

SI. NO	COMPONENT / OPERATION	CHARACTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	TYPE OF RECORD		INSPECT ION AGENCY		REMARKS
								M	B	11	12	
1	2	3	4	5	6	7	8	9	D	11	12	15
1.0 Material												
1.1	Raw Material (Rock & Binders)	Chemical	Major	Lab Analysis	1 sample/lot	As per vendor Standard		MTC	√	P	V	# Audit checks at random by Manufacturer QC at Sub-supplier works for all Verification / Witness Points.
1.2	GI Wire netting wire (Upto 400 °C)	Wire dia & dimension of netting	Major	Measurement	IS 3150 Append 'A'	IS:3150 / BHEL Approved data sheet & Drawings		MTC	√	P	W	
1.3		Chemical	Major	Lab Analysis	IS 3150 Append 'A'	IS: 280 & IS: 7887	IS: 7887	MTC	√	P	V	
1.4		Tensile Test	Major	Lab Analysis	IS 3150 Append 'A'	IS: 280 & IS: 1608	IS: 280	MTC	√	P	V	
1.5		Wrapping Test	Major	Lab Analysis	IS 3150 Append 'A'	IS: 280	IS: 280	MTC	√	P	V	
1.6		Coating Test	Major	Lab Analysis	IS 3150 Append 'A'	IS: 280	IS: 4826	MTC	√	P	V	
1.7		Dimension of Netting	Major	Measurement	IS 3150 Append 'A'	IS: 3150		MTC	√	P	W	
1.8		Bend Test	Major	Measurement	IS 3150 Append 'A'	IS: 280		MTC	√	P	V	
1.9		Gauge (Wire Dia.)	Major	Measurement	IS 3150	IS:6528 / BHEL Approved Data sheet & Drawings		MTC	√	P	W	
1.1	SS Wire Netting (Above 400 °C)	Dimension of netting	Major	Measurement	IS 6528	IS:3150 & BHEL Approved data sheet & Drawings		MTC	√	P	W	
1.11		Chemical Composition	Major	Lab analysis	IS 6528	IS:6528	Gr X0.04 Cr18 Ni10	MTC	√	P	V	
1.12		Reverse bend test	Major	Lab analysis	IS 6528	IS:6528	Gr X0.04 Cr18 Ni10	MTC	√	P	V	
1.13		Wrapping Test	Major	Lab analysis	IS 6528	IS:6528	Gr X0.04 Cr18 Ni10	MTC	√	P	V	

2.0 In Process Control												
2.1	Finished Mattress	Dimensional check	Major	Measurement	IS : 8183	IS:3144,IS:8183 / BHEL Approved Data Sheet & Drawings		MTC	√	P	W*	* At Random
PREPARED BY M.MANOJ PANDI, Engineer / QA			LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: Manufacturer ; B: BHEL / BHEL Authorised Inspection Agency (AIA) P: PERFORM W: WITNESS AND V: VERIFICATION						APPROVED BY M.S.MURALIDHARAN, Manager / QA & C			
SIGNATURE		PAGE 01 OF 03										





BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE, CHENNAI - 17
 QUALITY ASSURANCE & CONTROL DEPT.

STANDARD QUALITY ASSURANCE PLAN FOR LRB WOOL MATTRESS

QP NO: QPG:41
 REV.NO: 01

DATE: 24/05/12

SI. NO	COMPONENT / OPERATION	CHARACTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	TYPE OF RECORD		INSPECTION AGENCY		REMARKS
								9	D	M	B	
1	2	3	4	5	6	7	8	9	D	11	12	15
3.0	Final Inspection											
3.1	Mattress	Bulk Density	Major	Lab test (R)	IS : 8183 Append 'C'	IS:3144,IS:8183 / BHEL Approved Data Sheet & Drawings	MTC	√	P	W*		* At Random
3.2		Recovery after compression	Major	Lab test (R)	IS : 8183 Append 'C'	IS:3144,IS:8183 / BHEL Approved Data Sheet & Drawings	MTC	√	P	W		Refer Note: 4
3.3		Shot content	Major	Lab test (R)	IS : 8183 Append 'C'	IS:8183 Appdx 'A'	IS:8183 / BHEL Approved Data Sheet & Drawings	MTC	√	P	W	
3.4		Moisture Content	Major	Lab test (R)	IS : 8183 Append 'C'	IS:8183 Appdx 'A'		MTC	√	P	W	
3.5		Moisture Absorption	Major	Lab test (T)	IS : 8183 Append 'C'	IS:3144	IS:8183	MTC	√	P	W	Refer Note: 1
3.6		Incombustibility	Major	Lab test (T)	IS : 8183 Append 'C'	IS:3144	IS:8183	MTC	√	P	W	Refer Note: 1
3.8		Thermal Conductivity	Major	Lab test (Ts)	IS : 8183 Append 'C'	IS:3346	IS:8183	MTC	√	P	W	Refer Note: 1 & 2
3.9		Sulphur Content	Major	Lab Test (R)	IS : 8183 Append 'C'	IS:3144	IS:8183	MTC	√	P	W	Refer Note: 4
3.10		Fibre Diameter	Major	Lab test (T)	IS : 8183 Append 'C'	IS:3144	IS:8183	MTC	√	P	W	Refer Note: 4
3.11		Resistance to vibration	Major	Lab test (T)	IS : 8183 Append 'C'	IS:3144	IS:8183	MTC	√	P	W	Refer Note: 1
3.12		Resistance to Jolting	Major	Lab test (T)	IS : 8183 Append 'C'	IS:3144	IS:8183	MTC	√	P	W	Refer Note: 1
3.13		Heat Resistance at 550 deg.C	Major	Lab test (T)	IS : 8183 Append 'C'	IS:3144	IS:8183	MTC	√	P	W	Refer Note: 1
3.14		Alkalinity	Major	Lab test (R)	IS : 8183 Append 'C'	IS:8183 - Annexure-B		MTC	√	P	W	Refer Note: 4
3.15		Chloride Content (Corrosive)	Major	Lab test (R)	IS : 8183 Append 'C'	IS:8183 - Annexure-B		MTC	√	P	W	Refer Note: 4
 PREPARED BY M.MANOJ PANDI, Engineer / QA		LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: Manufacturer ; B: BHEL / BHEL Authorised Inspection Agency (AIA) P: PERFORM W: WITNESS AND V: VERIFICATION					 APPROVED BY M.S.MURALIDHARAN, Manager / QA & C					
SIGNATURE		PAGE 02 OF 03										



BHARAT HEAVY ELECTRICALS LIMITED
PIPING CENTRE, CHENNAI - 17
 QUALITY ASSURANCE & CONTROL DEPT.

**STANDARD QUALITY ASSURANCE PLAN FOR LRB
 WOOL MATTRESS**

QP NO: QPG:41
 REV.NO: 01
 DATE: 24/05/12

SI. NO	COMPONENT / OPERATION	CHARACTERISTICS	CLASSIFICATION	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE CRITERIA	TYPE OF RECORD		INSPECT ION AGENCY		REMARKS
										M	B	
1	2	3	4	5	6	7	8	9	D	11	12	15
4.0	Packing, Marking & Preservation											
4.1	Packing, Marking and Preservation	Identification	Major	Visual	IS:8183	BHEL Purchase Specification / BHEL approved Data Sheet / BHEL Purchase Order & Drawings	TC		P	W	Refer Note: 8	
4.2		Packing/Protection	Major	Visual	IS:8183							
5.0	Certification	Test Certificate	Major	The supplier shall furnish the certificate indicating the date of manufacture, Test values, batch number, batch quantity, date of testing, specification to which the material is tested for the routine tests conducted and type test conducted.				√	P	W		

BATCH - Entire production made in identical conditions viz., total production of Wool mattress for BHEL Purchase order from start up to close of furnace for a particular period.
 The batch shall be constituted of same size in thickness of the mattress.

LEGEND : MTC : Mill / Manufacturer's Test Certificate; IR : Inspection Report; (R) : Routine Test; (T) / (Ts) : Type Test

NOTES:

- Type test marked as 'T' shall be done once in 3 months in presence of BHEL/BHEL AIA for BHEL Purchase order and Type test marked as 'Ts' shall be done once in 12 months. The valid Type test report shall be submitted for review at the time of inspection
- Thermal Conductivity Test shall be carried on the sealed sample jointly selected by manufacturer and BHEL, in any one of the laboratories (1) IIT Chennai (2) CBRI Roorkee (3) PIBCO, New Delhi (4) NIRMA University, Ahmedabad.
 The original Test /certificate shall be submitted to BHEL Engg. / QA for review and approval. Shall be produced during the inspection of the product at the manufacturing works.
- All routine tests shall be carried out in the Manufacturers own laboratory. (Shall be approved by BHEL)
- Products shall be inspected by BHEL/BHEL Authorised Inspection agency/Customer- as indicated in the BHEL purchase order. The internal test records of routine tests shall be submitted for review during inspection. **Sample identified from the finished lot shall be subjected to routine tests and witness by BHEL / BHEL AIA**
- Manufacturer shall prepare and submit a separate manufacturing quality plan whenever BHELs customer approval is envisaged (as specified in the BHEL purchase order.)
- The mattress shall be handable without any lump formation and disintegration of material.
- The Relevant IS Nos. & year of issue: IS:8183-1993; IS:3150-1982; IS:280-1978; IS:7887-1992; IS:1608-2005; IS: 4826-1979; IS: 6528-1995; IS: 3144-1992; IS: 3346-1980
- The mattress shall be packed in Polythene laminated polypropylene or HDPE bags. Mattresses of same thickness shall be packed in one bag.
- All material test certificates of Routine test and Type-test shall be submitted during witness / final inspection to inspection Agency as indicated in the PO.

 PREPARED BY M.MANOJ PANDI, Engineer / QA	LEGEND: * RECORDS, IDENTIFIED WITH "TICK" (√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: Manufacturer ; B: BHEL / BHEL Authorised Inspection Agency (AIA) P: PERFORM W: WITNESS AND V: VERIFICATION	 APPROVED BY
		M.S.MURALIDHARAN, Manager / QA & C
SIGNATURE	PAGE 03 OF 03	