THERMAL INSULATION-R MATTRESSES
(1X800MW VIJAYWADA)

TECHNICAL SPECIFICATION

FOR

BONDED MINERAL (ROCK) WOOL MATTRESSES)

SPECIFICATION NO. PE-TS-419-169-M032
Rev. No.: 00

BHARAT HEAVY ELECTRICALS LIMITED, POWER SECTOR
PROJECT ENGINEERING MANAGEMENT
NOIDA, INDIA

CONTENTS

BHEL	**SPECIFIC TECHNICAL REQUIREMENT FOR BONDED MINERAL (ROCK) WOOL MATTRESSES**	SPECIFICATION NO:PE-TS-419-169-M032
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1.00.00 GENERAL

This specification covers the requirements of manufacture, physical & chemical properties, inspection & testing and packing for supply of bonded mineral (rock) wool mattresses having metallic hexagonal wire netting as facing on one or both side, suitable for service temperatures up to 750 deg C.

2.00.00 CODES AND STANDARDS

2.01.00 INDIAN STANDARD

2.01.01 The manufacture, physical & chemical properties, inspection and testing of the bonded mineral rock wool mattresses shall conform to the latest editions of the following appropriate standards.

2.01.02 IS: 8183 Specification for bonded mineral wool.

2.01.03 IS: 3144 Methods of test for mineral wool thermal insulation materials.

2.01.04 IS: 3346 Methods for the determination of thermal conductivity of thermal insulation materials (two slab, guarded hot plate method).

2.02.00 In case of any conflict between the above standards and this specification, the latter shall be final.

3.00.00 MANUFACTURE

3.01. 00 The mattresses shall be made from rock processed from a molten state into fibrous form with minimum organic thermosetting binder, and shall be machine felted, baked and metallic stitched / faced with metallic hexagonal wire netting on one or both sides (as specified in the BOM).

3.02.00 The metallic hexagonal wire netting shall be of Galvanized steel (made from wire conforming to IS: 280 medium coated to IS: 4826) / Stainless steel (made from wire to IS: 6528) having wire size and aperture conforming to IS: 3150, as specified in the BOM.

3.03.00 The mattress shall be continuously stitched / tied on to the wire netting with minimum 0.4 mm dia. galvanized steel / stainless steel wire, as specified in the BOM. The spacing between the stitching / ties shall not be more than 250 mm along the width and 150 mm along the length.

4.00.00 DIMENSIONS AND DIMENSIONAL TOLERANCES

4.01.00 The length and width of the mattresses shall be 1520 mm x 1220 mm or 1640 mm x 1220 mm. Nominal thickness shall be 25, 40, 50, 60, 70, 75 or 80 mm.

4.02.00 The method of measuring the dimensions i.e. length, width and thickness shall be as prescribed in IS: 3144. Tolerance on length and width shall be as per IS:8183. Tolerance on thickness shall be +6mm/-2mm.

5.00.00 BULK DENSITY AND TOLERANCES ON DENSITY

5.01.00 The bulk density of the bonded mineral (rock) wool mattresses without the facings, shall be 150 / 100 kg/m^3 unless otherwise specified. Tolerances on bulk density shall be +15 % and - 5% when tested as per method prescribed in IS: 3144.

6.00.00 MATERIAL PROPERTIES

6.01.00 SHOT CONTENT:

The method for determination of shot content shall be as prescribed in IS: 3144. The maximum shot content shall be 5% by weight.

Any shot present in the materials shall not be greater than 5 mm in any dimension.

6.02.00 THERMAL CONDUCTIVITY

The thermal conductivity (k-value) of the bonded mineral wool mattresses shall not exceed the values given in IS: 8183 Latest when determined in accordance with the method prescribed in IS: 3346.

K' Value test (for minimum three mean temperatures i.e. 100°C, 200°C & 300°C) results to be provided to BHEL for acceptance in accordance with conditions given below: -

If 'K' Value test has been conducted against any BHEL order, on sample collected within 12 months prior to the date of present inspection, the related test results may be provided. Otherwise, the test will be carried out on samples identified and sealed by customer / BHEL authorized representative and related test results to be provided. The test will be carried out at govt. approved labs or test houses (at CBRI – Roorkee, IIT – Chennai, PIBCO R & D Centre - N. Delhi, NIRMA University, Ahmedabad) recognized by reputed customers.

6.03.00 HEAT RESISTANCE

When a sample of mattress is heated to the maximum recommended temperature of use (550 ^{o}C for 100 kg/m^3 density and 750 ^{o}C for 150 kg/m^3 density) as per method prescribed in IS:3144 (test for maximum recommended temp), the material shall not suffer visible deterioration of the fibrous structure, any fusion of fibers and shall not show any evidence of internal self-heating. Any colour change shall not be considered as visible deterioration in fibrous structure.

6.04.00 OTHER TESTS

The following tests are to be conducted as per IS:3144/IS:8183 and the acceptance norms shall be as per IS:8183.

a. Moisture content

b. Moisture Absorption

c. Incombustibility

d. Sulphur content

e. Recovery after Compression

f. Alkalinity

g. Chloride Content

h. Fibre Diameter

i. Resistance to vibration

j. Resistance to jolting

7.00.00 PACKING AND MARKING

7.01.00 Stack of mattresses shall be packed in unfolded condition and sealed in polythene bags of at least 0.2mm thickness. Then the sealed bags shall be put inside the polythene lined HDPE or HDPP Woven netting bags and sealed by machine stitching.

To account for looseness in packing (if any) due to machine stitching, the bags shall be properly stacked and tightly fastened during transportation to avoid any possible damage due to relative movements. Sharp edges of wire netting shall be bent inwards to avoid damage to packing.

7.02.00 Each bag of mattresses shall be serial numbered. Also, printed sheets indicating the nominal thickness, density and wire netting details (i.e. material and size) shall be placed below the wire netting.

7.03.00 For easy identification of mattresses as per density & wire netting material, following colour codes for the HDPE bags is to be followed:

a) Yellow bags with marking as shown in Fig 1 (Page 5 of 5) for 150 kg/m3 with Galvanized steel wire netting

b) White bags with marking as shown in Fig 1 (Page 5 of 5) for 100 kg/m3 with Galvanized steel wire netting

c) Yellow bags with marking as shown in Fig 1 (Page 5 of 5) for 150 kg/m3 with SS wire netting

d) In case of both side SS/ GS wire meshing, additional marking “BOTH SIDE MESH” is to be provided.

7.04.00 Following details shall be legibly and indelibly marked on the packages.

a) Project Name
b) Vendor name:
c) Purchase Order No. and Date
d) Sl. No. of package/Batch No:
e) Size of mattresses (Thickness x Length x Width)
f) Density of mattresses
f) Wire netting material and size
g) Weight of the package
h) No. of mattresses in the package
i) A caution note “Always store under covered shed and on raised platforms"

8.00.00 INSPECTION AND TESTING

8.01.00 Bonded mineral wool mattresses to be supplied under this specification shall be of tested quality and workmanship. Inspection and testing of thermal insulation materials shall be as per this specification / quality plan enclosed. Manufacturer shall conduct all tests and stage inspections as per the approved quality plan to ensure that the material conforms to the requirements of this specification and of applicable standards. All shop tests shall be conducted in the presence of BHEL's / BHEL's customer's representative, on the samples identified by him / them.

8.02.00 The Quality Plan enclosed with this specification specifies minimum quality control requirement. During contract stage vendor shall furnish this Quality Plan duly signed & stamped for BHEL approval. Quality plan shall be approved by BHEL and customer. Inspection and testing shall be carried out as per Quality Plan by BHEL/ BHEL representative and customer (as applicable). In case inspection is by both BHEL and their customer, then the inspection can be carried out jointly or separately, which will be informed later. In case of the foreign bidder, inspection shall be carried out by reputed third party.

8.03.00 The charges for third party inspection (Lloyds, TUV or equivalent) for foreign bidders shall be included in the base price of the item by the bidder. This third party agency shall be approved by BHEL. Bidder to inform the same in the offer and mention the same in Quality Plan.

Note: There may be minor changes in quality plan depending on customer/consultant comments which will HAVE TO BE ACCOMMODATED BY VENDOR AT NO EXTRA COST.

9.00.00 DOCUMENTS TO BE SUBMITTED AFTER AWARD OF CONTRACT:

1. Quality plan duly signed and stamped.
2. Datasheet for Approval by BHEL/Customer.

Approval of Quality plan/ Data sheet shall be required for manufacturing clearance and the same shall be considered for delay analysis by BHEL.

	SPECIFIC TECHNICAL REQUIREMENT FOR BONDED MINERAL (ROCK) WOOL MATTRESSES	SPECIFICATION NO:PE-TS-419-169-M032
		SECTION : I
		REV. NO. 00
		DATE: 19.11.2020
		SHEET 5 OF 5

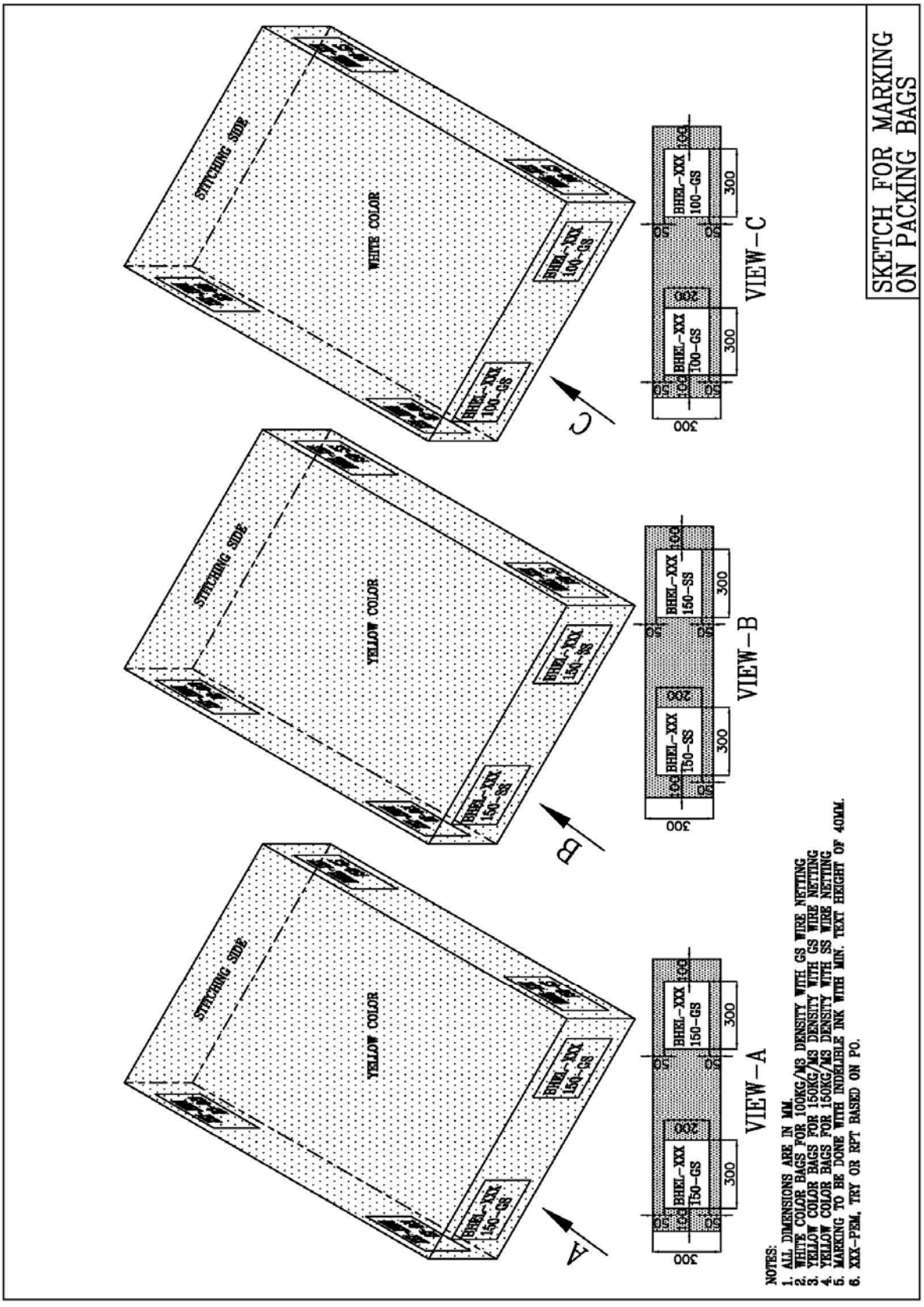

Fig 1: Sketch for marking on bags

	DATA SHEET- A BONDED MINERAL (ROCK) WOOL MATTRESS 1x800 MW Vijaywada	SPECIFICATION NO. PE-TS-419-169-M032
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		REV. NO.: 00 / DATE: 19.11.2020
		SHEET 1 OF 1

B.O.M.

S.No	MATERIAL	DENSITY(Kg/m3)	THK(mm)	Quantity for One Unit (m2)
1	Bonded mineral (Rock) wool mattresses with one side GS wire netting of 13 mm x 0.71 mm size stitched with 0.4 mm GS wire	150	40	**130**
			50	**1113**
			60	**2782**
			75	**4822**
2	Bonded mineral (Rock) wool mattresses with one side SS wire netting of 13 mm x 0.71 mm size stitched with 0.4 mm SS wire	150	75	**1113**
3	Bonded mineral (Rock) wool mattresses with one side GS wire netting of 13 mm x 0.71 mm size stitched with 0.4 mm GS wire	100	25	**578**
			40	**1623**
			50	**1669**
			60	**928**
			75	**3153**

Note:

Quantity tolerance shall be (+)0/ (-)15 m^2 for each density/thickness.

STANDARD TECHNICAL DATA SHEET FOR LIGHT RESIN BONDED MINERAL (ROCK) WOOL MATTRESSES

PROJECT: 1x800 MW Vijaywada

QP NO:PE-QP-419-169-M032

SPECIFICATION NO: PE-TS-419-169-M032

SL. No.	CHARACTERISITCS	ACCEPTANCE/PERMISSIBLE LIMIT		
1	MATERIAL	LRB Rock wool mattresses confirming to IS:8183/Latest.		
2	Bulk Density	100 Kg/m^3 & 150 Kg/m^3 with (+)15% & (-)5% tolerance.		
3	Mattresses Size	1640mm x 1220mm/1520mm x 1220mm		
4	Thickness	25,40,50,60,75mm (Thickness values as per BOM) Tolerance on thickness shall be +6mm/-2mm.		
5	Service Temperature	Upto 400^0 C - 100 Kg/m3 Above 400^0 C - 150 Kg/m3		
6	Thermal Conductivity as per IS 8183/93 (Group 3/Group 4)	Mean Temp.	**100 Kg/m^3 (Group 3)** K value in mW/cm.°C (Max)	**150 Kg/m^3 (Group 4)** K value in mW/cm.°C (Max)
		100° C	0.52	0.52
		200° C	0.73	0.68
		300° C	0.95	0.93
7	Chloride content	0.01 % max.		
8	Shot content	Shot shall not exceed 5% maximum by weight.		
		Shot shall not be greater than 5mm in any dimension.		
9	Sulphur content	0.6% max		
10	Moisture Content (Weight gain by moisture absorption)	2 % max		
11	Incombustibility Test (loss of weight after test)	5% max		
12	Resistance to vibration	1 % max		
13	Resistance to jolting	3 % max		
14	Alkalinity	7-10 pH		
15	Recovery After Compression	90% minimum after compression to 75% of the original Thickness.		
16	Fibre Diameter	7.0 Micron max.		
17	SS wire netting (above 400 deg.C)	As per IS:6528 & 3150, Aperture 13mm & Wire Dia 0.71mm.(Wire Dia and single side wire netting as per BOM).		
18	SS Tieing/Stitching wire (above 400 deg.C)	Wire Dia 0.40mm As per IS:6528.		
19	GI wire netting (upto 400 deg.C)	As per IS:280 & 3150, Aperture 13mm & Dia 0.71mm.(Wire Dia and single side/ Both sides wire netting as per BOM).		
20	GI Tieing/Stitching wire (upto 400 deg.C)	Wire dia 0.40mm As per IS:280.		
21	Packing, Marking &other requirement	Stack of mattresses shall be packed in unfolded condition and sealed in polythene bags of at least 0.2mm thickness. Then the sealed bags shall be put inside the polythene lined HDPE or HDPP Woven netting bags and sealed by machine stitching. Packing to be duly marked with a caution note “Always store under covered shed and on raised platforms". For marking and other details Technical specification is to be referred.		

BIDDER/SUPPLIER	**BHEL**

	MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS BHEL/Customer Approved Suppliers	STANDARD QUALITY PLAN	SPEC. NO : PE-TS-419-169-M032	DATE: 19-11-2020
		CUSTOMER : APGENCO	QP NO.: PE-QP-419-169-M032	DATE: 19-11-2020
		PROJECT: 1x800 MW Vijaywada	PO NO.:	DATE:
		ITEM: THERMAL INSULATION – RESIN BONDED MINERAL (ROCK) WOOL MATTRESSES	SECTION:	SHEET 1 OF 3

SL NO.	COMPONENT & OPERATIONS	CHARACTERIST-ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	*	**		10
					M	C/N				D	M	C	N
1.0 MATERIAL													
1.1	CHEMICAL COMPOSITION (RAW MATERIAL)	CHEMICAL PROPERTIES	MA	CHEMICAL	ONE SAMPLE PER LOT	ONE SAMPLE PER LOT	MANUFACTURER STANDARD	MANUFACTURER STANDARD	TC	√	P	V	V	
1.2	GS WIRE	1.DIMENSIONS#	MA	MEASUREMENT	IS 3150 Appendix A	IS 3150 Appendix A	IS 3150	IS 3150/ BHEL/CUSTOMER APPROVED DATA SHEET	IR	√	P	W #	V	#Witness shall be carried out at the stage of Clause 3.1.
		2.GAUGE DIAMETER	MA	MEASUREMENT			IS 280	IS 280/ BHEL/CUSTOMER APPROVED DATA SHEET	IR	√	P	W #	V	
		3. CHEMICAL	MA	LAB. TEST			IS 280	IS 7887	TC	√	P	V	V	
		4. COATING TEST	MA	LAB. TEST			IS 280	IS 4826	TC	√	P	V	V	
		5. TENSILE TEST	MA	LAB. TEST			IS 280	IS 280	TC	√	P	V	V	
		6. WRAPPING TEST	MA	LAB. TEST			IS 280	IS 280	TC	√	P	V	V	
		7. BEND TEST	MA	LAB. TEST			IS 280	IS 280	TC	√	P	V	V	
1.3	SS WIRE	1.DIMENSIONS#	MA	MEASUREMENT	IS 6528	IS6528	IS 3150	IS 3150/ BHEL/CUSTOMER APPROVED DATA SHEET	IR	√	P	W #	V	#Witness shall be carried out at the stage of Clause 3.1.
		2.GAUGE DIAMETER	MA	MEASUREMENT	IS 3150	IS 3150	IS 6528	IS 6528/ BHEL/CUSTOMER APPROVED DATA SHEET	IR	√	P	W #	V	
		3.CHEMICAL ANALYSIS	MA	LAB. TEST	16 6528	IS 6258	IS 6528	IS 6528	TC	√	P	V	V	
		4.TENSILE TEST	MA	LAB. TEST	IS 6528	IS6528	IS 6528	IS 6528	TC	√	P	V	V	
		5. REVERSE BEND TEST	MA	LAB. TEST	IS 6528	IS6528	IS 6528	IS 6528	TC	√	P	V	V	
		6. WRAPPING TEST	MA	LAB. TEST	IS 6528	IS6528	IS 6528	IS 6528	TC	√	P	V	V	
		7. TORSION TEST	MA	LAB. TEST	IS 6528	IS6528	IS 6528	IS 6528	TC	√	P	V	V	
2.0 IN-PROCESS INSPECTION													
1.1	FINISHED MATTRESS	DIMENSION & TOLERANCE	MA	MEASUREMENT	IS 8183	IS 8183	IS 3144	IS 8183/ BHEL/CUSTOMER APPROVED DATA SHEET	TC	√	P	V	V	
3.0 FINAL INSPECTION													

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		Rohit Aggarwal	Checked by:		K K Yadav
Reviewed by:		Prince Malik	Reviewed by:		R K Jaiswal

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS BHEL/Customer Approved Suppliers	STANDARD QUALITY PLAN	SPEC. NO : PE-TS-419-169-M032	DATE: 19-11-2020
	CUSTOMER : APGENCO	QP NO.: PE-QP-419-169-M032	DATE: 19-11-2020
	PROJECT: 1x800 MW Vijaywada	PO NO.:	DATE:
	ITEM: THERMAL INSULATION – RESIN BONDED MINERAL (ROCK) WOOL MATTRESSES	SECTION:	SHEET 2 OF 3

SL NO.	COMPONENT & OPERATIONS	CHARACTERIST-ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY				REMARKS
1	2	3	4	5	6		7	8	9	*	**			10
					M	C/N				D	M	C	N	
3.1	BONDED MINERAL (ROCK) WOOL MATTRESSES (FINISHED PRODUCT)#	1. DIMENSIONS	MA	MEASUREMENT	IS 8183	IS 8183	IS 3144	IS 8183/ BHEL/CUSTOMER APPROVED DATA SHEET	IR	√	P	W	V	
		2. APPEARENCE	MA	VISUAL	IS 8183	IS 8183	IS 3144	SHALL BE FREE FROM VOIDS, CRACKS	IR					
		3. BULK DENSITY	MA	LAB. TEST	IS 8183	IS 8183	IS 3144	IS 8183/ BHEL/CUSTOMER APPROVED DATA SHEET	TC	√	P	W	V	. Routine tests
		4.SHOT CONTENT	MA	LAB. TEST	IS 8183	IS 8183	IS 3144		TC	√	P	W	V	
		5. SULPHUR CONTENT	MA	LAB. TEST	IS 8183	IS 8183	IS 3144		TC	√	P	W	V	
		6. ALKALINITY	MA	LAB. TEST	IS 8183	IS 8183	IS 8183		TC	√	P	W	V	
		7. CHLORIDE CONTENT	MA	LAB. TEST	IS 8183	IS 8183	IS 3144		TC	√	P	W	V	
		8. MOISTURE CONTENT	MA	LAB. TEST	IS 8183	IS 8183	IS 3144		TC	√	P	W	V	
		9.THERMAL CONDUCTIVITY (K VALUE)	CR	LAB. TEST	IS 8183	IS 8183	IS 3346	IS 8183/ BHEL/CUSTOMER APPROVED DATA SHEET	TC	√	P	W	V	Type test REFER NOTES 4 & 5
		10. HEAT RESISTANCE	MA	LAB. TEST	IS 8183	IS 8183	IS 3144	IS 8183/ BHEL/CUSTOMER APPROVED DATA SHEET	TC	√	P	W	V	Type tests REFER NOTE 6
		11.MOISTURE ABSORPTION	MA	LAB. TEST	IS 8183	IS 8183	IS 3144		TC	√	P	W	V	
		12. RECOVERY AFTER COMPRESSION	MA	LAB. TEST	IS 8183	IS 8183	IS 8183		TC	√	P	W	V	
		13. INCOMBUSTIBILITY	MA	LAB. TEST	IS 8183	IS 8183	IS 3144		TC	√	P	W	V	
		14.RESISTANCE TO VIBRATION	MA	LAB. TEST	IS 8183	IS 8183	IS 3144		TC	√	P	W	V	
		15. RESISTANCE TO JOLTING	MA	LAB. TEST	IS 8183	IS 8183	IS 3144		TC	√	P	W	V	
		16. FIBRE DIAMETER	MA	LAB. TEST	One for each density	One for each density	IS 3144		TC	√	P	W	V	
3.2	PACKING & MARKING	PACKING TYPE AND IDENTIFICATION MARKING	MA	VISUAL	RANDOM	RANDOM	BHEL/CUSTOMER APPROVED DATA SHEET/PACKING PROCEDURE	BHEL/CUSTOMER APPROVED DATA SHEET/ PACKING PROCEDURE	SOFT COPY OF PHOTO GRAPH	√	P	W	-	REFER NOTE 2

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		Rohit Aggarwal	Checked by:		K K Yadav
Reviewed by:		Prince Malik	Reviewed by:		R K Jaiswal

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	MANUFACTURER/BIDDER/VENDOR NAME & ADDRESS BHEL/Customer Approved Suppliers	STANDARD QUALITY PLAN	SPEC. NO : PE-TS-419-169-M032	DATE: 19-11-2020
		CUSTOMER : APGENCO	QP NO.: PE-QP-419-169-M032	DATE: 19-11-2020
		PROJECT: 1x800 MW Vijaywada	PO NO.:	DATE:
		ITEM: THERMAL INSULATION – RESIN BONDED MINERAL (ROCK) WOOL MATTRESSES	SECTION:	SHEET 3 OF 3

SL NO.	COMPONENT & OPERATIONS	CHARACTERIST-ICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			REMARKS
1	2	3	4	5	6		7	8	9	*	**		10
					M	C/N				D	M	C	N

NOTES:

1. In case of foreign supplier, all test certificates shall be furnished by the supplier, duly witnessed/verified by supplier's TPI.
2. Following to be noted for packing:
   a. Material shall be packed suitably in order to avoid damage during transit and also during storage at site in tropical climate conditions.
   b. Photographs of items duly placed inside the box just before the final packing and Photographs of the box just before dispatch to be sent to BHEL purchase group for review before issuing MDCC.
3. BHEL reserves the right for conducting repeat test, if required.
4. 'K' Value test will be carried out on samples identified and sealed by BHEL Inspector once in twelve (12) months irrespective of ongoing projects. The tests will be carried out at govt. approved labs (at CBRI - Roorkee, IIT - Chennai or PIBCO R & D Centre, N. Delhi, NIRMA University, Ahmedabad). 'K' Value test will be carried out for at least three mean temperatures i.e.100 0C, 200 0C & 300 0C for each density.
5. Thermal conductivity type test reports shall be submitted to BHEL Engineering for review and approval.
6. Type tests (except thermal conductivity) shall be done once in 3 months in the presence of BHEL/BHEL TPIA.
7. The latest revisions/year of issue of all the IS indicated in the QP shall be referred.

LEGENDS:

***D**: Records, identified with "Tick"(√) shall be essentially included by supplier in QA Documentation.
** **M**: Supplier/ Manufacturer/ Sub-Supplier
C: Main Supplier/BHEL/ Third Party Inspection agency
N: Customer
P: Perform
W: Witness
V: Verification
MA: Major Characteristic
MI: Minor Characteristic
CR: Critical Characteristic
IR: Inspection Report
TC: Test Certificate
`

BHEL					
ENGINEERING			QUALITY		
	Sign & Date	Name		Sign & Date	Name
Prepared by:		Rohit Aggarwal	Checked by:		K K Yadav
Reviewed by:		Prince Malik	Reviewed by:		R K Jaiswal

BIDDER/ SUPPLIER	
Sign & Date	
Seal	

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Doc No:			
	Sign & Date	Name	Seal
Reviewed by:			
Approved by:			

	COMPLIANCE SHEET **BONDED MINERAL (ROCK) WOOL MATTRESSES** **1x800 MW Vijaywada**	SPECIFICATION NO. PE-TS-419-100-M003	
		SECTION : II	
		REV. NO.: 00	DATE: 19-11-2020
		Sheet 1 of 1	

I hereby comply/not comply (*) to all the requirements of this technical specification in totality.

*** In case the bidder does not comply to the technical specification, the deviations shall be explicitly listed in the technical deviation sheet of GCC. Deviations listed in technical deviation sheet shall only be considered.**

Name of Bidder / Authorized Representative :- _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Designation :- _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Signature :- _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Company Seal :- _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Date :- _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

PARTICULARS OF BIDDER / AUTHORISED REPRESENTATIVE				
NAME	DESIGNATION	SIGNATURE	DATE	COMPANY SEAL

Bharat Heavy Electricals Limited

(A Govt. Of India Undertaking)

PROJECT ENGINEERING MANAGEMENT

THERMAL INSUALTION-LRB (ROCKWOOL) MATTRESS/PIPESECTION for 1X800MW Vijayawada

Price Variation Clause:

Ex-works prices shall be variable as per PVC formula given below:

Current Price = Order Price * (0.15+0.4*M1/M0 +0.15*F1/F0 +0.05*S1/S0+0.25 * L1/L0)

Where

M0 = INDICES AS PER RBI BULLETIN TABLE 21 SL NO.: 1.3.13.2 (REFRACTORY PRODUCTS) FOR MONTH OF ORDERING.
M1 = INDICES AS PER RBI BULLETIN TABLE 21 SL NO.: 1.3.13.2 (REFRACTORY PRODUCTS) FOR 1 MONTH PRIOR TO DESPATCH.
F0 = INDICES AS PER RBI BULLETIN TABLE 21 SL NO.: 1.2 (FUEL & POWER) FOR MONTH OF ORDERING.
F1 = INDICES AS PER RBI BULLETIN TABLE 21 SL NO.: 1.2 (FUEL & POWER) FOR 1 MONTH PRIOR TO DESPATCH
S0 = INDICES AS PER RBI BULLETIN TABLE 21 SL NO.: 1.3.14.4 – (MILD STEEL-LONG PRODUCTS) FOR MONTH OF ORDERING.
S1 = INDICES AS PER RBI BULLETIN TABLE 21 SL NO.: 1.3.14.4 – (MILD STEEL-LONG PRODUCTS) FOR 1 MONTH PRIOR TO DESPATCH
L0 = INDICES AS PER RBI BULLETIN TABLE 19 (CONSUMER PRICE INDEX FOR INDUSTRIAL WORKERS) FOR MONTH OF ORDERING.
L1 = INDICES AS PER RBI BULLETIN TABLE 19 (CONSUMER PRICE INDEX FOR INDUSTRIAL WORKERS) FOR 1 MONTH PRIOR TO DESPATCH

Total PVC shall be limited to ± 10% of Ex-Works Value.

Note: RBI Indices considered for refractory, Fuel &Power, Mild steel are as per base year 2011-12 and for Industrial worker as per base year 2016 of RBI Bulletin. The above PV Clause is subject to change based on latest RBI Bulletin.