other Contract (s) placed on him/it by any department/office/Unit/Division of the said Company.

10. Arbitration & Conciliation:

a) In case amicable settlement is not reached between the Parties, in respect of any dispute
or

difference or claim or controversy arising out of the formation, breach, termination, validity or execution of the Contract(or Agreement) or the respective rights and liabilities of the parties or in relation to interpretation of any provision of the Contract or in any manner touching upon the Contract, then, either Party may, by a notice in writing to the other Party refer such dispute or difference or controversy or claim, (except as to any matters, the decision of which is specifically provided for therein) to the sole arbitration by the arbitrator appointed by Head/In-Charge of the Unit/Division/Region.

b) The Arbitrator shall pass a reasoned award and the award of the Arbitrator shall be final and binding upon the parties to the dispute.

c) Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India), or other statutory modifications or re enactments thereof and the rules made thereunder and for

the time being in force shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be at ----- **(Insert the name of the city/town of the concerned BHEL Unit/Division).**

d) In case of Contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:

In the event of any dispute or difference relating to the interpretation and application of the provisions of the Contract, such dispute or difference shall be referred to by either party to the arbitration of one of the arbitrators in the department of public enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The Arbitration and Conciliation Act, 1996 shall not be applicable to arbitration under this clause. The award of the arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may make further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law and Justice, Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary or Additional Secretary when so authorized by the Law Secretary, whose decision shall bind the parties hereto finally and conclusively.

e) Notwithstanding the existence or any dispute or differences and/or reference for the arbitration, the Supplier shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and expedition in a professional manner.

11. Governing Law & Jurisdiction:

This Agreement shall be governed by and be construed as per applicable Indian Laws in force at the relevant time.

Subject to clauses 10(a) and 10(d) hereinabove, all matters in connection with the subject agreement shall be subject to exclusive jurisdiction of Courts situated at -----**(insert the name of the place where the BHEL Unit/Division is located)**

SIGNATURE

WITNESSES

1.

Name

Address:

2.

Name:

Address: